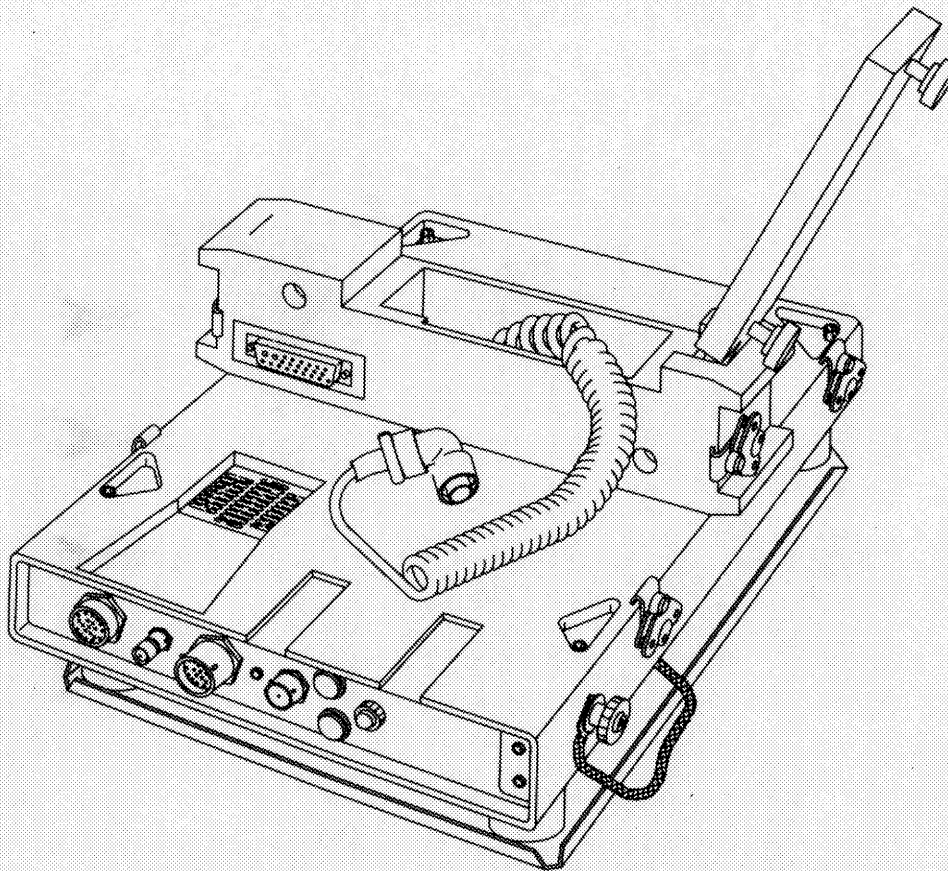


ARMY TM 11-5895-1321-24
NAVY EE005-LC-MMI-010/W110-MT6452
AIR FORCE TO 31R2-2GRC215-52

UNIT, INTERMEDIATE DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE MANUAL



MOUNTING BASE, ELECTRICAL EQUIPMENT MT-6452/GRC-215 (NSN 5975-01-207-8991)

HOW TO USE
THIS MANUAL III

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DEPARTMENTS OF THE ARMY, THE NAVY, AND THE AIR FORCE

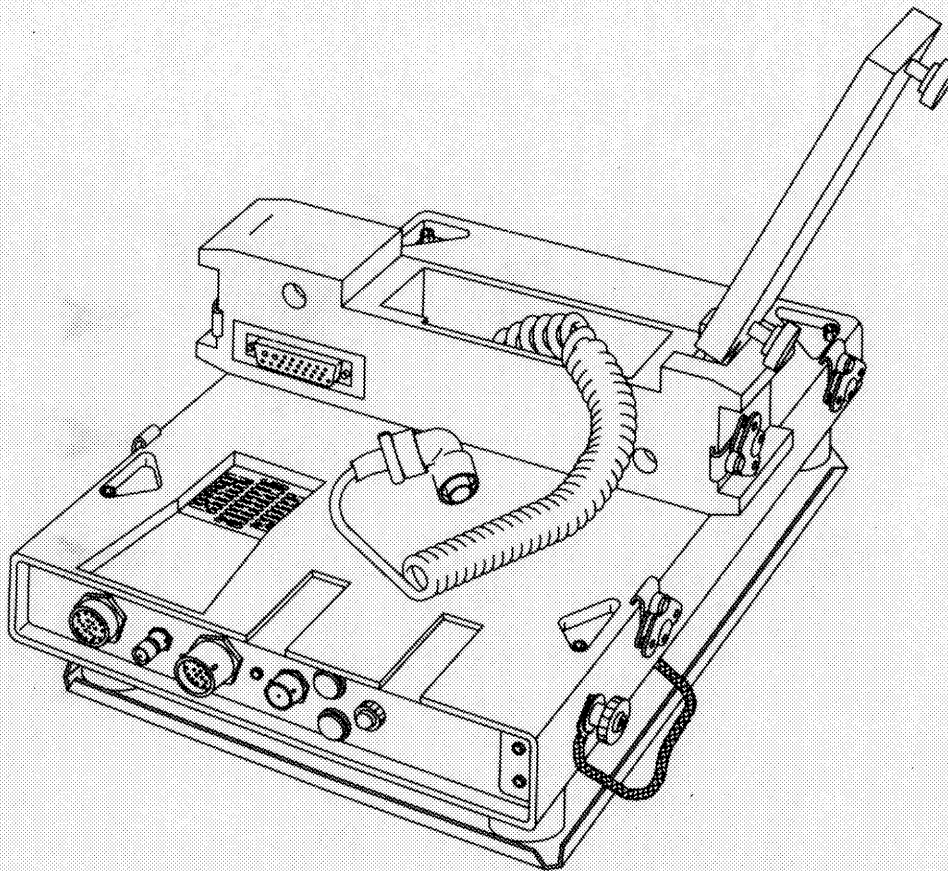
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1 FEBRUARY 1989

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5

SAFETY STEPS TO FOLLOW IF SOMEONE IS THE VICTIM OF ELECTRICAL SHOCK

1

DO NOT TRY TO PULL OR GRAB THE INDIVIDUAL

2

IF POSSIBLE, TURN OFF THE ELECTRICAL POWER

3

IF YOU CANNOT TURN OFF THE ELECTRICAL POWER, PULL, PUSH, OR LIFT THE PERSON TO SAFETY USING A DRY WOODEN POLE OR A DRY ROPE OR SOME OTHER INSULATING MATERIAL

4

SEND FOR HELP AS SOON AS POSSIBLE

5

AFTER THE INJURED PERSON IS FREE OF CONTACT WITH THE SOURCE OF ELECTRICAL SHOCK, MOVE THE PERSON A SHORT DISTANCE AWAY AND IMMEDIATELY START ARTIFICIAL RESUSCITATION

WARNING

Turn off all equipment power before using TRICHLOROTRIFLUOROETHANE. Provide adequate ventilation while using TRICHLOROTRIFLUOROETHANE. Avoid prolonged breathing of the fumes and vapor. Do not use solvent near heat or open flames; the products decomposed are toxic and irritating. Since TRICHLOROTRIFLUOROETHANE dissolves natural oils, avoid prolonged contact with the skin. When needed, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

CAUTION



This equipment contains certain static-sensitive solid state devices which are subject to damage from electrostatic discharge. Effective control of electrostatic discharge is maintained only through continuous strict observance of the following maintenance procedures:

- Any maintenance requiring disassembly of the equipment must be performed at an approved work station. The work station must include a grounded surface and grounded wrist strap in accordance with DOD-HDBK-263.
- All maintenance personnel must have completed training in the handling of static-sensitive devices before working on this equipment. Maintenance personnel must wear the grounded wrist strap and be at an approved work station when performing maintenance.
- The static sensitive subassemblies or circuit cards must be stored in approved electrostatic free material when not installed in the equipment.

Technical Manual
No. 11-5895-1321-24
Technical Manual
No. EE005-LC-MMI-010/W110-MT-6452
Technical Order
TO 31R2-2GRC215-52

DEPARTMENTS OF THE ARMY,
THE NAVY, AND THE AIR FORCE

Washington, DC, 1 February 1989

**UNIT, INTERMEDIATE DIRECT SUPPORT, AND GENERAL SUPPORT
MAINTENANCE MANUAL**

**MOUNTING BASE, ELECTRICAL EQUIPMENT
MT-6452/GRC-215
(NSN 5975-01-207-8991)**

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in back of this manual direct to: Commander, US Army Communications - Electronics Command and Fort Monmouth, ATTN: AMSEL-LC-ME-PS, Fort Monmouth, New Jersey 07703-5000.

For Air Force, submit AFTO Form 22 (Technical Order System Publication Improvement Report and Reply) in accordance with paragraph 6-5, Section VI, TO 00-5-1. Forward direct to prime SM-ALC/MMEDT McClellan AFB, CA 95652-5609.

For Navy, mail comments to the Commander, Space and Naval Warfare Systems Command, ATTN: SPAWAR 003-242 Washington, DC 20363-5100.

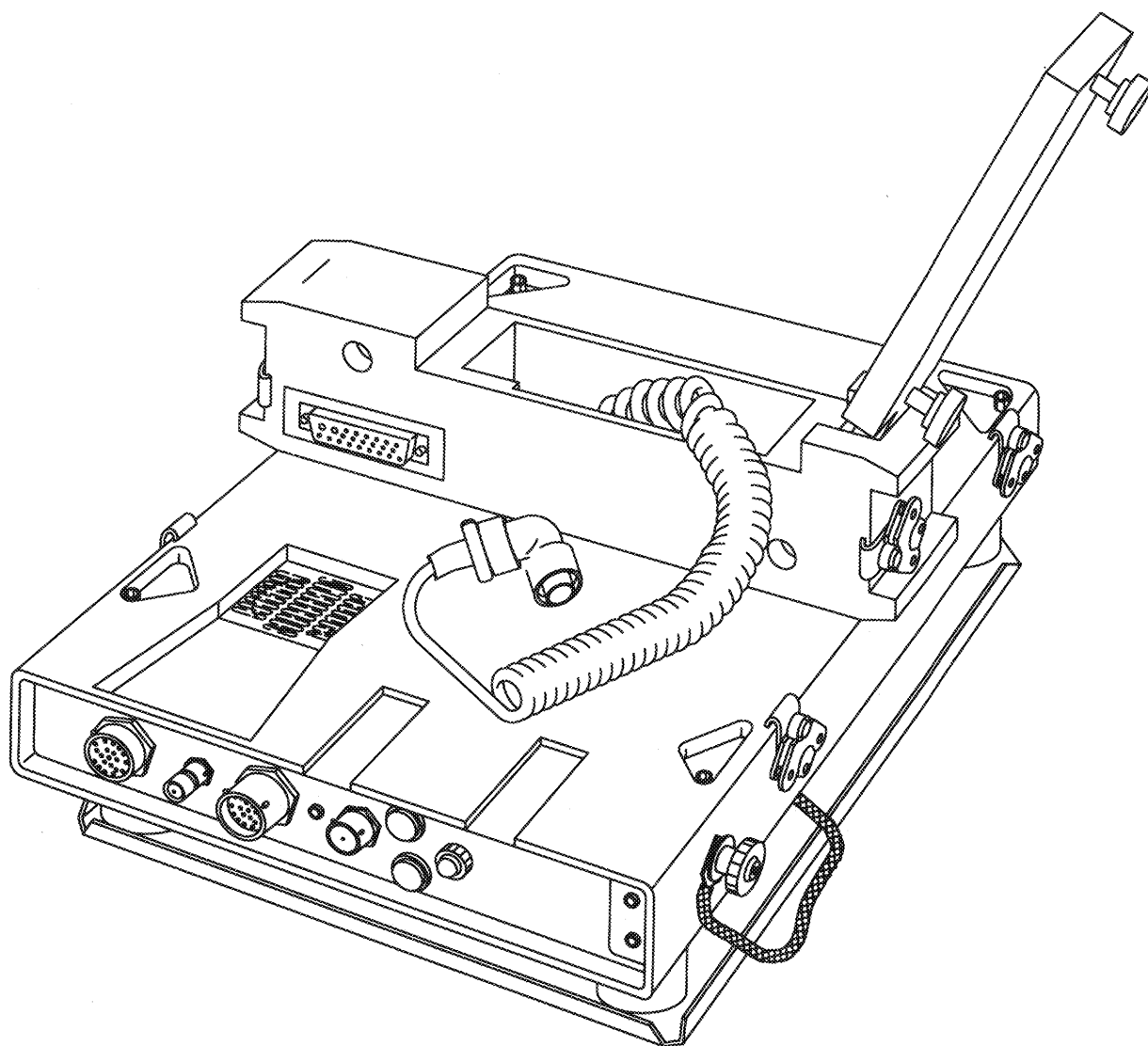
In either case, a reply will be furnished direct to you.

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HOW TO USE THIS MANUAL

- The front cover index identifies frequently used information. Each item is boxed and identified by topic and page number.
- The first page containing the information you are looking for has a black box on the edge of the page.
- Bend the manual in half and following the index to the page with the black edge marker.
- Topics in the table of contents which are the same as topics on the front cover are also boxed.
- A complete alphabetical subject index is located in the back of the manual. Use the index to locate specific information.
- The glossary contains an explanation of technical terms and acronyms.



MOUNTING BASE, ELECTRICAL EQUIPMENT
MT-6452/GRC-215

CHAPTER 1 INTRODUCTION

<u>Subject</u>	<u>Page</u>
Equipment Description and Data	1-4
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Section I. GENERAL INFORMATION

1-1. SCOPE

a. Type of Manual. Unit, Intermediate Direct Support, and General Support Maintenance Manual.

b. Equipment Name and Model Number. Mounting Base, Electrical Equipment, MT-6452/GRC-215.

c. Purpose of Equipment. The Mounting Base, Electrical Equipment MT-6452/GRC-215 provides electrical and mechanical interface required for the Receiver/Transmitter RT-1511/GRC-215 in the Radio Set AN/GRC-215 configuration. It also provides injection frequencies used during operation of the AN/GRC-215 and storage for the battery case. It provides charging for the manpack battery. In addition, a feeder cable provides a charging capability for the remote control set battery.

d. Maintenance Category Cross-reference. Army maintenance categories are referenced in this manual. Navy and Air Force personnel will contact their same-level maintenance group. Refer to the following cross-reference list.

Army	Navy	Air Force
Unit	Organizational	Organizational

1-2. MAINTENANCE FORMS, RECORDS, AND REPORTS

a. Reports of Maintenance and Unsatisfactory Equipment. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA Pam 738-750, as contained in Maintenance Management Update. Air Force personnel will use AFR 66-1 for maintenance reporting and TO 00-35D-54 for unsatisfactory equipment reporting. Navy personnel will report maintenance performed utilizing the Maintenance Data Collection Subsystem (MDCS) IAW OPNAVINST 4790.4A, and unsatisfactory material/conditions utilizing the PMS Feedback Report.

b. Reporting of Item and Packaging Discrepancies. Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/DLAR 4140.55/SECNAVINST 4355.18 AFR 400-54/MCO 4430.3J.

c. Transportation Discrepancy Report (TDR) (SF 361). Fill out and forward Transportation Discrepancy Report (TDR) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610.33C/AFR 75-18/MCO P4610.19D/DLAR 4500.15.

1-3. CONSOLIDATED INDEX OF PUBLICATIONS AND BLANK FORMS

a. Army. Refer to the latest issue of DA Pam 25-30 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

b. Navy. Navy personnel refer to NAVSUP 2002.

c. Air Force. For technical publications, Air Force personnel refer to Numerical Index and Requirements Table (NI & RT). For non-technical publications, refer to AFR 0-2. For forms, refer to AFR 0-9.

1-4. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

a. Army. If your equipment needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on an SF 368 (Product Quality Deficiency Report). Mail it to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-PA-MA-D, Fort Monmouth, New Jersey 07703-5000. We'll send you a reply.

b. Navy. Navy personnel are encouraged to submit EIR's in accordance with AFR 900-4.

c. Air Force. Air Force personnel are encouraged to submit EIR's in accordance with AFR 900-4.

1-5. DESTRUCTION OF MATERIEL TO PREVENT ENEMY USE

a. Army. Destroy the Mounting Base, Electrical Equipment, MT-6452/GRC-215 in accordance with the procedures in TM 750-244-2 to prevent enemy use.

1-5. DESTRUCTION OF MATERIEL TO PREVENT ENEMY USE (Cont.)

b. Navy. Navy personnel comply with the local Command Material Destruction Plan.

c. Air Force. Air Force personnel comply with TM 750-244-2 or the local emergency destruction plan.

1-6. PREPARATION FOR STORAGE OR SHIPMENT

a. Army. Before placing equipment into administrative storage, insure that equipment is operational. If operational, put into storage using appropriate corrosion control techniques. When removing from storage, again perform operational tests and Unit PMCS (if available) to determine mission capability.

b. Navy. Refer to NAVSUP PUB 503.

c. Air Force. Refer to AFM 66-267 (storage) and AFR 67-31 (shipment).

1-7. OFFICIAL NOMENCLATURE, NAMES, AND DESIGNATIONS

COMMON NAME

OFFICIAL NOMENCLATURE

Team Terminal
Vehicular Adapter (VA)

Radio Set AN/GRC-215, P/N A3023753
Mounting Base, Electrical Equipment,
MT-6452/GRC-215, P/N A3023796

A1 Filter Assembly

Connector Assembly, Filter Box,
A1A1A1A1, P/N A3027298-1

Vent Assembly

Vent Assembly Filter, A1A1A1A2, P/N
A3030268

Motherboard
A4 Filter Assembly

Motherboard CCA, A1A1A1A3, P/N A3030271
PA/ATU Filter Assembly, A1A1A1A4, P/N
A3027295

A5 Filter Assembly
A6 Filter Assembly

Assembly Filter, A1A1A1A5, P/N A3027292
Assembly Filter, A1A1A1A6, P/N
A3027297-1

Battery Charger
Battery Charger A1 CCA

Battery Charger, A1A1A1A7, P/N A3031145
Battery Charger CCA, A1A1A1A7A1 P/N
A3031070

Battery Charger A2 CCA

Battery Charger CCA, A1A1A1A7A2, P/N
A3031071

Control Circuits
PA Interface

Control Circuits, A1A1A2, P/N A3026061
Power Amplifier (PA) Interface, A1A5, P/N
A3026064

Frequency Synthesizer

Frequency Synthesizer, A2, P/N
A3024340

Blower

Tubeaxial Blower, A1A1A1B1, P/N A3030323

Section II. EQUIPMENT DESCRIPTION AND DATA

1-8. EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

a. Characteristics

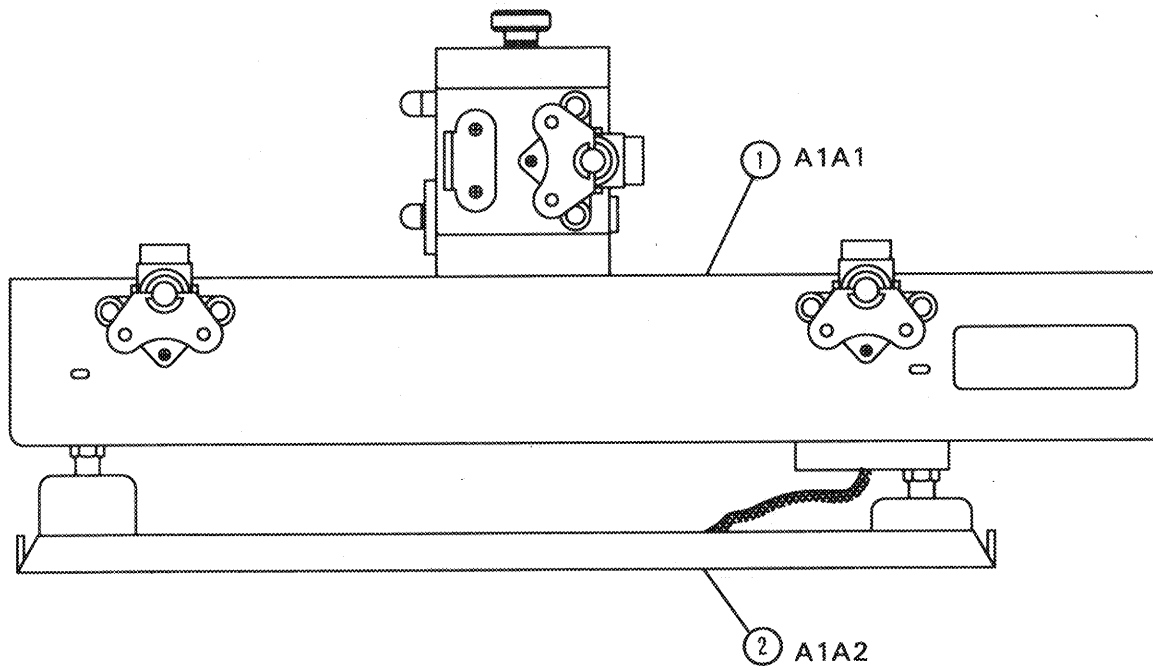
- Provides mechanical interface for the receiver/transmitter.
- Provides intermediate frequency (IF) and frequency standard to receiver/transmitter.
- Provides power to the installed receiver/transmitter.
- Routes built-in test (BIT) signals to/from the receiver/transmitter.
- Automatically charges batteries used in manpack and remote configuration.
- Provides cooling air to the receiver/transmitter.
- Provides control signal interface between receiver/transmitter and antenna tuning unit and power amplifier.
- Provides control signal interface between electronic counter-countermeasures (ECCM) module and frequency synthesizer.

b. Capabilities and Features

- Has front panel indicators to display operational status.
- Front panel light emitting diode (LED) indicates battery charge in progress.
- Has electromagnetic pulse (EMP) protection of battery charge circuits.
- Front panel indicator of frequency synthesizer BIT FAULT.

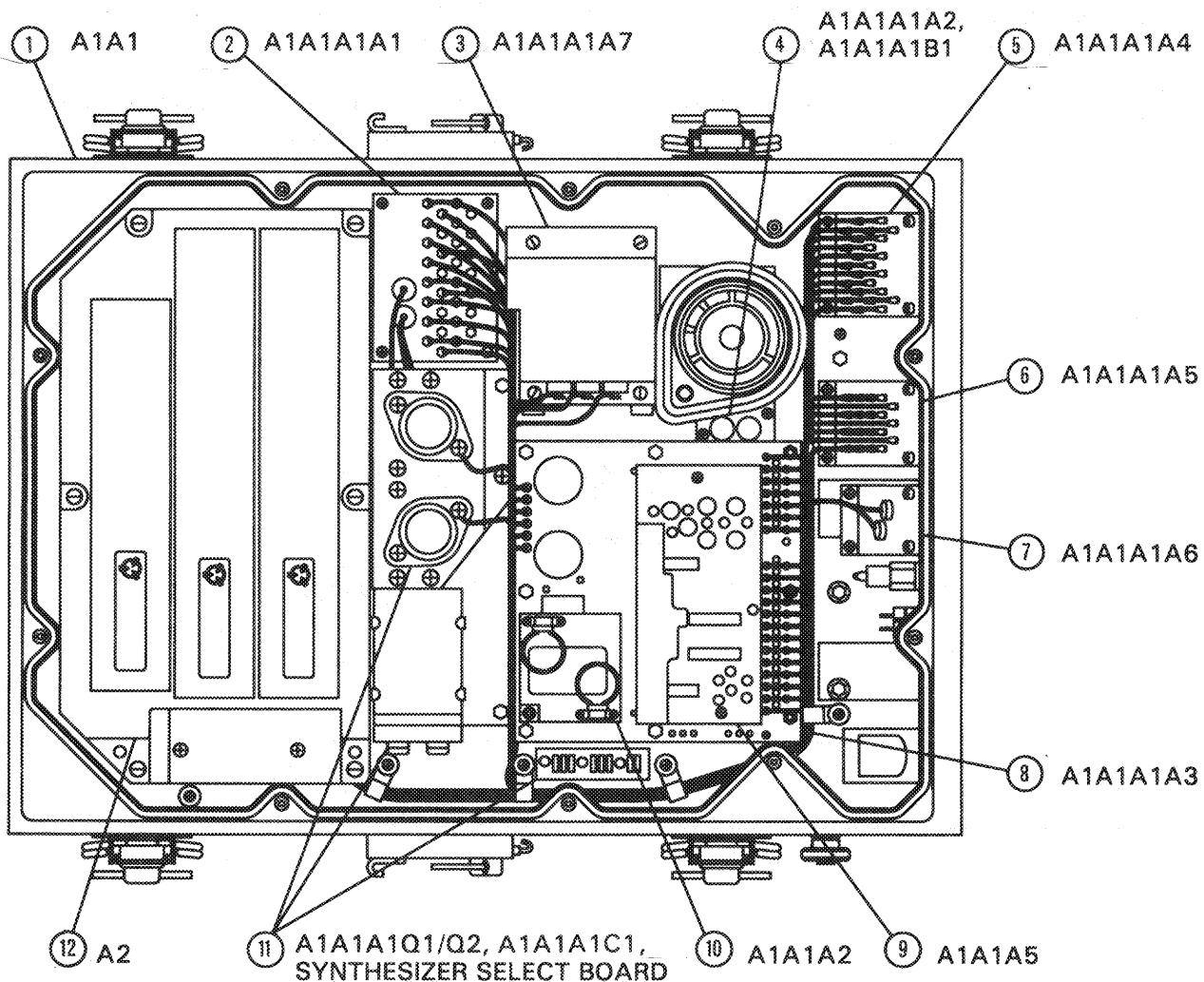
1-9. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

- ① Mounting Base A1A1. Provides vehicular mount for the receiver/transmitter and battery case.
- ② Shock Mount A1A2. Provides shock and vibration isolation for receiver/transmitter, battery case, and frequency synthesizer.



MT-6452/GRC-215 (SIDE VIEW)

1-9. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Cont.)



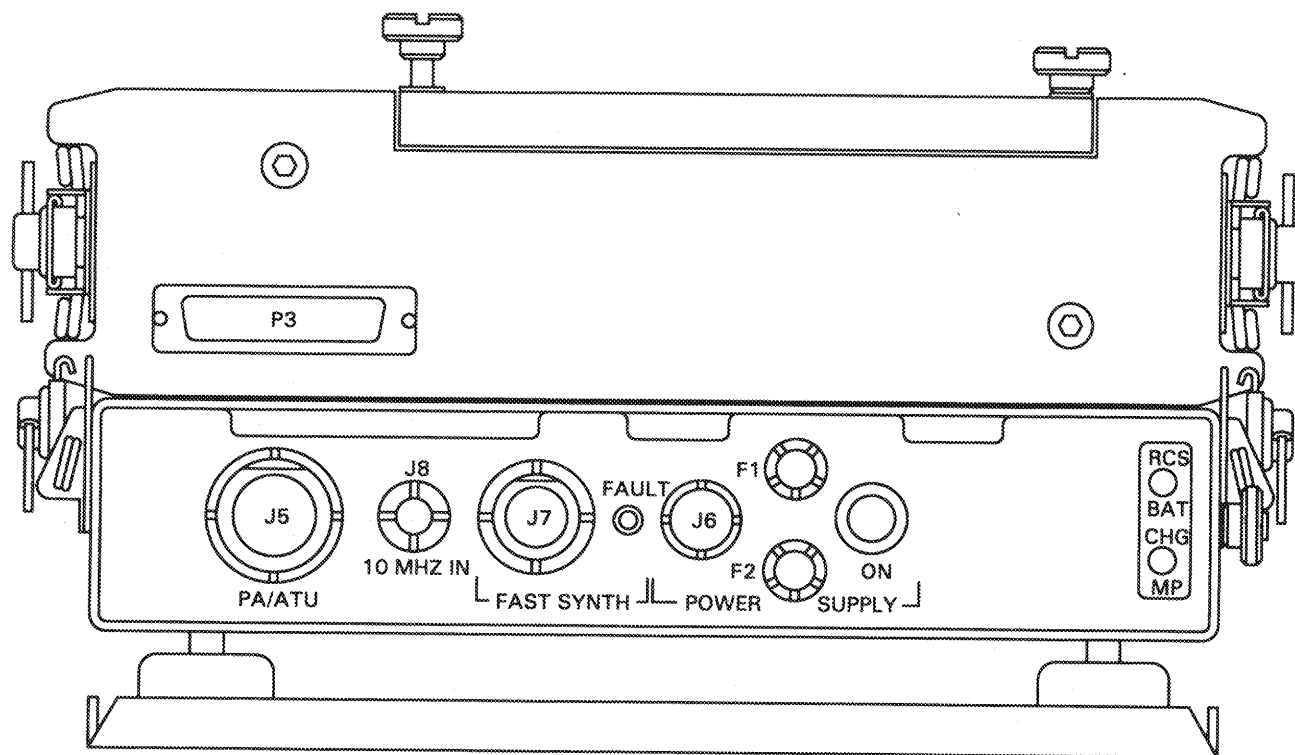
BOTTOM VIEW A1 (COVER REMOVED)

- ① Base A1A1. Houses functional assemblies and wiring of the vehicular adapter. Provides dc power to assemblies of the vehicular adapter, and electrical interface between the receiver/transmitter, ECCM module, reference frequency oscillator (RFO), 100-watt power amplifier, antenna tuning unit (ATU), battery case (for charging the manpack battery), and converter (for charging the remote control set (RCS) battery).

1-9. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Cont.)

- ② A1 Filter Assembly, A1A1A1A1. Contains 33 feedthrough capacitors and one radio frequency (rf) filter. Provides input connection and isolation for lines (except coaxial lines) to/from J3 (receiver/transmitter) and J4 (battery case).
- ③ Battery Charger A1A1A1A7. Provides +30 Vdc at 280-350 mA to charge the RCS battery.
- ④ Vent Assembly A1A1A1A2, and Fan Assembly A1A1A1B1. Contain two rf filters which filter fan control voltage. The fan provides cooling air to the receiver/transmitter.
- ⑤ A4 Filter Assembly, A1A1A1A4. Contains 24 rf filters. Provides input connection and filtering for lines to/from J5 (100-watt power amplifier and ATU).
- ⑥ A5 Filter Assembly, A1A1A1A5. Contains 18 rf filters. Provides input connection and filtering for lines to/from J7 (ECCM module).
- ⑦ A6 Filter Assembly, A1A1A1A6. Contains two rf filters. Provides input connection and filtering for lines to/from J6 (power input).
- ⑧ Motherboard A1A1A1A3. Provides mounting connectors for control circuits A1A1A2 and PA interface A1A1A5 and electrical interconnection to/from these modules and other base-mounted assemblies. Provides additional filtering of input dc power. Provides 71.4 kHz to the battery case for battery charge synchronization.
- ⑨ PA Interface A1A1A5. Contains circuitry to interface receiver/transmitter control and BIT signals with the 100-watt power amplifier and the 100-watt ATU.
- ⑩ Control Circuits A1A1A2. Provides filtering and EMP protection for input voltages, controls routing of input voltages to vehicular adapter assemblies and controls vent assembly A1A1A1A2.
- ⑪ Base-Mounted Components A1A1A1C1, A1A1A1Q1/Q2, Synthesizer Select Board. A1A1A1C1 and A1A1A1Q1/Q2 provide additional voltage/current regulation for internal dc voltages. The synthesizer select board contains components used in selecting synthesizer frequencies.
- ⑫ Frequency Synthesizer Module A2. Under ECCM module control, provides injection frequency to the receiver/transmitter.

1-9. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS (Cont.)



FRONT VIEW

1-12. SAFETY, CARE, AND HANDLING

CAUTION

Prior to removing or installing a component or cable, ensure that power to the component has been turned off. Removing and connecting cables while power is applied may result in an arc or short. This can damage the connector pins.

CAUTION

The vehicular adapter contains certain static-sensitive solid state devices which are subject to damage from electrostatic discharge (ESD). Effective control of ESD is maintained only through continuous strict observance of the following maintenance procedures:

- Any maintenance action requiring disassembly of the equipment must be performed at an approved work station. The work station must include a grounded surface and grounded wrist strap in accordance with DOD-HDBK-263.
- All maintenance personnel must have completed training in the handling of static-sensitive devices before working on this equipment. Maintenance personnel must wear the grounded wrist strap and be at an approved work station when performing maintenance.
- The static sensitive subassemblies or circuit cards must be stored in approved electrostatic-free materials when not installed in the equipment.

Make all cable connections by hand. Do not use tools.

Section III. PRINCIPLES OF OPERATION

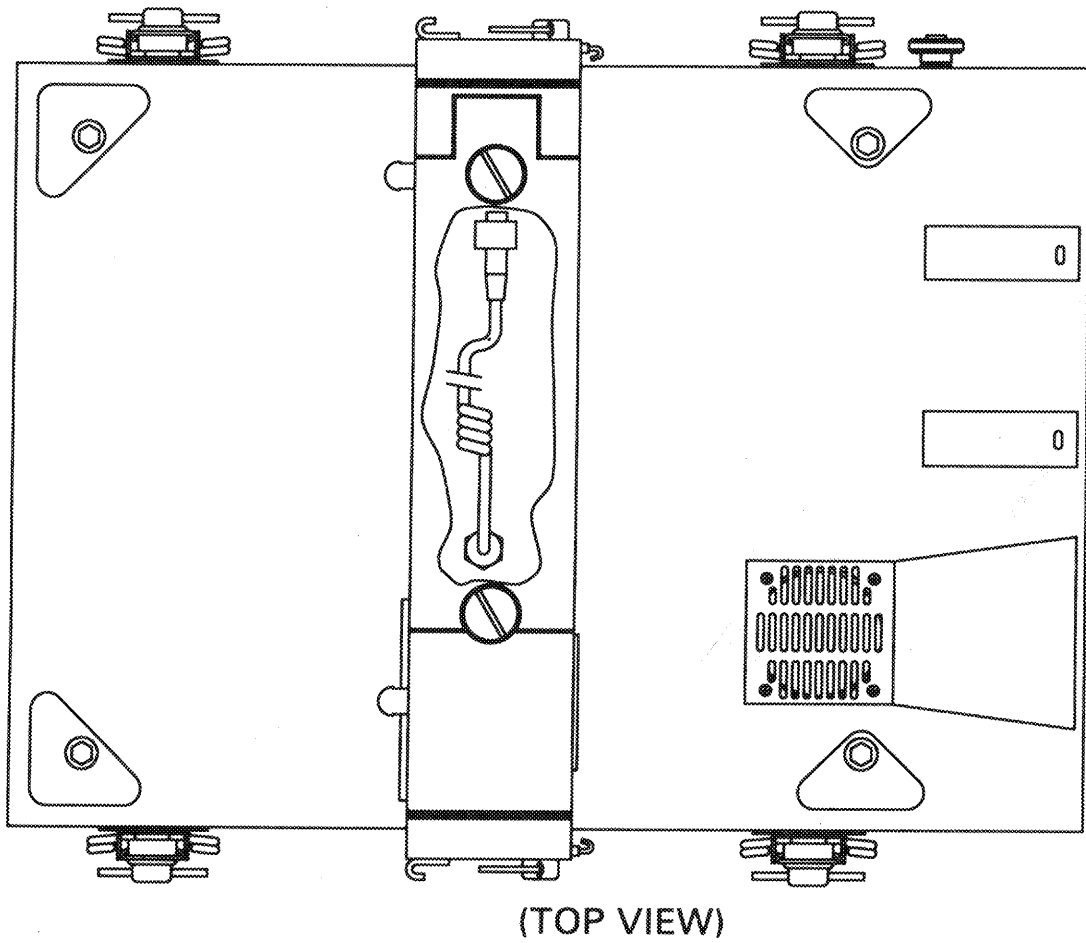
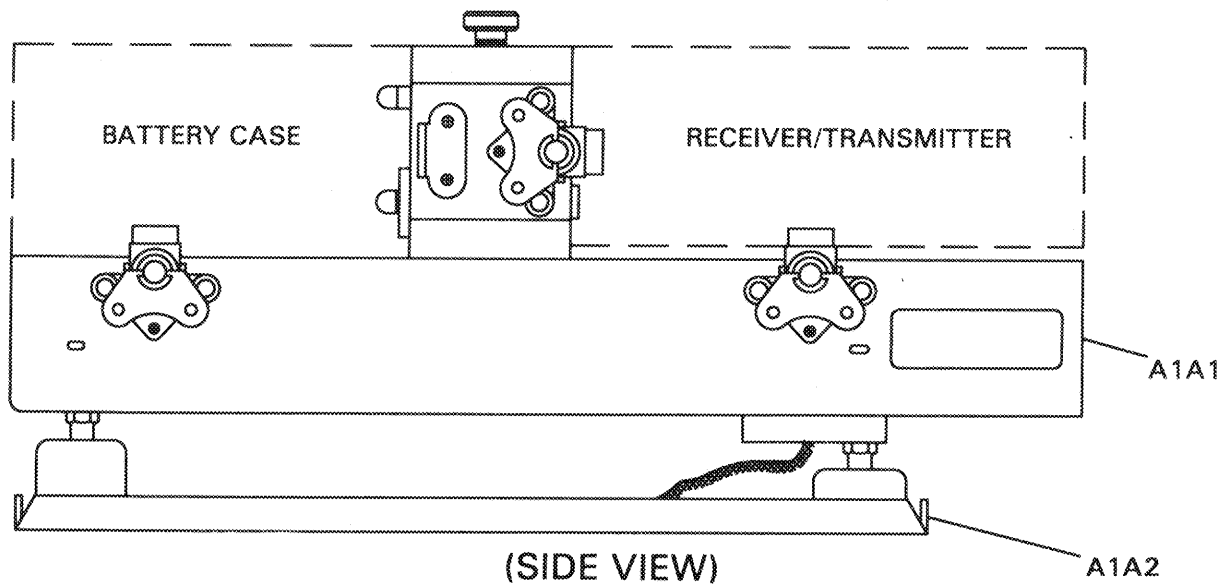
1-13. FUNCTIONAL DESCRIPTION OF VEHICULAR ADAPTER

The vehicular adapter provides mechanical and electrical interface necessary to adapt receiver/transmitter RT-1511/G to the vehicle-mounted Team Terminal configuration.

a. Mechanical Interface. The mechanical interface protects the receiver/transmitter from vibration and shock. The mounting base (A1A1) provides for secure attachment of the receiver/transmitter to the vehicular adapter with four lock down fasteners. J1 provides electrical connection to the base (A1A1). An air channel in the Mounting Base mates with the air intake port of the receiver/transmitter to channel cooling air from the blower. A1A1 also provides for storage of the battery case and interface of the manpack battery for charging. A battery charging cable that mates with the converter for RCS battery charging is also provided.

The shock mount base (A1A2) provides mechanical interface between the vehicular adapter and the Team Terminal vehicle through four shock absorbers. The shock base is bolted to the vehicle rack to establish firm mechanical and electrical ground contact. Captive bolts from the mounting base secure the vehicular adapter to the shock mount base. A ground strap between the tray and the mounting base provides vehicle ground to the adapter.

1-13. FUNCTIONAL DESCRIPTION OF VEHICULAR ADAPTER (Cont.)



1-13. FUNCTIONAL DESCRIPTION OF VEHICULAR ADAPTER (Cont.)

b. Electrical Interface. The base (A1A1) provides an electrical interface to connect the receiver/transmitter to components within the vehicular adapter and to the other line replaceable units (LRU) of the Team Terminal. External connections are provided by:

- P3 to the receiver/transmitter
- J4 to the battery case
- J5 to the 100-watt power amplifier and ATU
- J6 to the Team Terminal power supply (PP-8170)
- J7 to the ECCM module
- J8 to the external standard
- P1 to the remote control unit battery

Internal connection to the frequency synthesizer is provided by J1.

1-14. FUNCTIONAL DESCRIPTION OF MAJOR COMPONENTS

The base assembly (A1A1) contains all interconnecting wiring and houses:

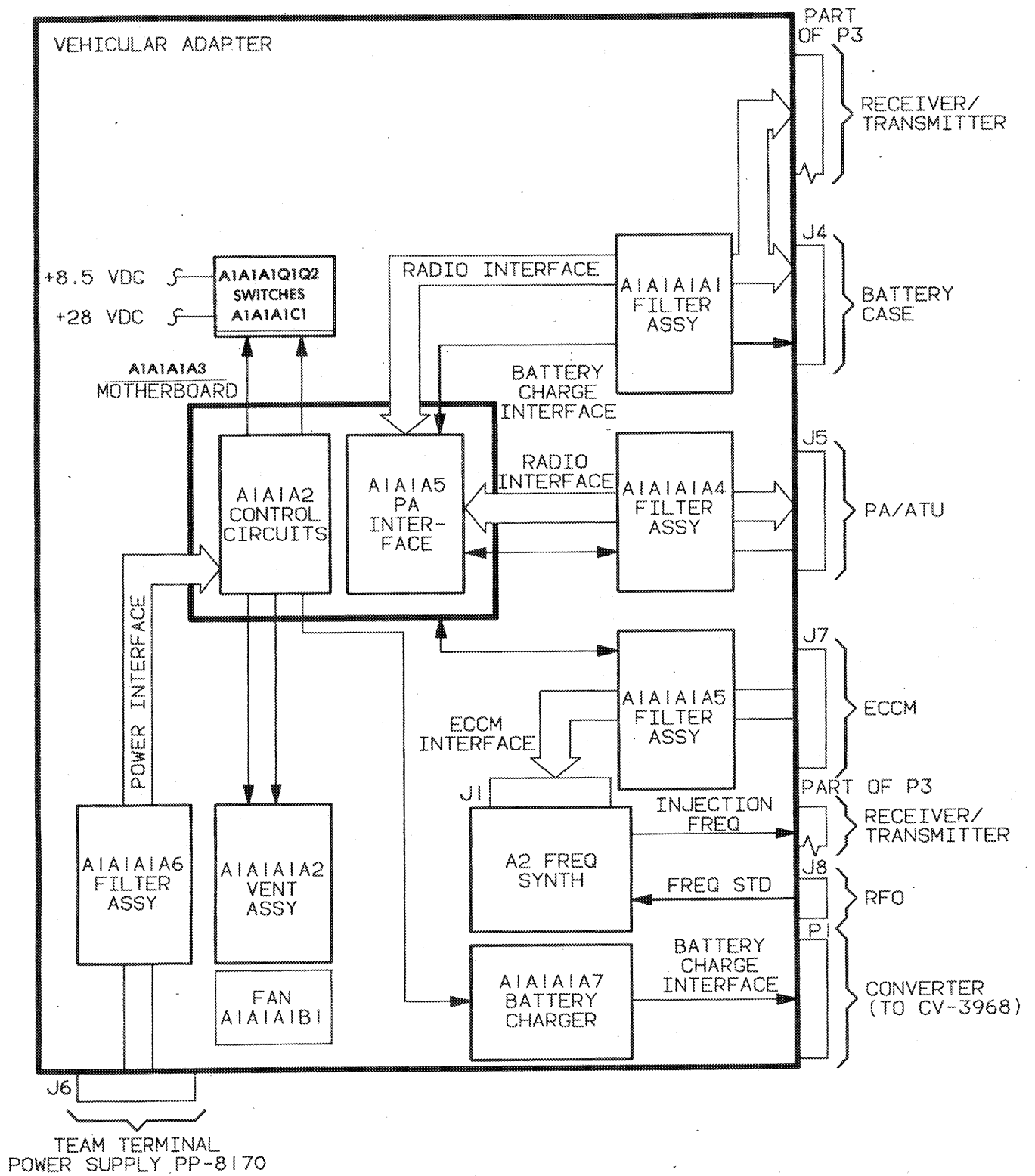
- Frequency synthesizer (A2)
- Control circuits (A1A1A2)
- PA interface (A1A1A5)
- Five filter assemblies (A1A1A1A1, A1A1A1A2, and A1A1A1A4 through A1A1A1A6)
- Motherboard (A1A1A1A3)
- Battery charger (A1A1A1A7)
- Base-mounted components (A1A1A1C1, A1A1A1Q1, and A1A1A1Q2)
- Fan (A1A1A1B1)

These assemblies and components establish four interfaces:

- Power interface
- Radio interface
- ECCM interface
- Battery charge interface

Foldouts in the rear of this manual contain complete schematics for assemblies repairable at the Intermediate Maintenance level. FO-1 is the base (A1A1) schematic, FO-2 is the motherboard (A1A1A1A3) schematic, FO-3 is the battery charger (A1A1A1A7) schematic.

1-13. FUNCTIONAL DESCRIPTION OF VEHICULAR ADAPTER (Cont.)



1-14. FUNCTIONAL DESCRIPTION OF MAJOR COMPONENTS (Cont.)

a. Power Interface. Power input is received from the Team Terminal power supply PP-8170 at front panel connector J6. DC returns are terminated at A1A1A1A6E1 and reference to vehicular adapter chassis at A1E13.

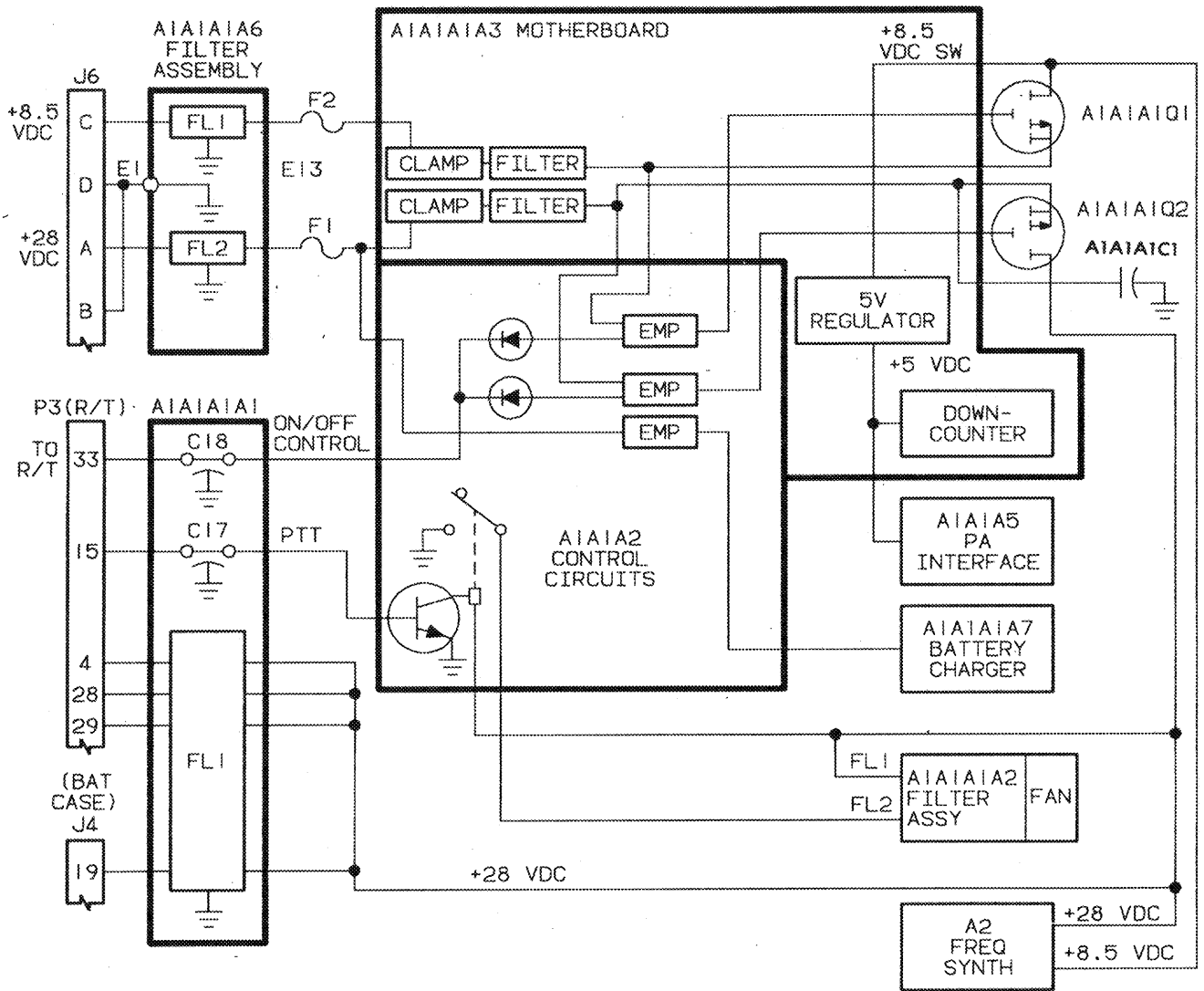
Input +8.5 Vdc (J6-C) is filtered at FL1 of the filter assembly (A1A1A1A6) and routed through fuse F2 (4 amps). From the fuse, +8.5 Vdc is routed to the motherboard (A1A1A1A3). A voltage clamp on the motherboard provides protection from input voltage polarity reversal and input current surge. The voltage is filtered and routed to the control circuits (A1A1A2) which provide EMP protection. The voltage is then applied to the source input of base-mounted A1A1A1Q1 which is used as a voltage switch. The ON/OFF control signal input from P3 (R/T) is routed to the control circuits and used to produce the gate voltage to A1A1A1Q1. When the ON/OFF control signal is high, the control circuits turn on Q1, routing +8.5 Vdc (switched) to the frequency synthesizer (A2).

The voltage applied to A1A1A1Q1 source is also routed to the motherboard, where it is applied to a +5 Vdc regulator. Regulated +5 Vdc is used on the motherboard and routed to the PA interface (A1A1A5) for CMOS Vcc.

Input +28 Vdc (J6-A) is filtered at FL2 of the A1A1A1A6 filter assembly and routed through fuse F1 (5 Amps). From the fuse, +28 Vdc is routed to the motherboard where a voltage clamp provides protection from input voltage polarity reversal and current surge. The voltage is filtered and routed to the control circuits which provides EMP protection. The voltage is applied to the source input of base-mounted A1A1A1Q2 which is used as a voltage switch. When the ON/OFF control signal is received on P3-24, the control circuits will turn on Q2, routing +28 Vdc (switched) to the filter assembly (A1A1A1A2) to provide power to the fan, to the frequency synthesizer (A2), and to the filter assembly (A1A1A1A1). From the filter assembly, the +28 Vdc is routed to the receiver/transmitter and battery case.

The control circuits also applies the A1A1Q2 source voltage to the battery charger (A1A1A1A7).

1-14. FUNCTIONAL DESCRIPTION OF MAJOR COMPONENTS (Cont.)

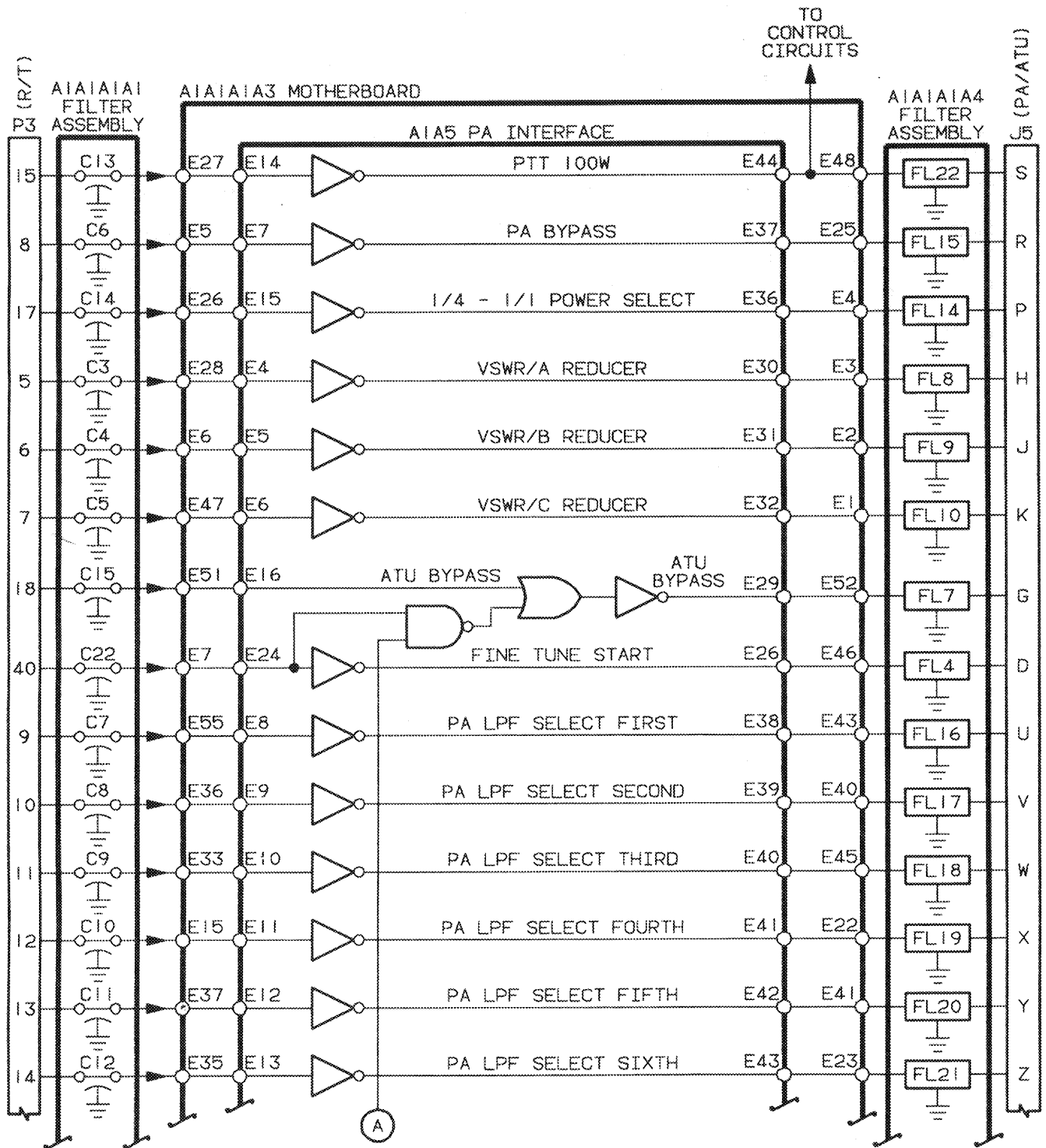


1-14. FUNCTIONAL DESCRIPTION OF MAJOR COMPONENTS (Cont.)

b. Radio Interface. Interface between the receiver/transmitter and the 100-watt power amplifier and ATU is established through the A1A1A1A1 filter assembly, the PA interface module, and the A1A1A1A4 filter assembly.

Signals at external connector P3 from the receiver/transmitter are isolated and filtered by feedthrough capacitors on the A1A1A1A1 filter assembly and routed to the motherboard. The PA interface mounts to the motherboard and receives signal inputs from the A1A1A1A1 filter. Circuitry on the PA interface inverts the input signal and uses it to gate an open collector ground output signal. All output signals from the PA interface are open collector signals. Ground at the output indicates that the signal is active. An open circuit condition indicates that the signal is not active. Ground outputs of the PA interface are routed to the A1A1A1A4 filter assembly to rf filters, and out to the 100-watt PA or ATU through front panel connector J5.

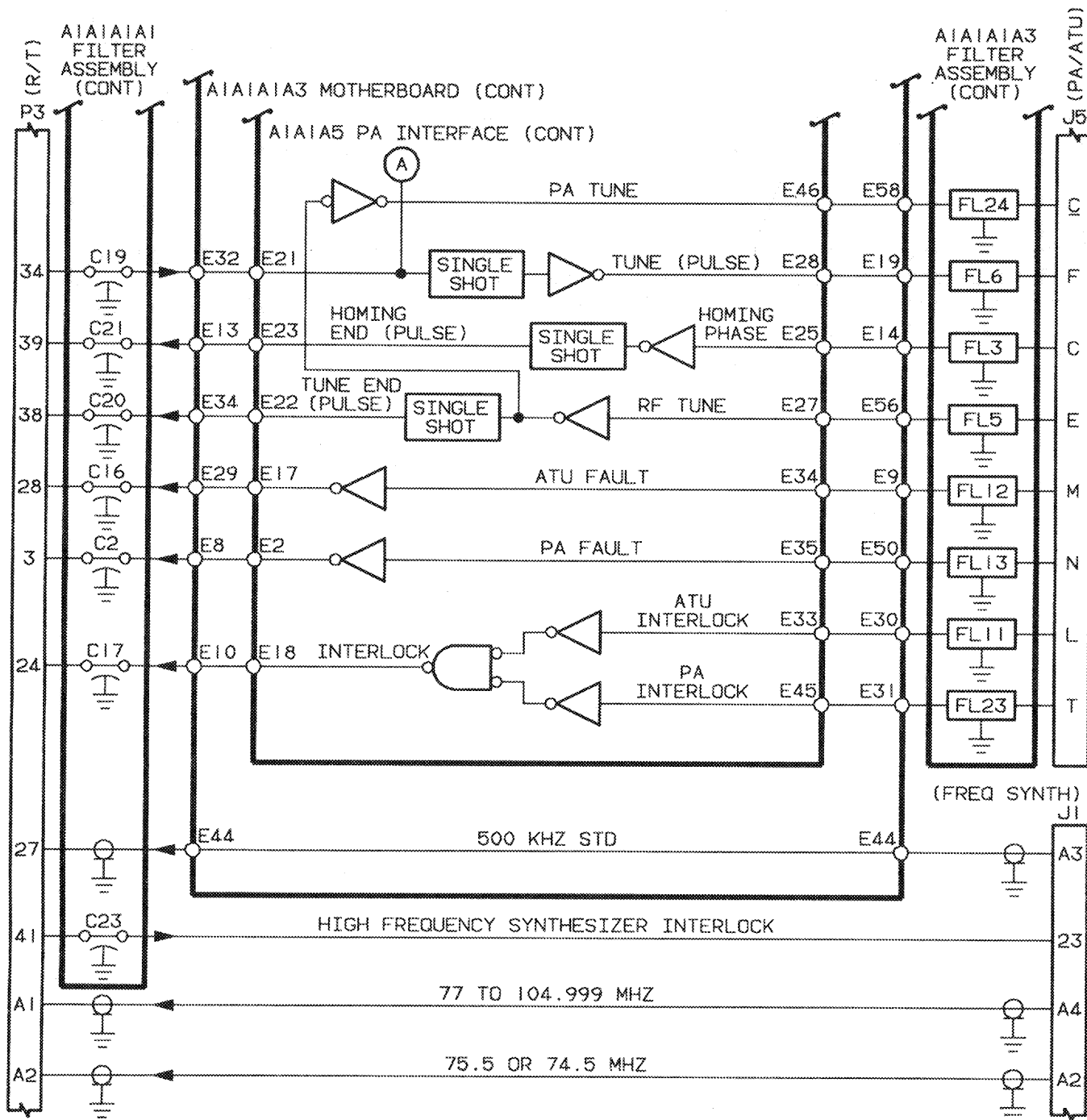
1-14. FUNCTIONAL DESCRIPTION OF MAJOR COMPONENTS (Cont.)



1-14. FUNCTIONAL DESCRIPTION OF MAJOR COMPONENTS (Cont.)

Signals on J5 from the 100-watt PA and ATU are conditioned in the same way. Signals are filtered and isolated on the A1A1A1A4 assembly and routed through the motherboard to the PA interface. Here, the signals are inverted and applied to open collector circuits for output to the receiver/transmitter. Ground outputs to the receiver/transmitter indicate active conditions and open circuits indicate that the signal is not active. Outputs to the receiver/transmitter are filtered and isolated by the feedthrough capacitors on the A1A1A1A1 filter assembly and output to the receiver/transmitter through P3. Interface between the frequency synthesizer is established through hard wiring between P3 (R/T) and J1 (frequency synthesizer). The high frequency synthesizer interlock signal from P3-41 to J1-23 is filtered and isolated by C23 of the A1A1A1A1 filter assembly.

1-14. FUNCTIONAL DESCRIPTION OF MAJOR COMPONENTS (Cont.)

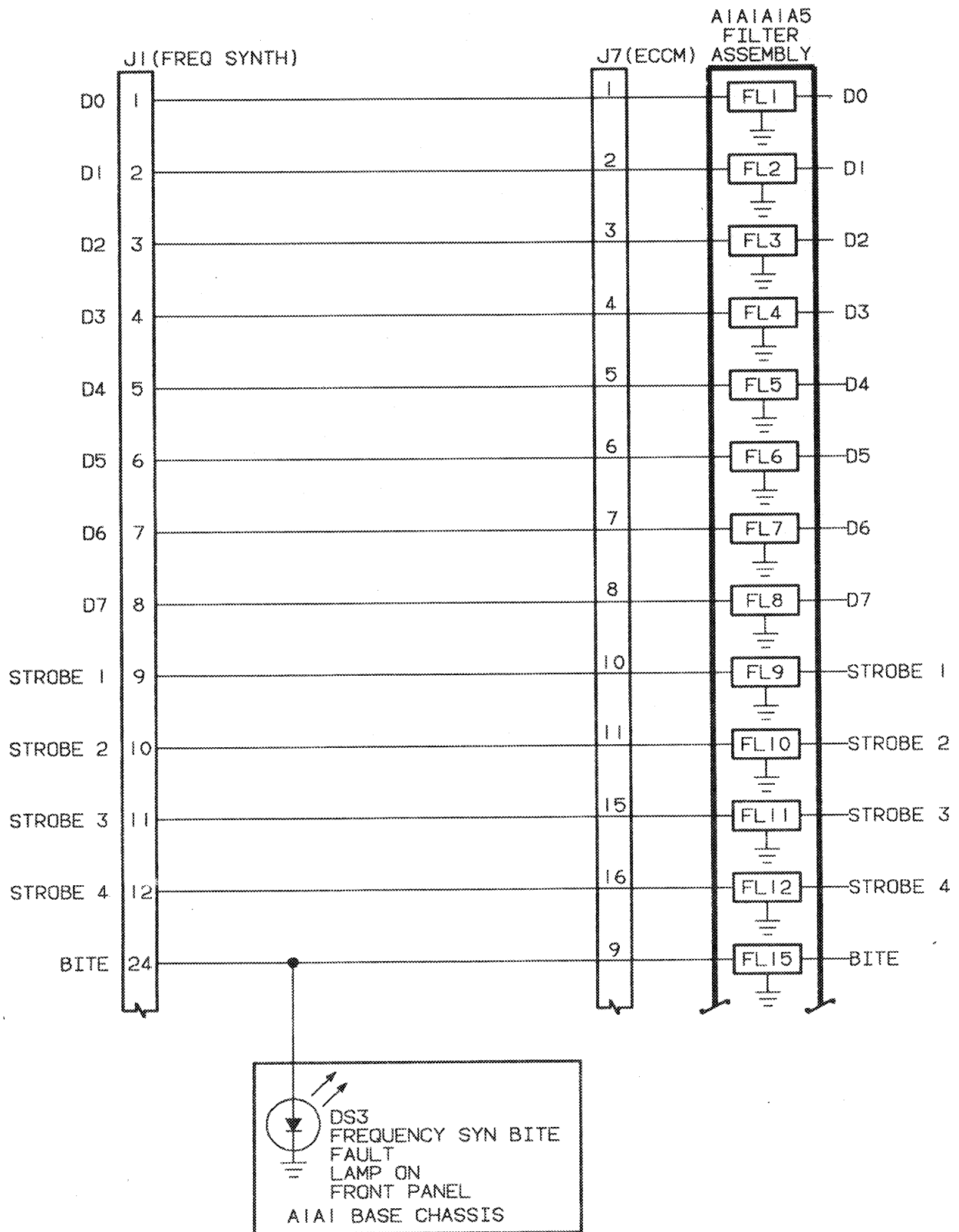


1-14. FUNCTIONAL DESCRIPTION OF MAJOR COMPONENTS (Cont.)

c. ECCM Interface. Interface between the ECCM module (J7) and the frequency synthesizer (J1) is established to provide ECCM control of the frequency synthesizer. All signals are filtered and isolated at their entry and exit points to the base. RF filters are low-pass filters. DC levels will pass through the filter, but frequencies in the audio frequency range and above will be shunted to ground.

An additional function of the ECCM module interface is to connect control signals from the ECCM at J7 through rf filters on the A1A1A1N5 filter assembly to the frequency synthesizer at J1. The frequency synthesizer receives operating voltages (+8.5 and +28 Vdc) from the power switches A1A1A1Q1 and A1A1A1Q2 under direction of the control circuits (A1A1A2).

1-14. FUNCTIONAL DESCRIPTION OF MAJOR COMPONENTS (Cont.)



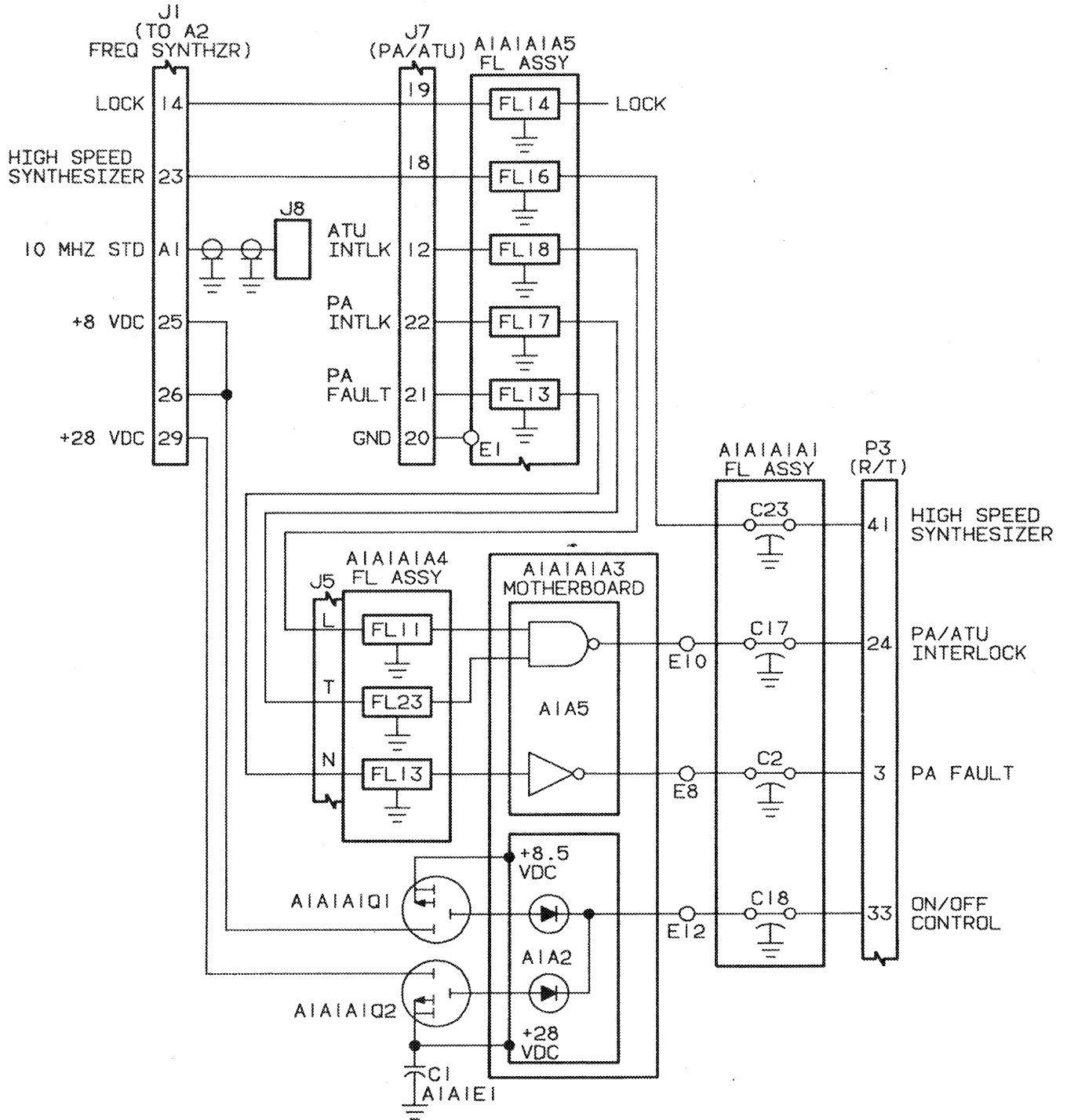
ECCM INTERFACE

1-14. FUNCTIONAL DESCRIPTION OF MAJOR COMPONENTS (Cont.)

The Team Terminal interlock is established through J5-L and J5-T from the PA/ATU connector J5. The signal is routed as a positive level to the ECCM module through A5FL17/J7-22 (PA interlock) and A5FL18/J7-12 (ATU interlock). The same signals are routed through A4FL11 and 23 and combined and converted to a single open collector/ground signal on the PA Interface and routed to the receiver/transmitter through A1C17/P3-24. The interlock circuit is completed by the high speed synthesizer signal interconnection P3-41, A1FL23 through FL16, to J7-18 and J1-23. The interlock establishes the basic operating mode of the Team Terminal configuration:

- (1) The receiver/transmitter internal frequency synthesizer is disabled and replaced by IF and frequency standards from the frequency synthesizer (A2).
- (2) The internal receiver/transmitter ATU is disabled and replaced with the 100-watt ATU interface through the PA interface (A1A1A5).
- (3) The internal receiver/transmitter PA is limited to a low output (5 watts).

1-14. FUNCTIONAL DESCRIPTION OF MAJOR COMPONENTS (Cont.)



1-14. FUNCTIONAL DESCRIPTION OF MAJOR COMPONENTS (Cont.)

d. Battery Charger Interface. The battery charger interface consists of two separate circuits: one provides input signals for the battery case assembly for charging manpack batteries, and one provides signals for charging the RCS battery.

The battery case mounts to the vehicular adapter base (A1A1) and is interfaced at J4. The 500 kHz frequency standard from the frequency synthesizer (A2) is routed to the motherboard, there a downcounter and inverter circuit divides the standard by 14 and routes 71.4 kHz to the battery case for synchronization of manpack battery charge. This signal, inverted to a switched ground and an open collector signal on the motherboard, is routed to J4-25.

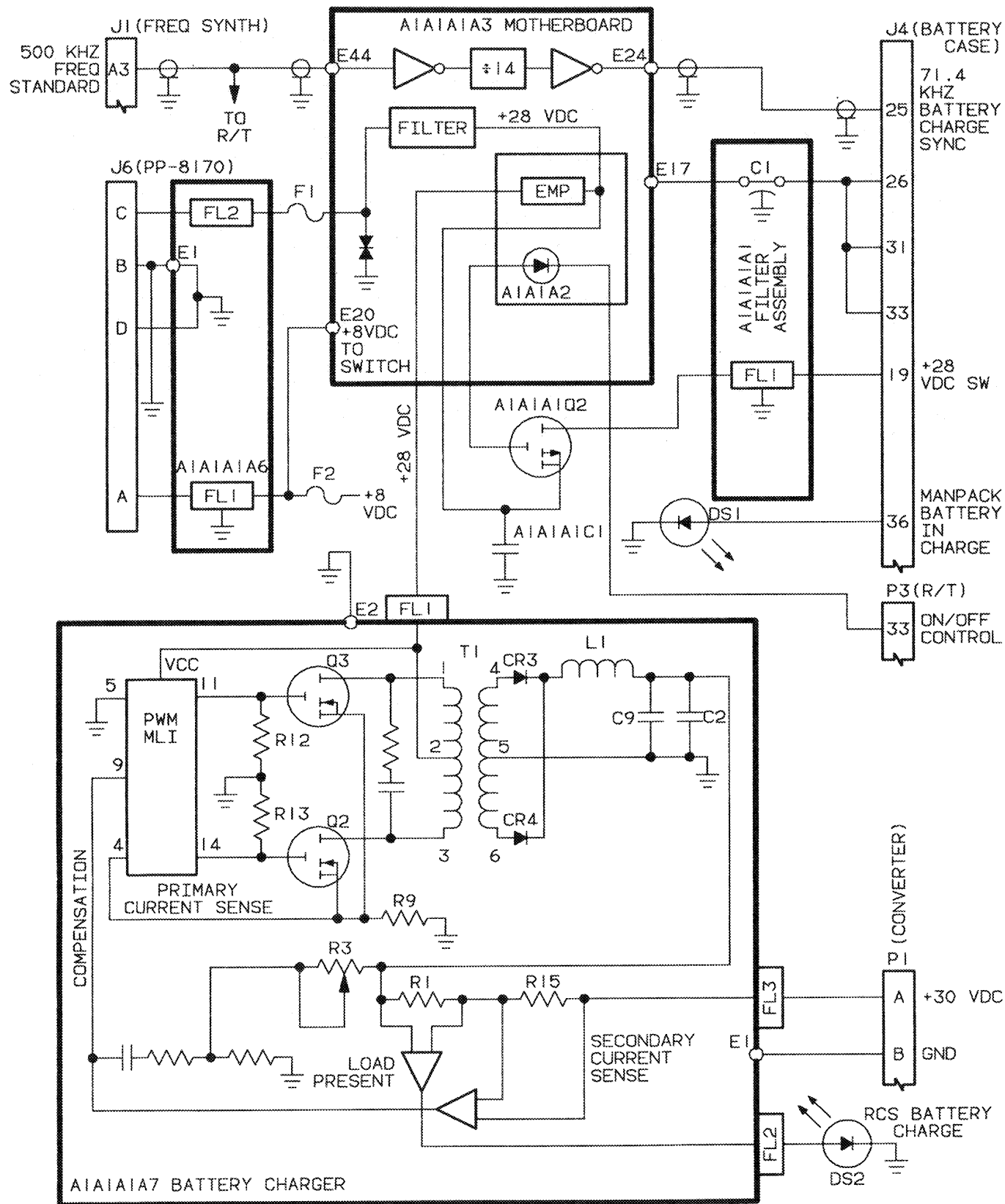
The vehicular adapter also provides ground and +28 Vdc to the base. The +28 Vdc drives the battery charger circuit in the base. When manpack batteries are being charged, a high signal at J4-36 from the case assembly lights the charge indicator on the vehicular adapter front panel.

P1, located inside the access cover at the top of the vehicular adapter base (A1A1), provides interface to the converter for charging the RCS battery. Charging voltage (+30 Vdc) and ground from the battery charger A1A1A7 are available at P1.

The control circuits (A1A1A2) provide +28 Vdc to the battery charger A1A1A7. This +28 Vdc is used as Vcc within the battery charger to drive a Pulse Width Modulator (PWM). The outputs of the PWM are positive pulses at near Vcc level. These outputs alternately turn on the N-channel MOSFETs. MOSFET switching action alternately applies ground to pins 1 and 3 of transformer T1. Available at the centertap of T1 is the +28 Vdc input from the control circuits.

The effect of this switched dc action across T1 is an ac voltage induced into the T1-4/-5/-6 secondary. This voltage is rectified by CR3 and CR4, filtered at L1, C9, and C2, and routed through R1 and R15 to FL3. From FL3 the voltage is routed to P1-A. P1 provides interface to the converter for charging the RCS battery.

1-14. FUNCTIONAL DESCRIPTION OF MAJOR COMPONENTS (Cont.)

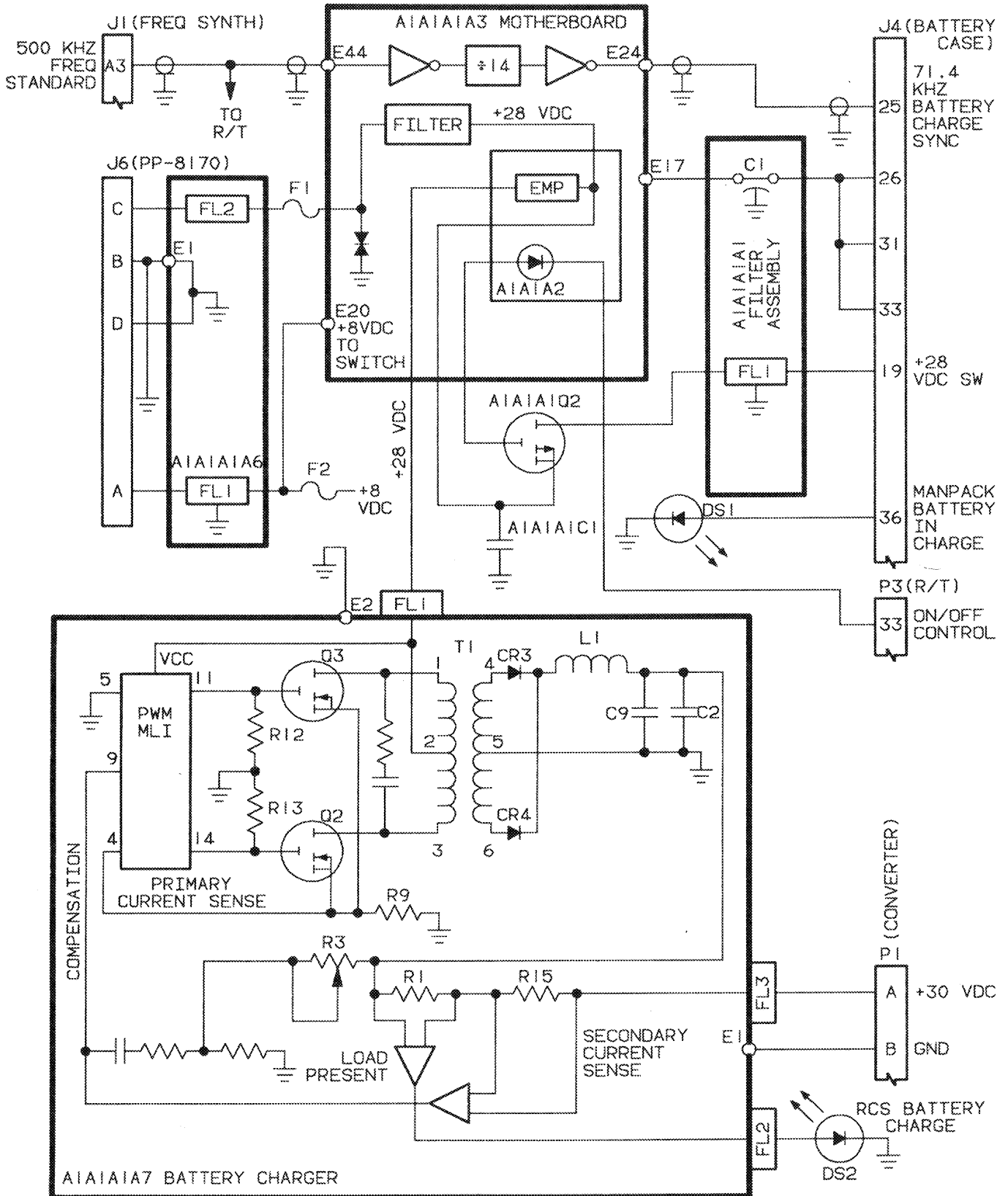


1-14. FUNCTIONAL DESCRIPTION OF MAJOR COMPONENTS (Cont.)

Voltage and current regulation are a result of additional inputs to the PWM. Primary current is sensed at R9 on the source of Q3 and Q2 and input to positive current limit sense at ML1-4. Negative current limit sense (pin 5) is tied to ground. Output voltage is routed to R3, which adjusts the PWM for proper voltage output. On the output leg (R1 and R15) current is sensed across R15, conditioned, and returned to the PWM compensation input as secondary current sense. Overcurrent conditions on either the T1 primary or secondary legs will result in shutdown of the PWM. Voltage regulation is through adjustable resistor R3 to the PWM compensation input.

When the RCS battery is connected to P1, current will be drawn down the output leg. Current is sensed across R1, resulting in an output voltage to light the front panel RCS in charge indicator. There will be no current in the output leg. With a load attached to P1, R15 acts as a secondary current sense. Current in excess of 350 milliamps across R15 will result in the shutdown of the PWM. The PWM remains shut down until the fault is corrected.

1-14. FUNCTIONAL DESCRIPTION OF MAJOR COMPONENTS (Cont.)



CHAPTER 2 UNIT MAINTENANCE

<u>Subject</u>	<u>Page</u>
Preparation for Storage or Shipment	2-5
Preventive Maintenance Checks and Services (PMCS)	2-3
Repair Parts, Special Tools; Test, Measurement, and Diagnostic Equipment (TMDE); and Support Equipment	2-1
Service Upon Receipt	2-2
Unit Maintenance	2-5
Unit Troubleshooting	2-5

Section I. REPAIR PARTS, SPECIAL TOOLS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE); AND SUPPORT EQUIPMENT

2-1. COMMON TOOLS AND EQUIPMENT

a. Army. For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

b. Navy. Navy personnel refer to applicable Tables of Allowance (TA).

c. Air Force. Air Force personnel refer to applicable Tables of Allowance (TA).

2-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

Special tools, TMDE, and support equipment and their purposes are listed in the Maintenance Allocation Chart, Appendix B.

2-3. REPAIR PARTS

Repair parts used during Unit Maintenance are listed and illustrated in the repair parts and special tools list located in TM 11-5895-1321-24P, EE005-LC-PLD-010/W110-MT6452 (Navy) , TO 31R2-2GRC215-54 (Air Force).

Section II. SERVICE UPON RECEIPT

2-4. Unpacking requires no special procedures for removing unit from its storage container. Use normal care in handling electronic equipment. Prevent damage to exterior controls and indicators. Avoid jarring unit during removal.

2-5. CHECKING UNPACKED EQUIPMENT

CAUTION

The vehicular adapter contains components that are sensitive to damage by electrostatic discharge (ESD). Improper handling will result in component and assembly failure. Use extreme care when handling. Refer to DOD-HDBK-263 for proper handling procedures.

a. Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on SF-364, Report of Discrepancy (ROD).

b. Check the equipment against the packing slip to see if the equipment is complete. Report all discrepancies in accordance with the instructions of DA Pam 738-750.

c. Refer to DA Pam 25-30 to see if your equipment has any Modification Work Orders (MWO) applied.

2-6. PRELIMINARY SERVICING OF EQUIPMENT

The vehicular adapter does not require alinement prior to installation. Perform the following checks upon receiving a new unit or prior to installing a repaired unit. The vehicular adapter is installed in accordance with the instructions contained in TM 11-5895-1220-12, EE160-RG-OMI-010/W110-GRC215 (Navy), TO 31R2-2GRC215-1 (Air Force).

a. Check all front panel connectors.

- Connectors are securely mounted to the chassis.
- Connector pins are not bent or broken.

b. Check all panel mounted lamps.

- POWER SUPPLY ON indicator lamp installed in the lamp holder.

- c. Check all panel-mounted fuses.
 - Fuseholders securely mounted to the chassis.
 - Proper fuses installed.
- d. Check the general mechanical condition of the vehicular adapter.

Section III. PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

2-7. INTRODUCTION

Preventive maintenance procedures help maintain the equipment in a serviceable condition. They include items to be checked and procedures for checking them. The checks and services described in the PMCS table outline inspections that are to be made at specific Monthly (M) and Quarterly (Q) intervals.

a. Routine Check. The following items are not listed in the PMCS table. Defects that can be found by these checks should be reported and corrected when found.

- Cleaning and dusting.
- Checking for frayed or loose cables.
- Covering unused receptacles.
- Checking for loose nuts, bolts, and screws.

b. Explanation of Columns.

- (1) Item Number Column. This column is used as a source of item numbers for the TM Number Column on DA Form 2404, Equipment Inspection and Maintenance Worksheet, in recording results of PMCS.
- (2) Interval Column. This column specifies the frequency of the check, M for Monthly checks and Q for Quarterly checks.
- (3) Item to be Inspected Column. This column specifies the item that is to be checked.

- (4) Procedures Column. This column describes the procedure by which the check is to be performed.

NOTE

If your equipment must be in operation all the time, only do items that can be checked and serviced without disturbing operation. Make the complete checks and services when the equipment can be shut down.

2-8. UNIT PMCS TABLE

PREVENTIVE MAINTENANCE CHECKS AND SERVICES

Item No.	Interval		Item To Be Inspected	Procedures
	M	Q		
1	•		End item equipment	Inspect for completeness.
2	•		Communications equipment performance	Initiate system off-line BIT. If BIT fails, refer to troubleshooting procedures in TM 11-5895-1220-12, EE160-RG-OMI-010/W110-GRC215 (Navy), TO 31R2-2GRC215-1 (Air Force).

Section IV. UNIT TROUBLESHOOTING

Unit troubleshooting of the vehicular adapter is performed as part of Team Terminal Unit Maintenance. Refer to TM 11-5895-1220-12, EE160-RG-OMI-010/W110-GRC215 (Navy) , TO 31R2-2GRC215-1 (Air Force).

Section V. UNIT MAINTENANCE

Unit unscheduled maintenance of the vehicular adapter is performed as part of Team Terminal unit maintenance. Refer to TM 11-5895-1220-12 (Navy) EE160-RG-OMI-010/W110-GRC215 (Air Force) TO 31R2-2GRC215-1).

Section VI. PREPARATION FOR STORAGE AND SHIPMENT

2-9. GENERAL

- a. Army. Refer to paragraph 1-6a for administrative storage.
- b. Navy. Refer to NAVSUP PUB 503.
- c. Air Force. Refer to AFM 66-267 (storage) and AFR 67-31 (shipment).

2-10. MARKING

The marking on the exterior of the container shall be in accordance with MIL-STD-129H.

CHAPTER 3 INTERMEDIATE DIRECT SUPPORT AND GENERAL SUPPORT MAINTENANCE

NOTE

Intermediate Direct Support Maintenance is not allocated for the vehicular adapter.

<u>Subject</u>	<u>Page</u>
Intermediate General Support Maintenance	3-50
Intermediate General Support Troubleshooting	3-2
Repair Parts, Special Tools; Test, Measurement, and Diagnostic Equipment (TMDE); and Support Equipment	3-1

Section I. REPAIR PARTS, SPECIAL TOOLS; TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT (TMDE); AND SUPPORT EQUIPMENT

3-1. COMMON TOOLS AND EQUIPMENT

a. Army. For authorized common tools and equipment, refer to the Modified Table of Organization and Equipment (MTOE) applicable to your unit.

b. Navy. Navy personnel refer to applicable Tables of Allowance (TA).

c. Air Force. Air Force personnel refer to applicable Tables of Allowance (TA).

3-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

Special tools, TMDE, and support equipment and their purposes are listed in the Maintenance Allocation Chart, Appendix B.

3-3. REPAIR PARTS

Repair parts used during Intermediate General Support Maintenance are listed and illustrated in the Repair Parts and Special Tools List (RPSTL) located in TM 11-5895-1321-24P, EE005-LC-PLD-010/W110-MT6452 (Navy), TO 31R2-2GRC215-54 (Air Force).

Section II. INTERMEDIATE GENERAL SUPPORT TROUBLESHOOTING

3-4. GENERAL

General support maintenance accomplishes vehicular adapter base repair, wiring repair, and replacement of control circuits module, PA interface module, and frequency synthesizer. Repair of the base includes component replacement.

General Support Maintenance has not allocated test equipment to test the frequency synthesizer. Frequency synthesizer built-in test equipment (BITE) failure at Unit Level Maintenance should be reported to Intermediate Maintenance. Intermediate Maintenance will perform further testing (refer to Symptom Index in paragraph 3-6) before replacing the synthesizer.

An inspection and test of the received item must be accomplished prior to applying power. Failure to perform an inspection could result in incorrect indications during test or damage to components due to incorrect mounting or seating. Refer to Chapter 2, Section II for service upon receipt requirements for the vehicular adapter.

An operational check of the vehicular adapter must be accomplished prior to troubleshooting to validate the symptom of the reported failure and type of repair. For reported failures of the frequency synthesizer, the operational check must be accomplished prior to synthesizer replacement to ensure that there are no other faults.

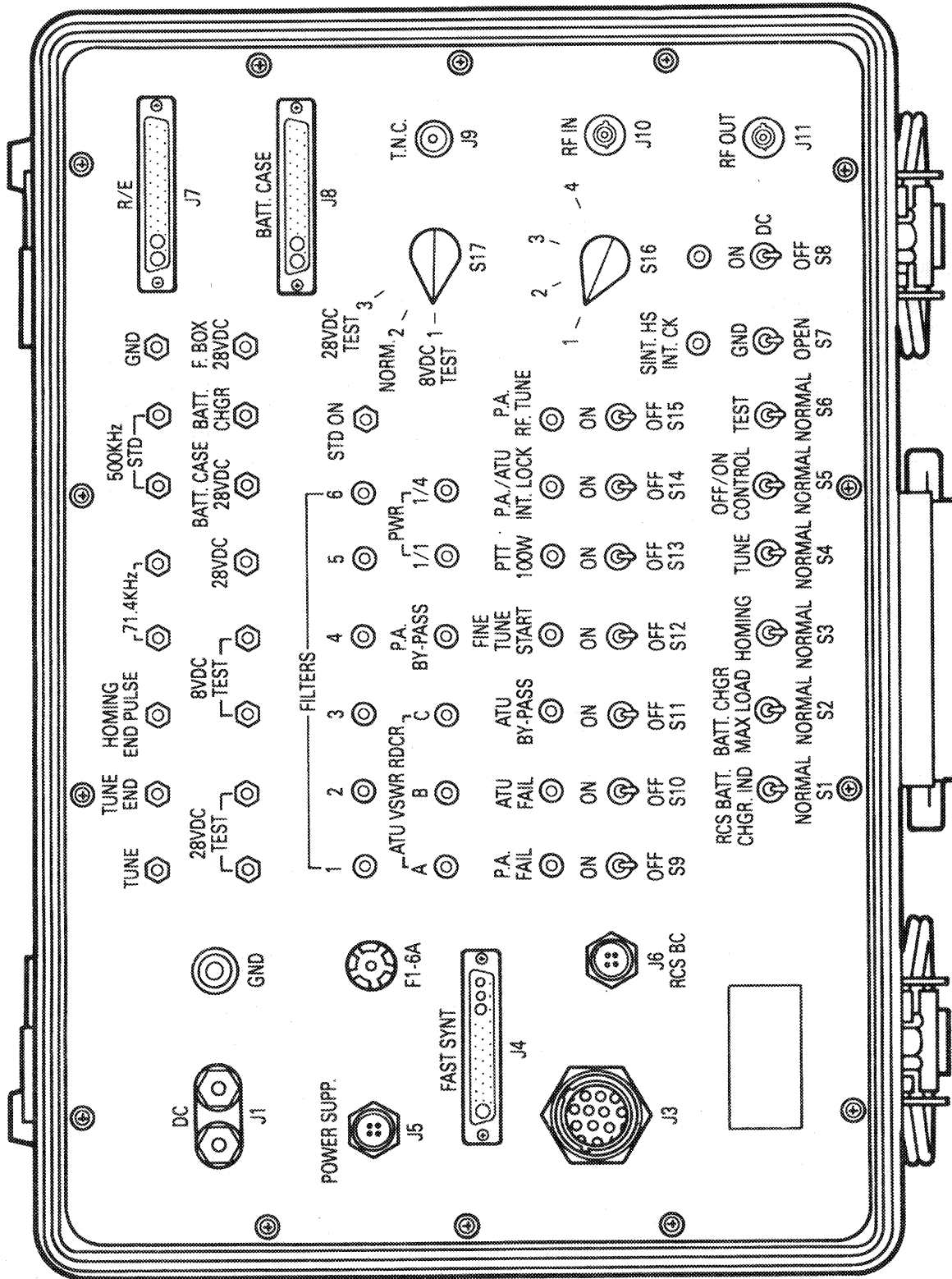
Upon completion of troubleshooting and repair of the vehicular adapter, an operational check is performed again to validate the repair action. Perform operational test after frequency synthesizer replacement to validate that there are no other faults.

Defects and corrective measures for items listed below are not in the troubleshooting chart. Defects and failures of these items should be corrected when noted.

- Front panel indicators and holders
- Front panel fuses and fuseholders
- Damaged bottom cover
- Gaskets, cushions and latch assemblies

Test Set TS-4252/GRC-215 is used in troubleshooting and operational testing of the vehicular adapter. It provides test points, control and status indicators. Cables W1, W52, W53, W54, W55, and W56 are included. See TM 11-6625-3212-14&P, ET901-BA-OMP-010/TS4252-GRC215 (NAVY), TO 33D7-50-1321-1 (Air Force), for operating and maintenance procedures for the test set.

3-4. GENERAL (Cont.)



TEST SET, VEHICLE ADAPTER TS-4252/GRC-215
(Commonly referred to as Test Fixture)

3-5. OPERATIONAL CHECK OF VEHICULAR ADAPTER

Perform the following tests:

- Upon receiving a suspected defective vehicular adapter
- Following troubleshooting of a vehicular adapter
- After completing repair action on a vehicular adapter

INITIAL SETUP

Test Equipment

Test Set, Vehicle Adapter,
TS-4252/GRC-215
Power Supply PP-8202/G
Digital Multimeter, AN/USM-486
RF Generator SG-1170
Oscilloscope OS-262(P)/U
Plug in Units, Amplifier
AM-6785/U and T.B. TD-1159/U
Frequency Counter AN/USM-459
RF Cable, RG-58, with BNC Connectors

Equipment Condition

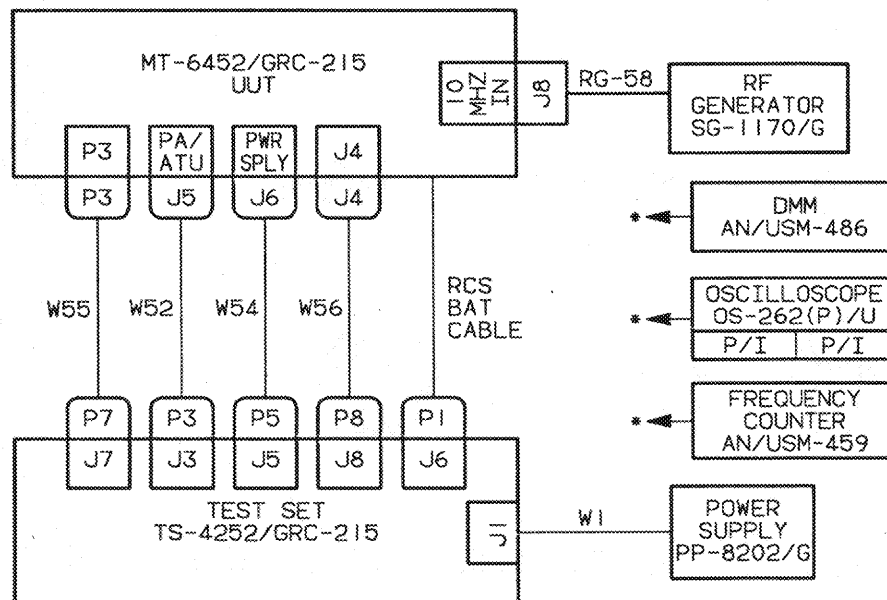
Power off
Test setup
Test fixture switch settings,
S1-S6 NORMAL, S17 NORM,
S9-S15 OFF, S16 to 1, S8-OFF
Set rf frequency generator for
10 MHz at 0 dBm output
PP-8202/G power supply on and set
for +28 Vdc

Tools

Tool Kit TK-17
Work Station, Static

NOTE

VA FAULT light may be lit during test. It should be ignored.



* CONNECT AS REQUIRED

3-5. OPERATIONAL CHECK OF VEHICULAR ADAPTER (Cont.)

- STEP 1. Set test fixture DC ON/OFF switch S8 to ON. Observe DC ON indicator on test fixture is lit. Verify that PWR 1:4, ATU FAIL, and PA/ATU INT LOCK indicators on test fixture light.
- STEP 2. Connect multimeter leads to F BOX 28 VDC and GND test points. Verify multimeter reads 0 Vdc.
- STEP 3. On VA test fixture, move OFF/ON CONTROL switch S5 to ON position. Verify that multimeter reads +26 to +30 Vdc, and DC ON and PWR 1:1 indicators are lit.
- STEP 4. On VA test fixture, move ATU BY-PASS (S11) and PTT 100W (S13) switches to ON position. Verify ATU BY-PASS and PTT 100W lamps light.
- STEP 5. Move ATU BYPASS (S11) and PTT 100W (S13) switches to OFF position. Verify ATU BY-PASS and PTT 100W indicators go out.
- STEP 6. Move multimeter positive lead to BATT CASE 28 VDC test point on VA test fixture. Verify that meter reads +26 to +30 Vdc. Disconnect multimeter.
- STEP 7. Connect frequency counter to 500 kHz STD test points on VA test fixture. Verify 500 (499995-500005) kHz is present at test points.
- STEP 8. Connect frequency counter to 71.4 kHz test points on the VA test fixture. Verify that frequency counter reads 71.428 kHz. Disconnect frequency counter.
- STEP 9. Connect multimeter to red 28 VDC and GND test point on VA test fixture. Verify that multimeter reads less than 1.0 Vdc.
- STEP 10. Move the RCS BATT CHGR IND (S1) and BATT CHGR MAX LOAD (S2) switches to the up position. Verify that the multimeter reads +26 to +30 Vdc.
- STEP 11. Move RCS BATT CHGR IND (S1) and BATT CHGR MAX LOAD (S2) switches to NORMAL position, then disconnect multimeter.
- STEP 12. On VA test fixture, move TEST/NORMAL switch (S6) to the TEST position. On VA test fixture verify:

FILTERS indicators 1 through 6 are lit
 ATU VSWR RDCR indicators A through C are lit
 PA BY-PASS indicator is lit
 PWR 1:4 indicator is lit
 PWR 1:1 indicator is not lit.

3-5. OPERATIONAL CHECK OF VEHICULAR ADAPTER (Cont.)

STEP 13. On VA test fixture, move TEST/NORMAL (S6) switch to the NORMAL position. On VA test fixture verify:

FILTERS indicators 1 through 6 are not lit
ATU VSWR RDCR indicators A through C are not lit
PA BY-PASS indicator is not lit
PWR 1:4 indicator is not lit
PWR 1:1 indicator is lit.

STEP 14. On the VA test fixture, move the PA FAIL switch (S9) to ON and verify that the PA FAIL indicator lights. Move switch S9 to OFF and verify that the lamp goes out.

STEP 15. On the VA test fixture, move the ATU FAIL switch (S10) to ON and verify that the ATU FAIL indicator lights. Move the switch to OFF and verify that the lamp goes out.

STEP 16. On the VA test fixture, move the ATU BY-PASS switch (S11) to ON and verify that the ATU BYPASS indicator lights. Move the switch to OFF and verify that the lamp goes out.

STEP 17. On VA test fixture, move FINE TUNE START switch (S12) to ON and verify that the FINE TUNE START indicator lights. Move the switch to OFF and verify that the lamp goes out.

STEP 18. On the VA test fixture, move the PA/ATU INT LOCK switch (S14) to ON and verify that PA/ATU INT LOCK indicator lights. Move the switch to OFF and verify that the lamp goes out.

STEP 19. On the VA test fixture, move the PA RF TUNE switch (S15) to ON and verify that the PA RF TUNE indicator lights. Move the switch to OFF and verify that the lamp goes out.

STEP 20. Using the oscilloscope, monitor the HOMING END PULSE test point on the VA test fixture. Move HOMING switch (S3) to ON and verify +5 Vdc pulses to ground and back to +5 Vdc at the test point. Move S3 to OFF.

STEP 21. Using the oscilloscope, monitor the TUNE END test point on the VA test fixture. Move PA RF TUNE (S15) and ATU BYPASS (S11) switches to ON and verify a +5 V positive pulse at the test point. Move S15 to OFF.

STEP 22. Using the oscilloscope, monitor the TUNE test point on VA test fixture. Move TUNE switch (S4) to up position and verify a +28 V positive pulse at test point TUNE. Move S11 to OFF and S4 to NORMAL.

STEP 23. Disconnect oscilloscope. On VA test fixture, move DC ON/OFF switch (S8) to OFF.

3-6. TROUBLESHOOTING PROCEDURES

Troubleshooting procedures contained in the troubleshooting flow charts are intended as an aid to technicians. Due to the complexity of the vehicular adapter, these flow charts cannot cover all possible failures and faults which may occur. These flow charts serve as a guide to logical step-by-step troubleshooting. Wiring diagrams of the vehicular adapter are contained in the rear of this manual. These should be referred to for location of connections and test points used during troubleshooting. A symptom index is provided to help you determine the flow chart applicable to the type of failure.

SYMPTOM INDEX

<u>Symptom</u>	<u>Paragraph</u>
Fast frequency synthesizer fails BIT at Unit Maintenance	3-9
Will not power up	3-10
F1 opens	3-11
F2 opens	3-12
No control to receiver/transmitter or power amplifier/antenna tuning unit	3-13
Will not charge RCS battery	3-14
Will not charge manpack battery.....	3-15
Blower inoperative	3-16
Passes operational test, will not function in Team Terminal.....	3-17

NOTE

Refer to para. 1-9 for assembly locations and FO-4 for test point locations.

3-7. DISASSEMBLY FOR TROUBLESHOOTING

Troubleshooting the battery charger A1A1A1A7 (para 3-14) requires partial disassembly of the battery charger.

INITIAL SETUP

Tools

Tool Kit TK-17
Work Station, Static

Equipment Condition

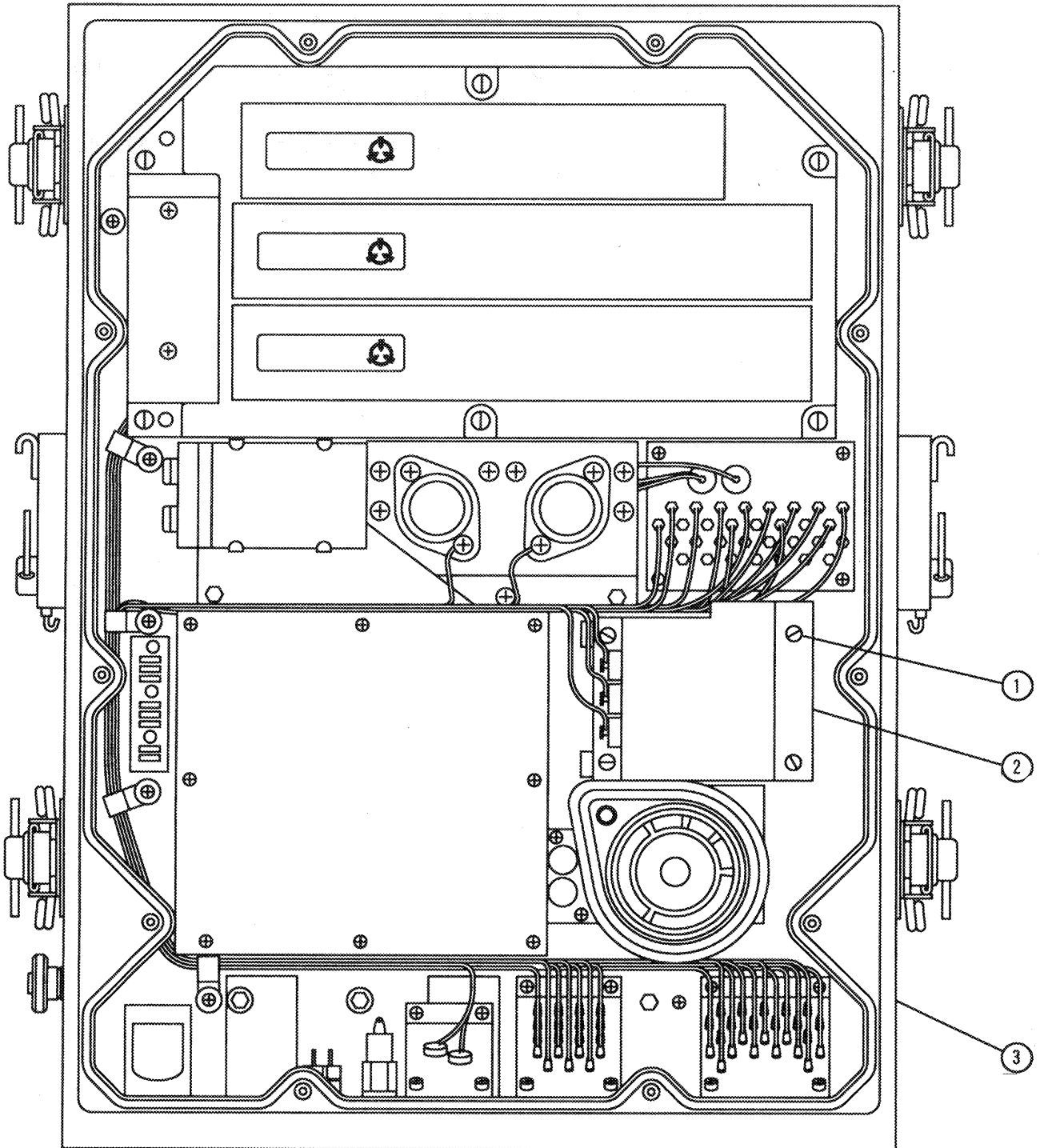
Power off
VA bottom cover removed
(para 3-19)

⌘ CAUTION ⌘

The vehicular adapter contains components that are sensitive to damage by electrostatic discharge (ESD). Improper handling will result in component and assembly failure. Use extreme care when handling. Refer to DOD-HDBK-263 for proper handling procedures.

STEP 1. Remove and retain cap screws ① securing Battery Charger ② to Base ③.

3-7. DISASSEMBLY FOR TROUBLESHOOTING (Cont.)

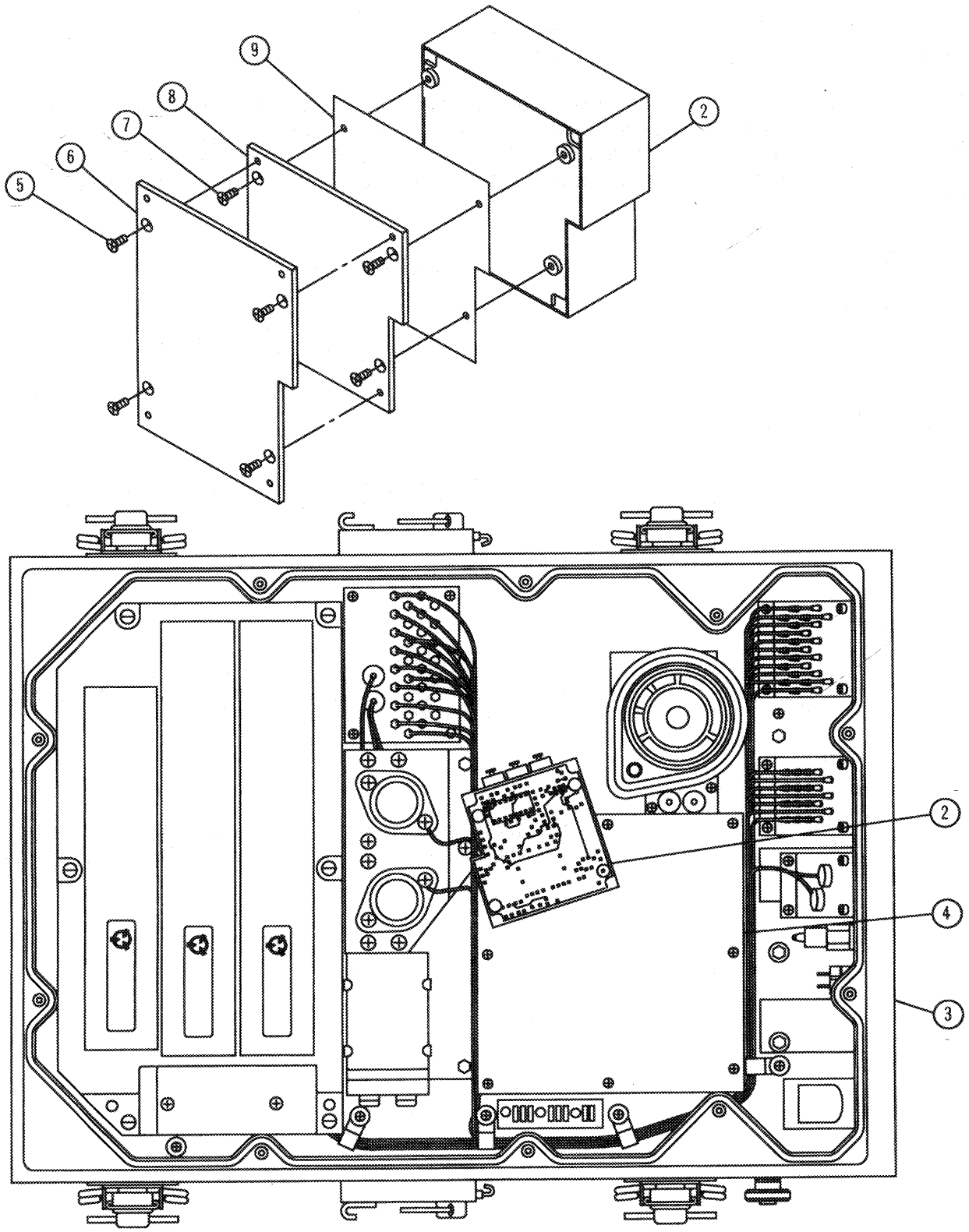


BOTTOM VIEW

3-7. DISASSEMBLY FOR TROUBLESHOOTING (Cont.)

- STEP 2. Carefully lift battery charger (2) and invert the assembly, laying it on the module cover (4).
- STEP 3. Remove four screws (5) securing heat sink (6) to bottom of battery charger. Remove heat sink.
- STEP 4. Remove four screws (7) securing bottom cover (8) to battery charger. Remove cover and insulator (9).

3-7. DISASSEMBLY FOR TROUBLESHOOTING (Cont.)

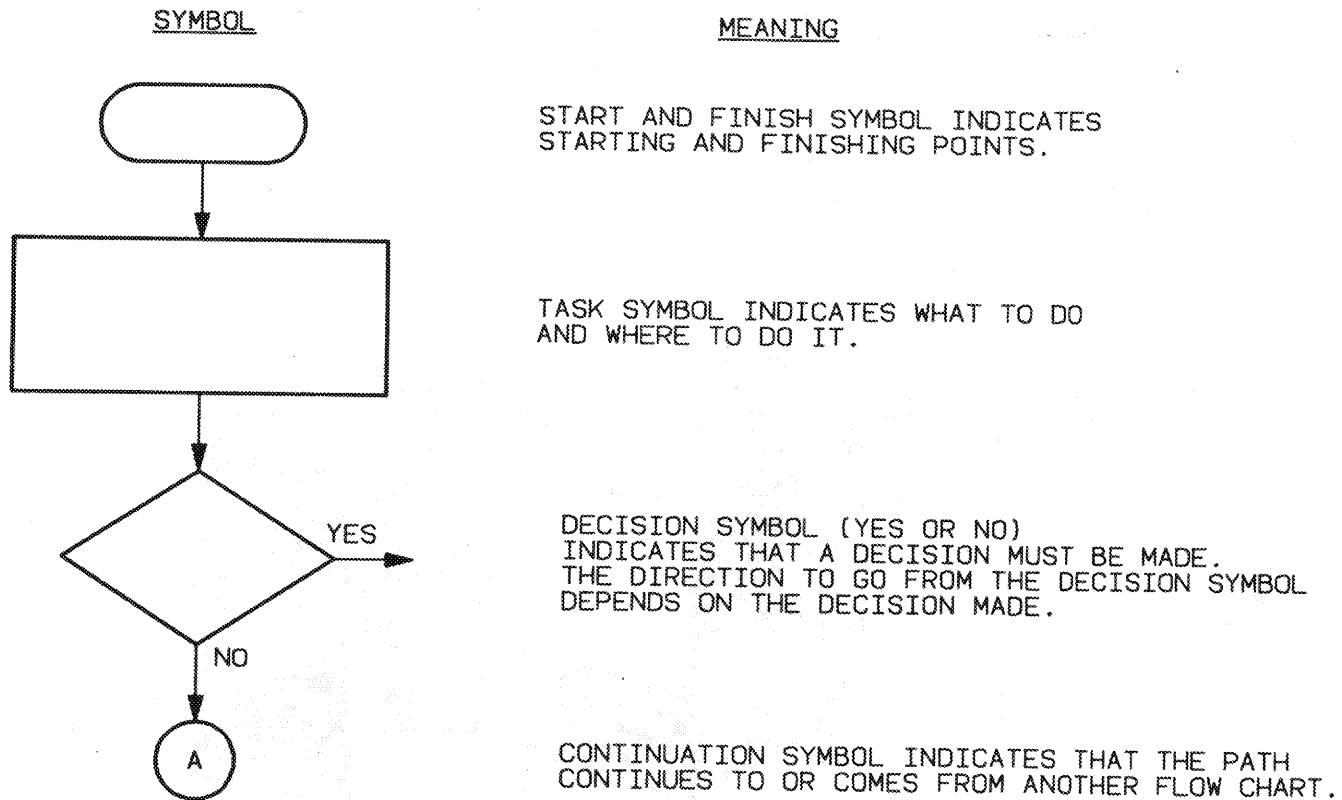


BOTTOM VIEW, COVER REMOVED

3-8. FLOW CHARTS AND HOW TO USE THEM

The flow charts make troubleshooting easier and give maintenance personnel a clear path to follow.

To use the flow chart, begin at START and follow the path indicated by the arrow. Perform the task given in the symbol block and then follow the arrow to the next block. At the decision symbol be sure to follow the correct path indicated by YES, NO, or a conditional statement.



3-9. FAST FREQUENCY SYNTHESIZER FAILS BIT AT UNIT MAINTENANCE

INITIAL SETUP

Test Equipment

Test Set, Vehicle Adapter,
 TS-4252/GRC-215
 Power Supply PP-8202/G
 Frequency Counter AN/USM-459
 Digital Multimeter, AN/USM-486
 RF Generator SG-1170
 Oscilloscope OS-262(P)/U
 Plug in Units, Amplifier
 AM-6785/U, and T.B. TD-1159/U

Equipment Condition

Power off
 Test setup
 VA bottom cover removed (para 3-19)
 Test fixture switch settings,
 S1-S6 NORMAL, S17 NORM,
 S9-S15 OFF, S16 to 1, S8-OFF
 Set rf frequency generator for
 10 MHz at 0 dBm output
 PP-8202/G power supply on and set
 for +28 Vdc

Tools

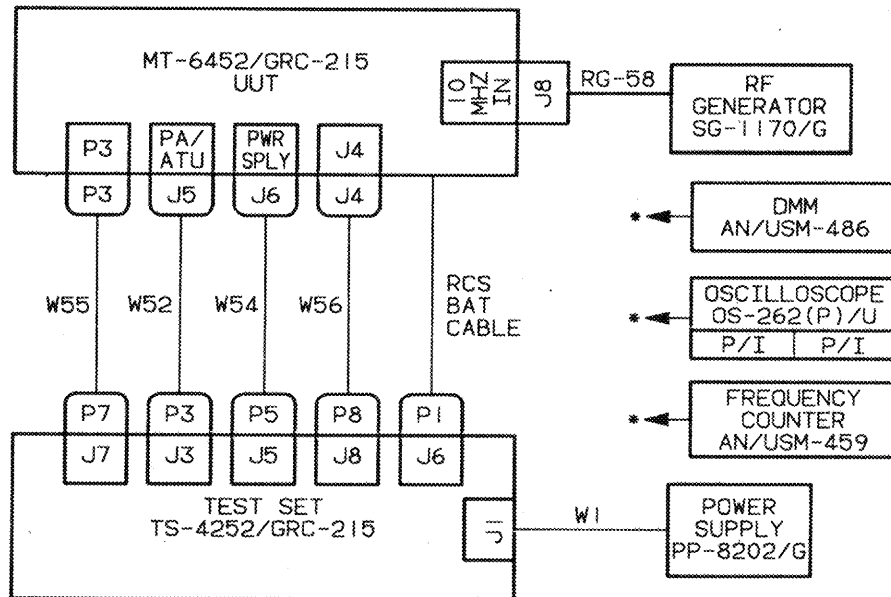
Tool Kit TK-17
 Work Station, Static

CAUTION

The vehicular adapter contains components that are sensitive to damage by electrostatic discharge (ESD). Improper handling will result in component and assembly failure. Use extreme care when handling. Refer to DOD-HDBK-263 for proper handling procedures.

NOTE

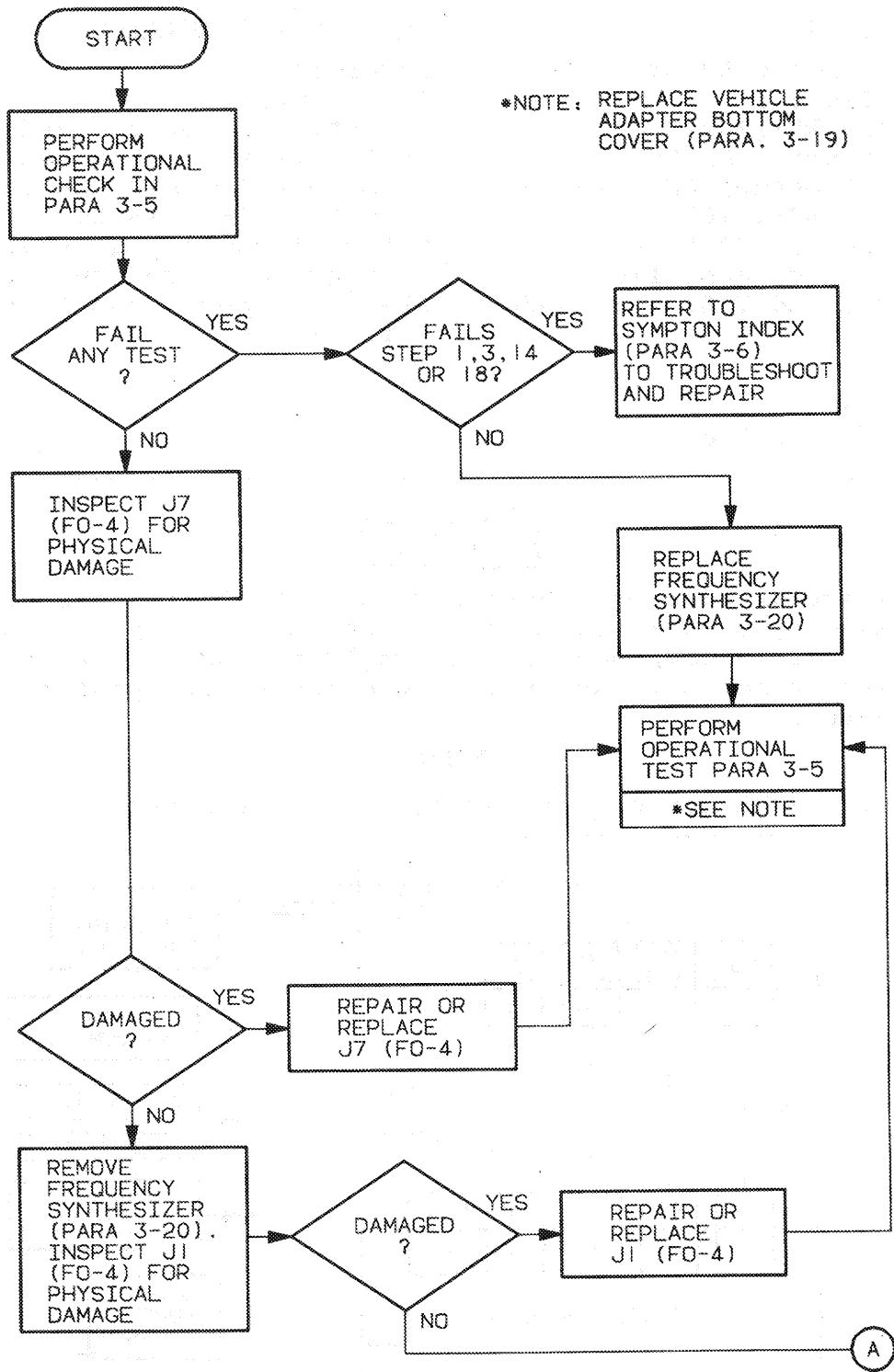
VA fault light may be lit during test. It should be ignored.



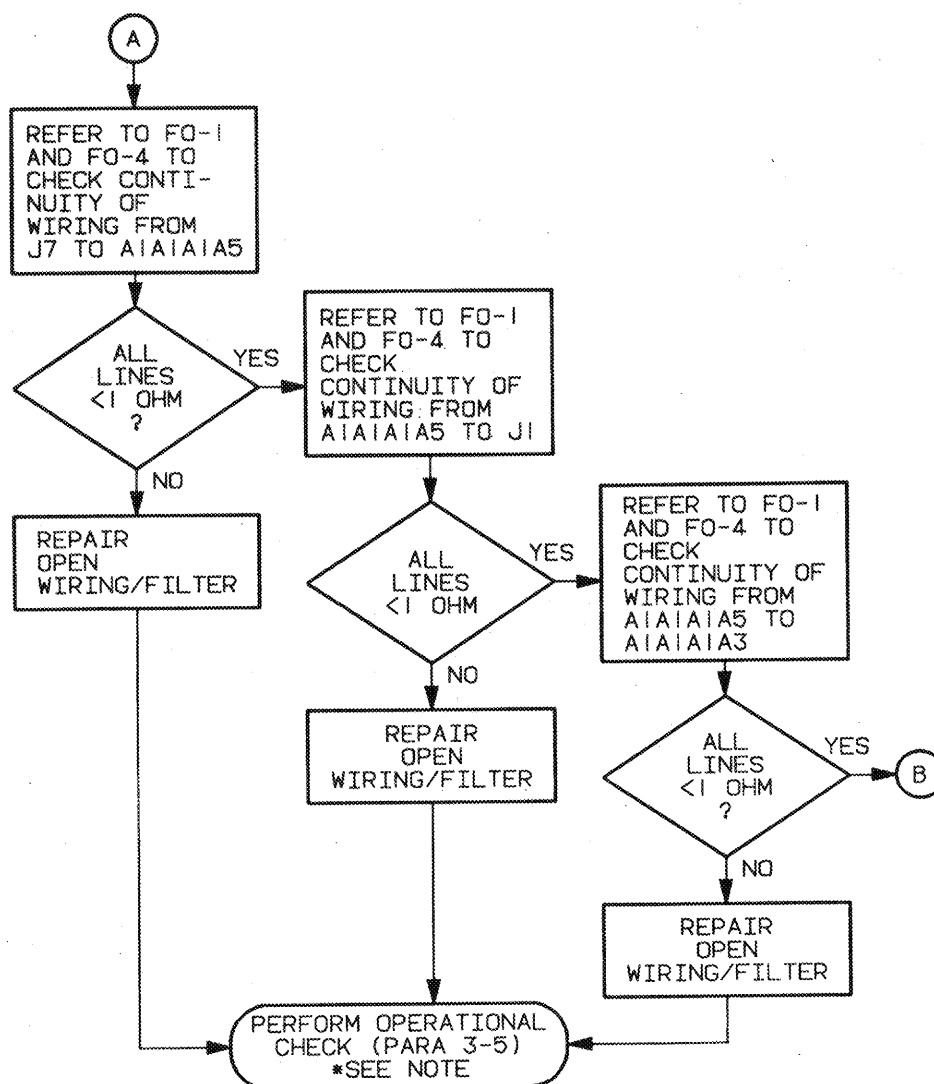
* CONNECT AS REQUIRED

Refer to FO-4 for test point locations.

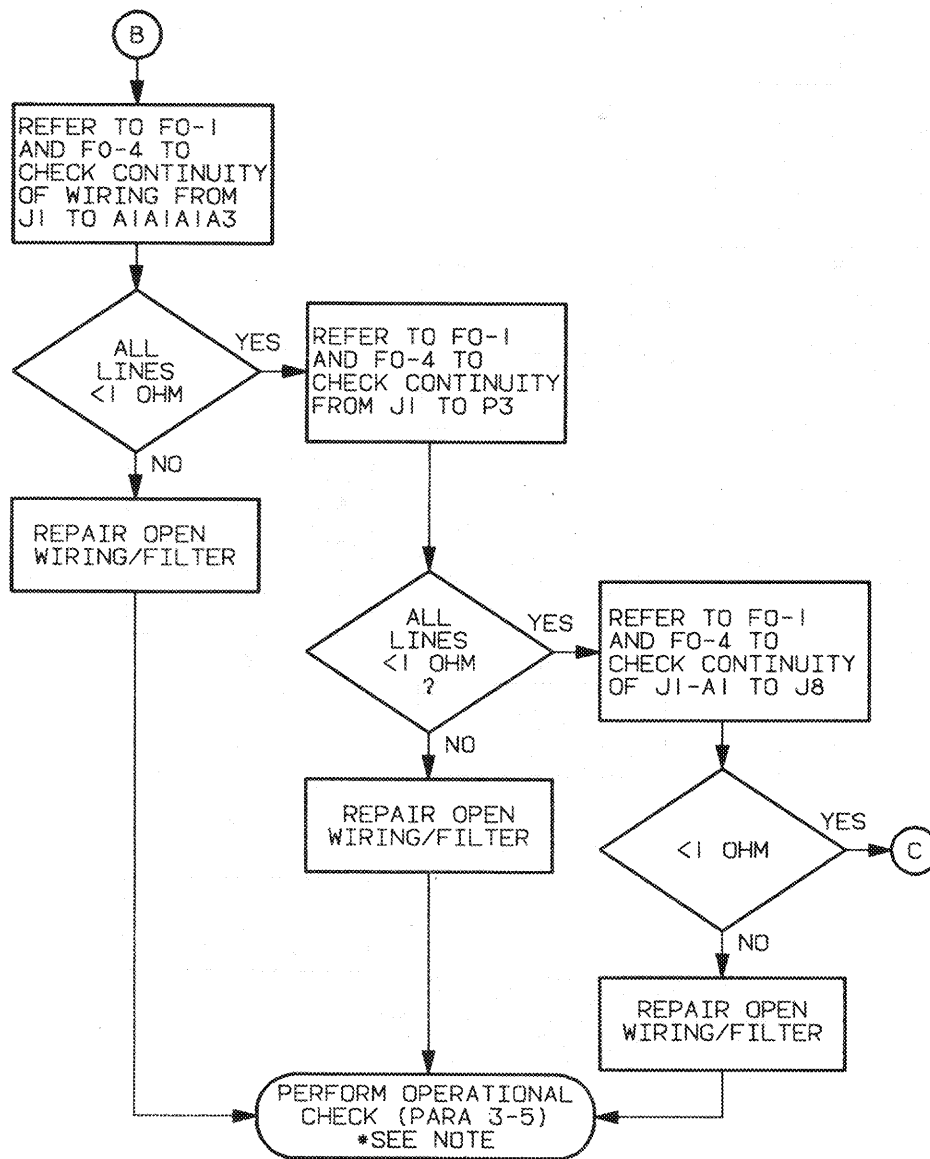
3-9. FAST FREQUENCY SYNTHESIZER FAILS BIT AT UNIT MAINTENANCE
(Cont.)



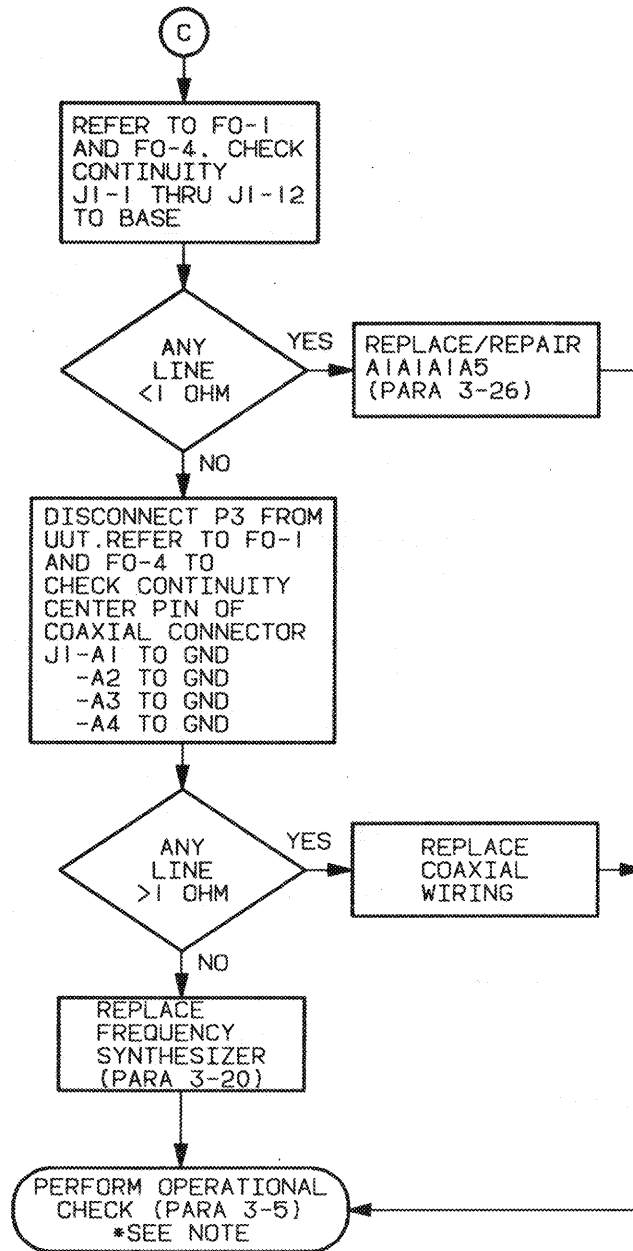
3-9. FAST FREQUENCY SYNTHESIZER FAILS BIT AT UNIT MAINTENANCE
(Cont.)



3-9. FAST FREQUENCY SYNTHESIZER FAILS BIT AT UNIT MAINTENANCE
(Cont.)



3-9. FAST FREQUENCY SYNTHESIZER FAILS BIT AT UNIT MAINTENANCE
(Cont.)



3-10. WILL NOT POWER UP

INITIAL SETUP

Test Equipment

Equipment Condition

Test Set, Vehicle Adapter,
 TS-4252/GRC-215
 Power Supply PP-8202/G
 Digital Multimeter AN/USM-486
 RF Generator SG-1170

Power off
 Test setup
 VA bottom cover removed
 (para 3-19)
 PP-8202/G dc power supply on and
 set for +28 Vdc
 Set rf frequency generator for
 10 MHz at 0 dBm output

Tools

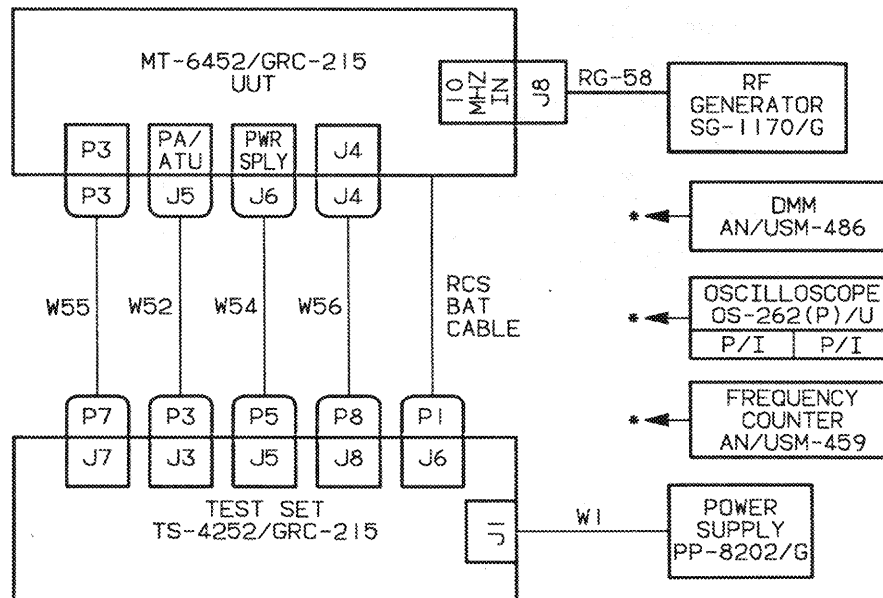
Tool Kit TK-17
 Work Station, Static



The vehicular adapter contains components that are sensitive to damage by electrostatic discharge (ESD). Improper handling will result in component and assembly failure. Use extreme care when handling. Refer to DOD-HDBK-263 for proper handling procedures.

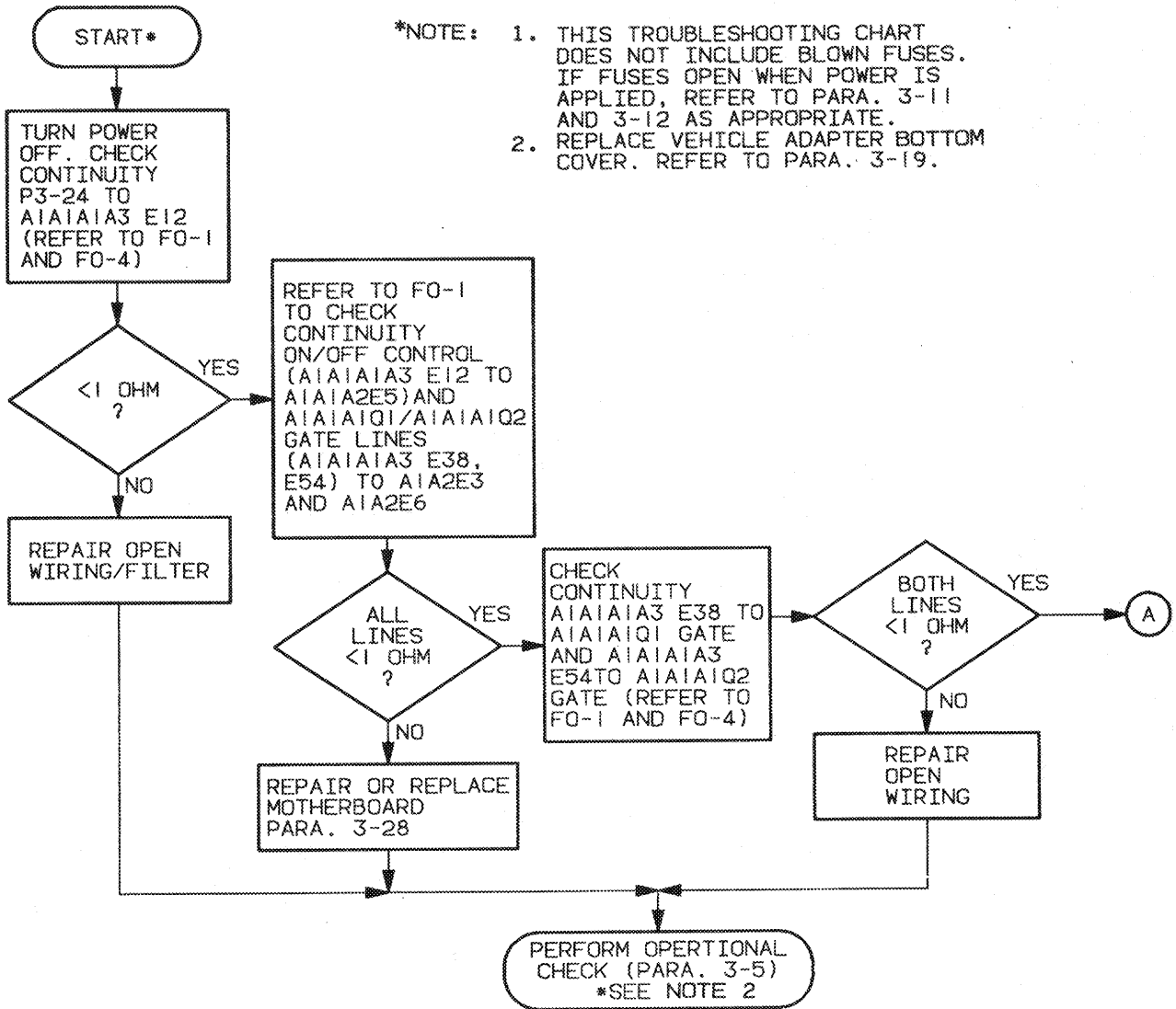
NOTE

VA fault light may be lit during test. It should be ignored.

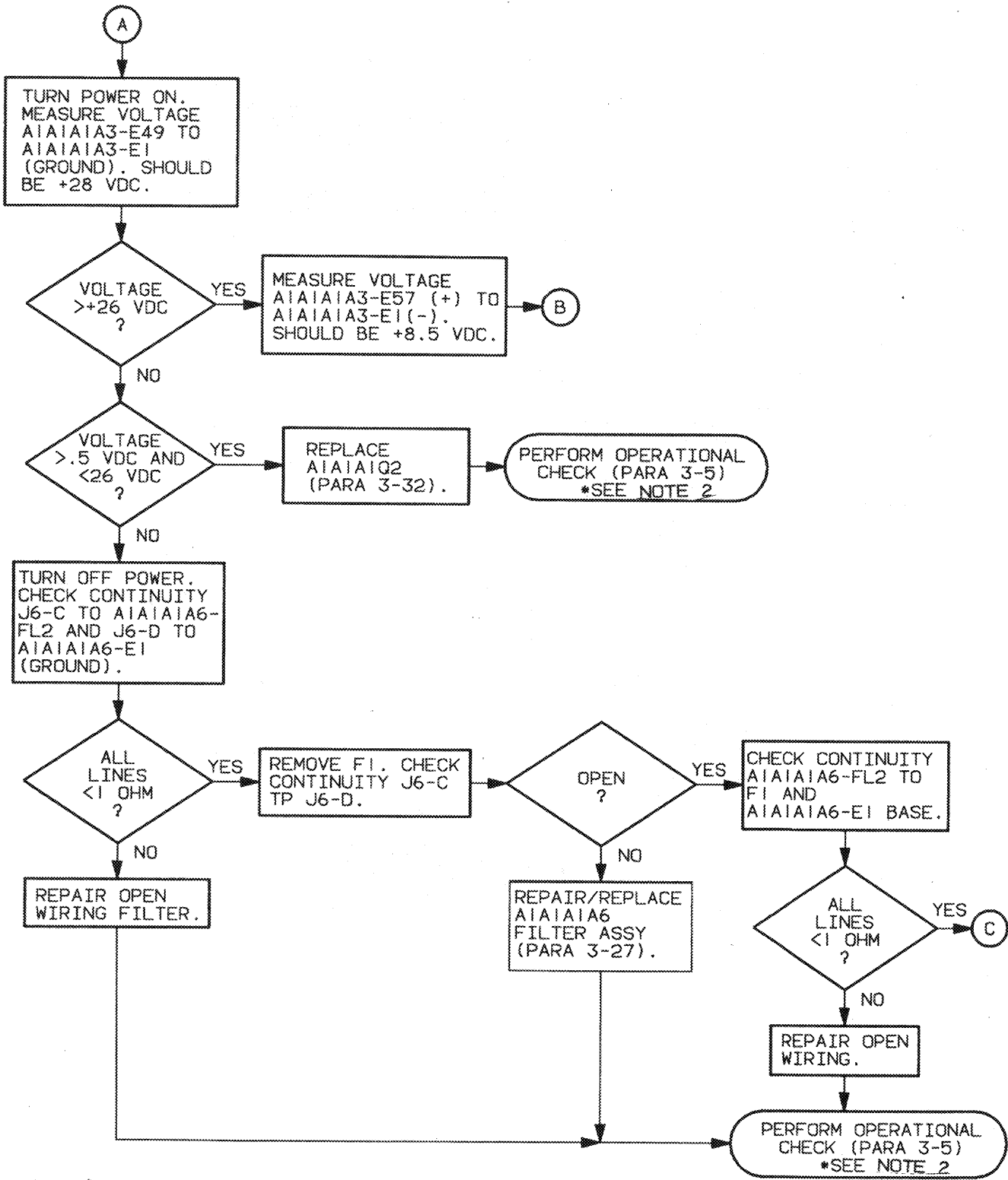


* CONNECT AS REQUIRED

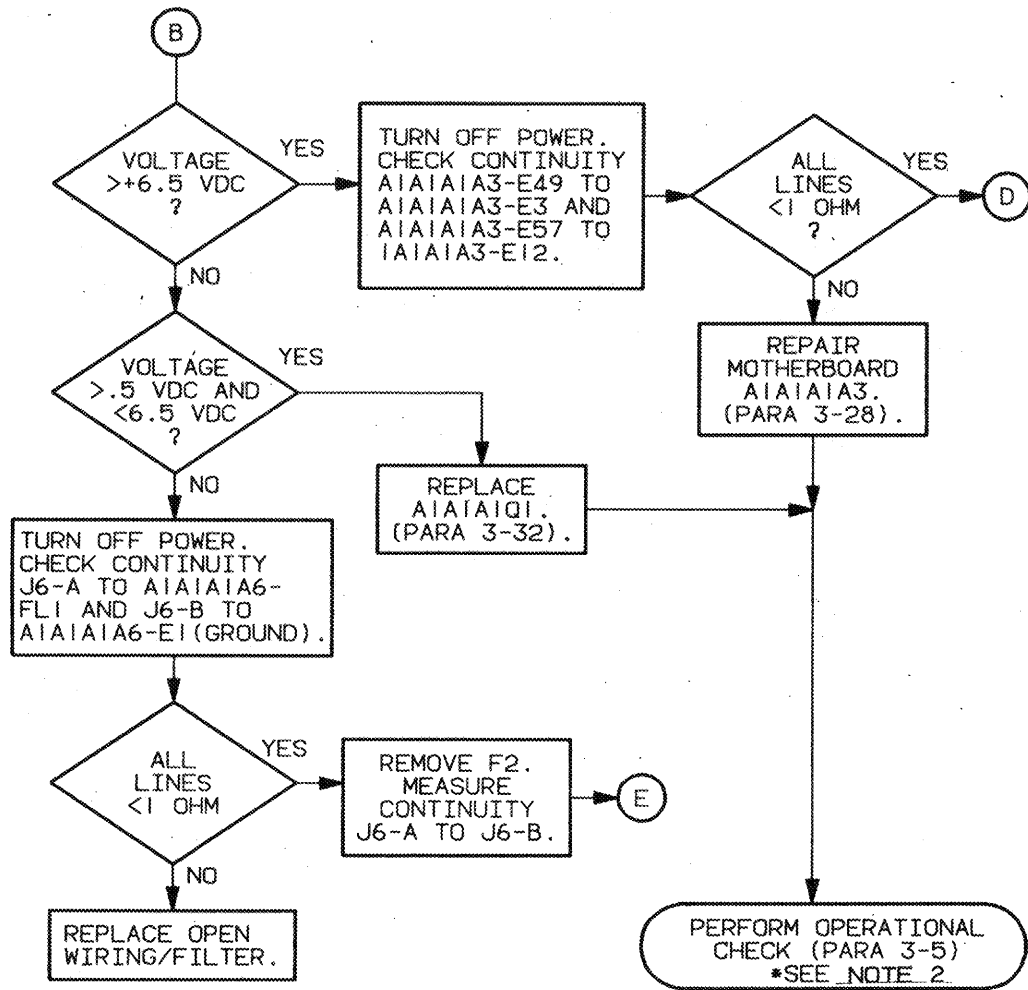
3-10. WILL NOT POWER UP (Cont.)



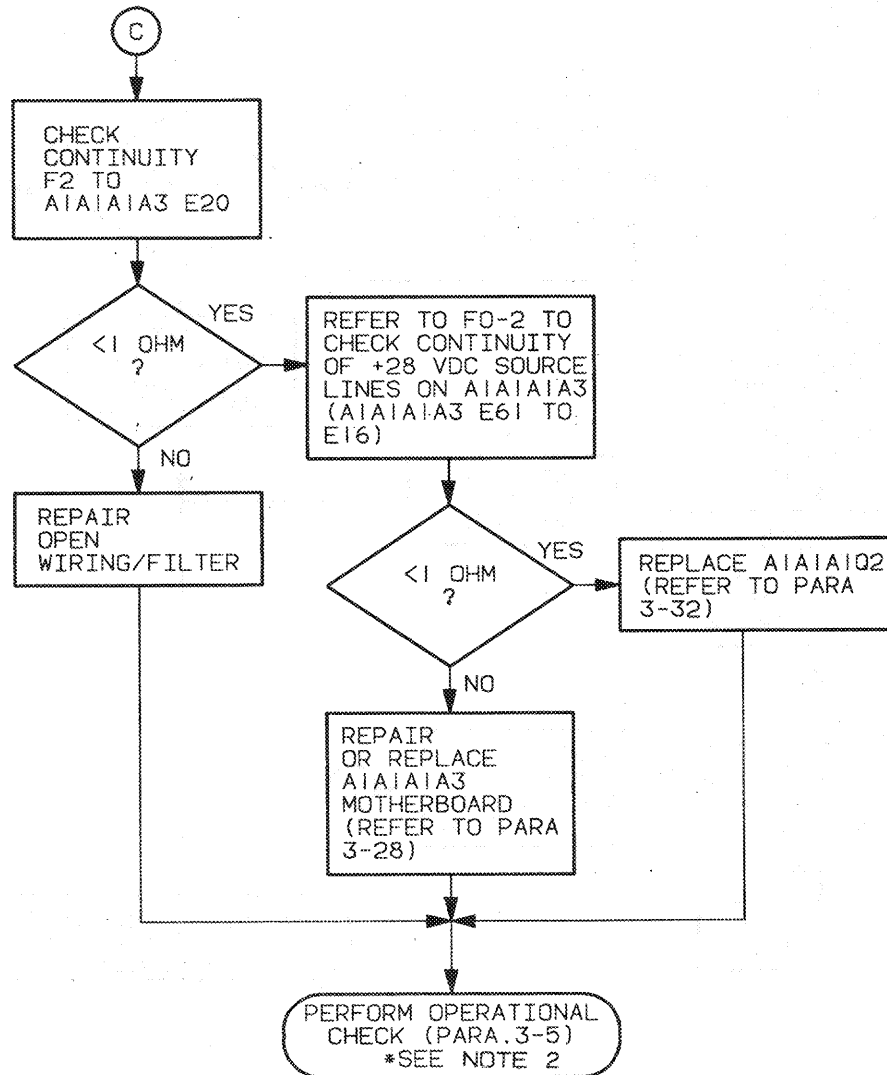
3-10. WILL NOT POWER UP (Cont.)



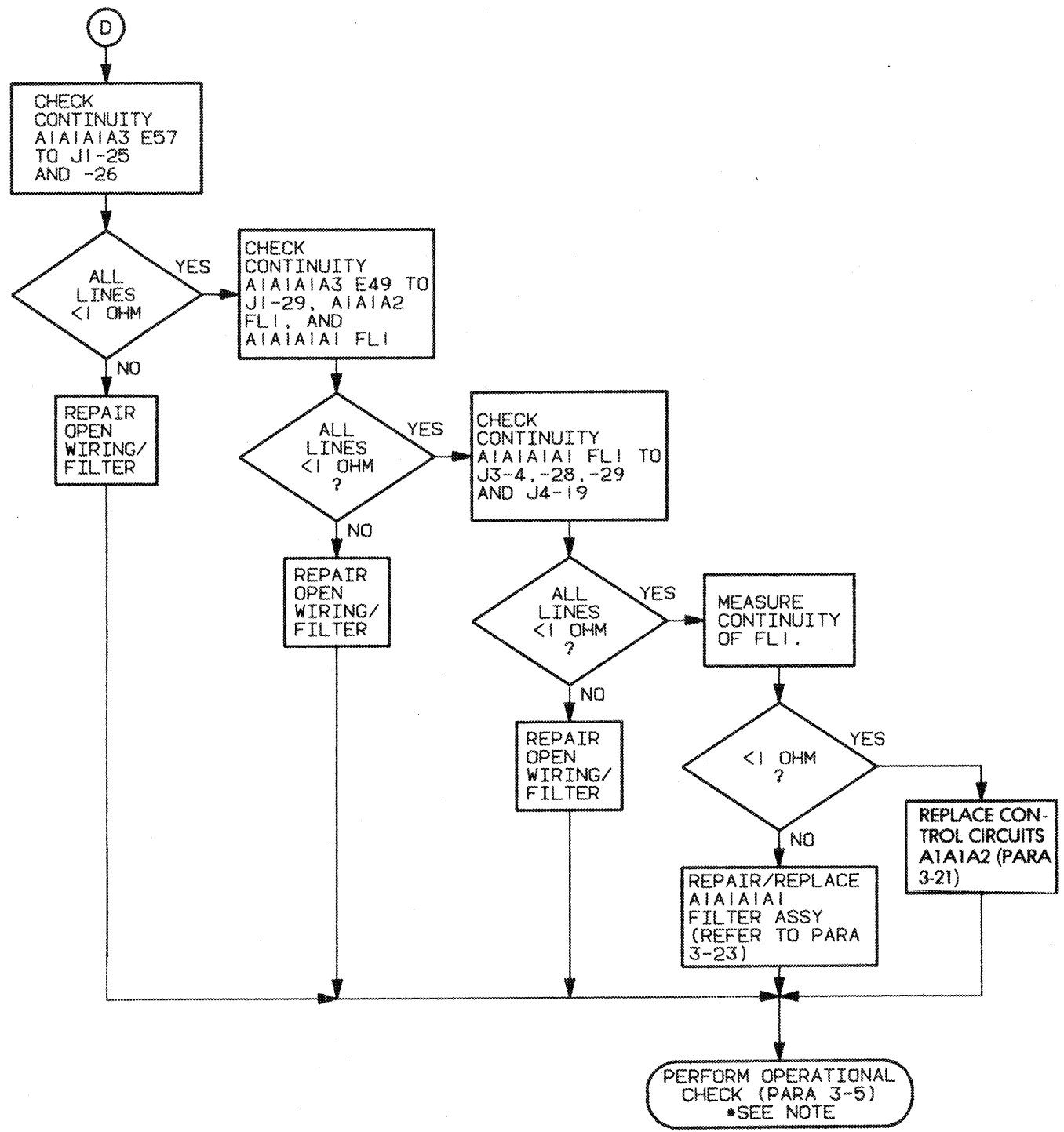
3-10. WILL NOT POWER UP (Cont.)



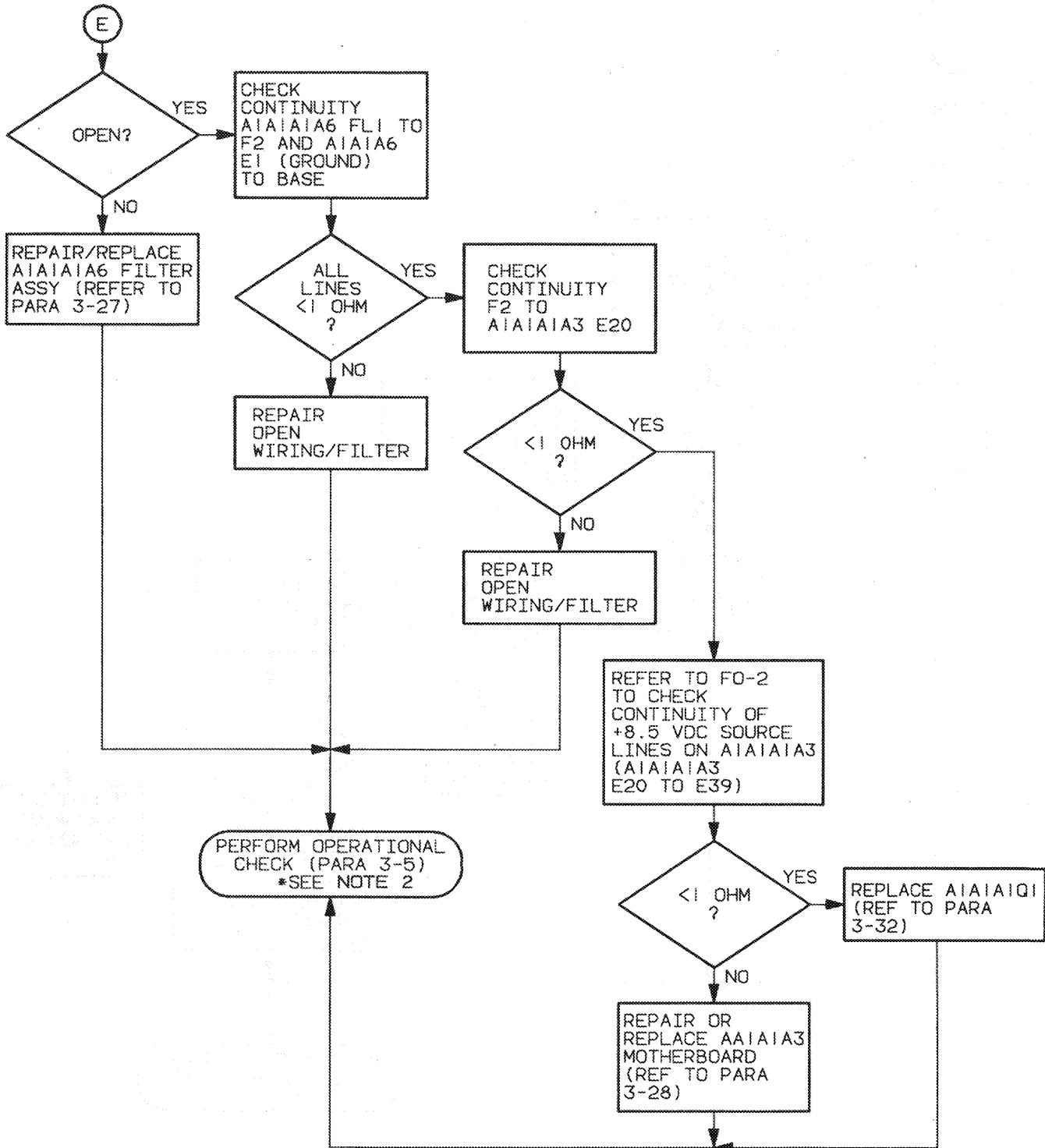
3-10. WILL NOT POWER UP (Cont.)



3-10. WILL NOT POWER UP (Cont.)



3-10. WILL NOT POWER UP (Cont.)



3-11. F1 OPENS

INITIAL SETUP

Test Equipment

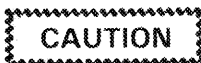
Test Set, Vehicle Adapter,
 TS-4252/GRC-215
 Power Supply PP-8202/G
 Digital Multimeter AN/USM-486
 RF Generator SG-1170

Tools

Tool Kit TK-17
 Work Station, Static

Equipment Condition

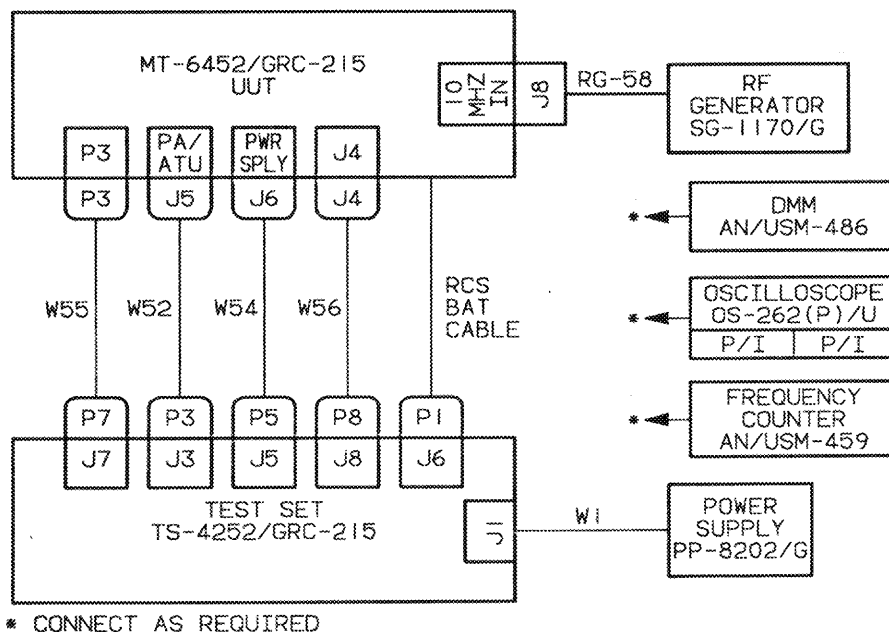
Power off
 Test setup
 VA bottom cover removed
 (para 3-19)
 PP-8202/G dc power supply on and
 set for +28 Vdc
 Set rf frequency generator for
 10 MHz at 0 dBm output



The vehicular adapter contains components that are sensitive to damage by electrostatic discharge (ESD). Improper handling will result in component and assembly failure. Use extreme care when handling. Refer to DOD-HDBK-263 for proper handling procedures.

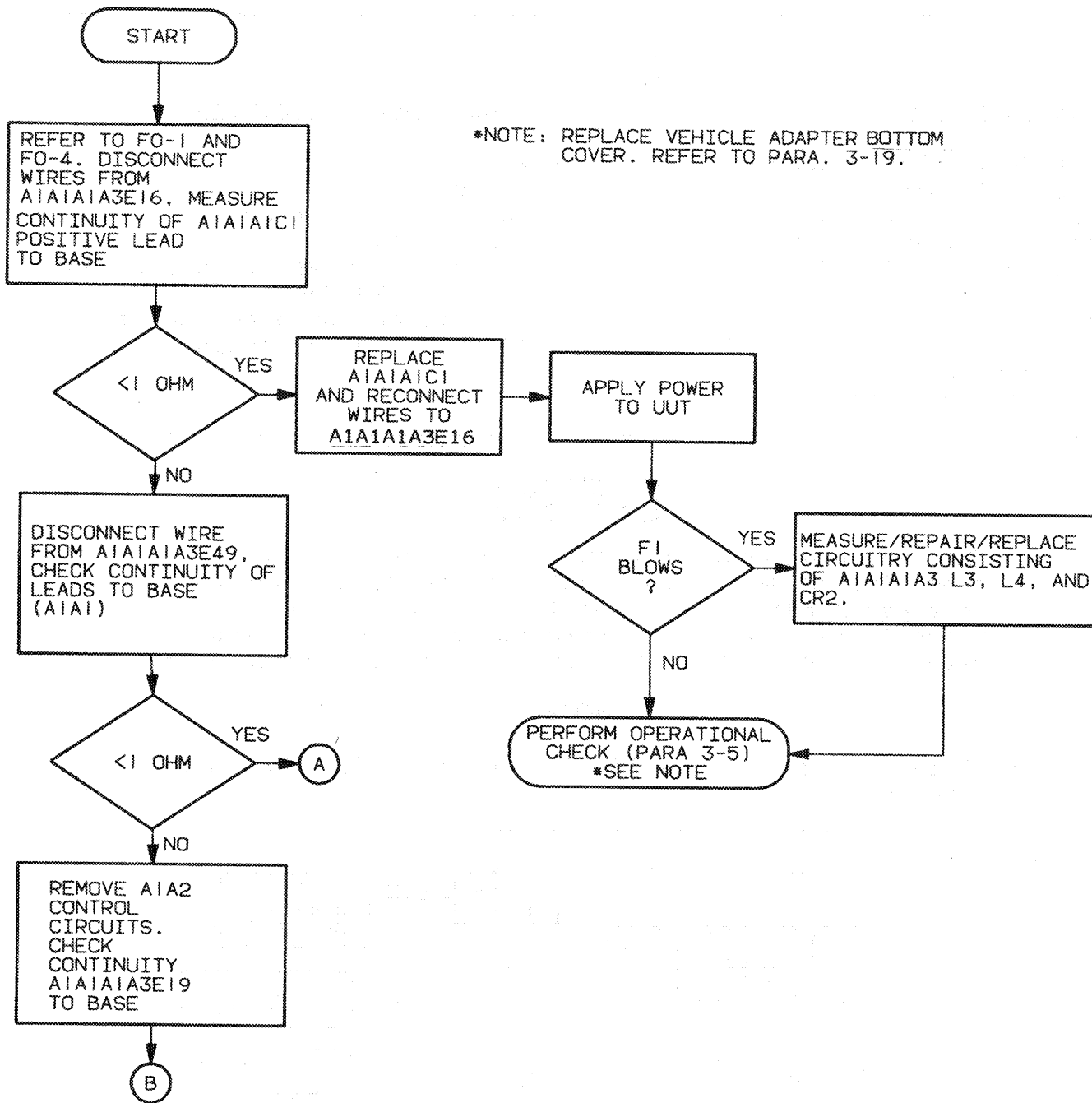
NOTE

VA fault light may be lit during test. It should be ignored.

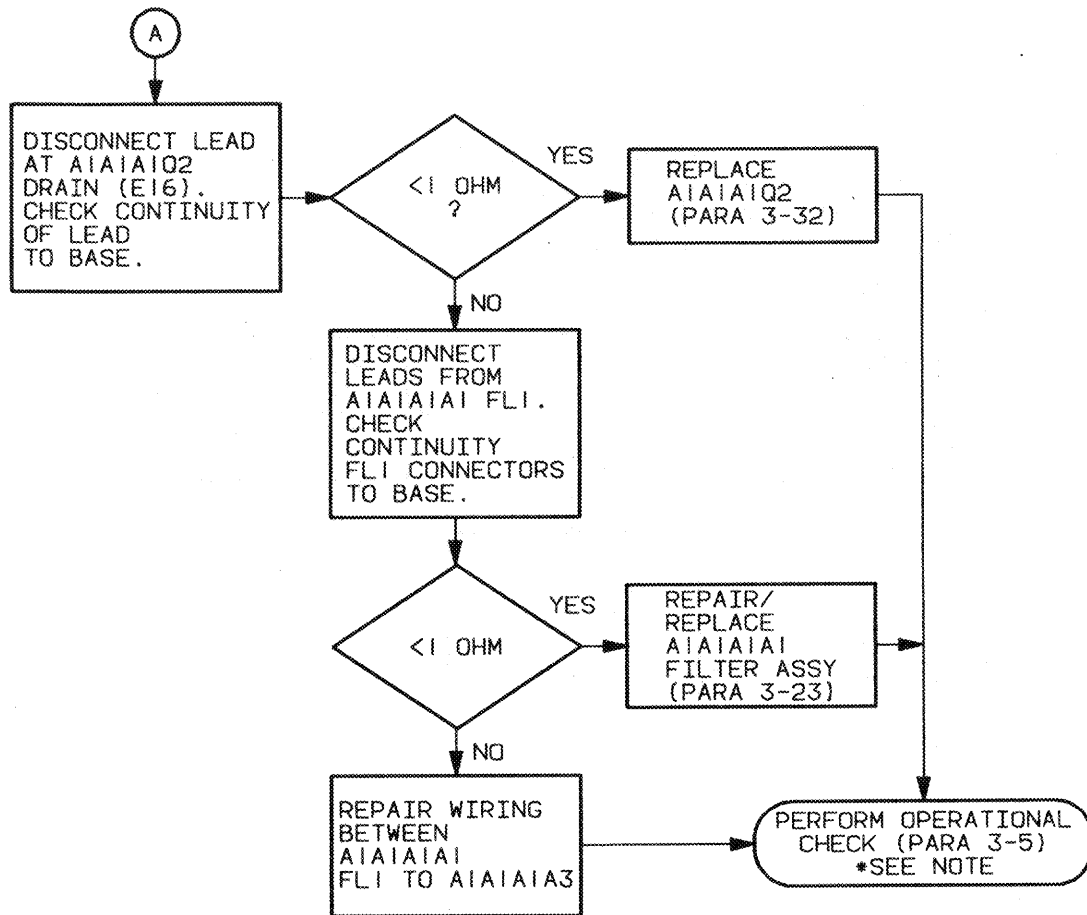


* CONNECT AS REQUIRED

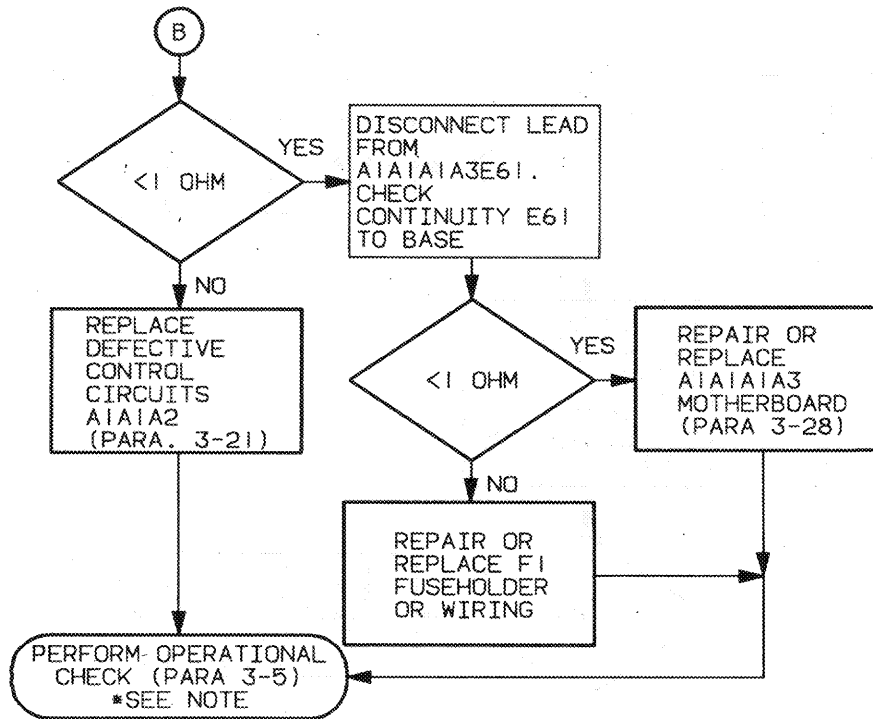
3-11. F1 OPENS (Cont.)



3-11. F1 OPENS (Cont.)



3-11. F1 OPENS (Cont.)



3-12. F2 OPENS

INITIAL SETUP

Test Equipment

Test Set, Vehicle Adapter,
TS-4252/GRC-215
Digital Multimeter AN/USM-486

Equipment Condition

Power off
VA bottom cover removed
(para 3-19)

TOOLS

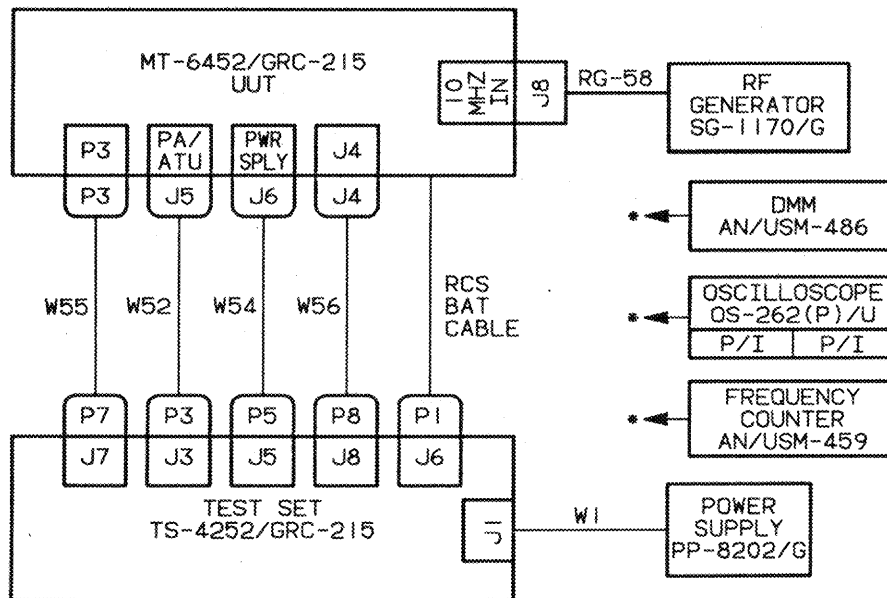
Tool Kit TK-17
Work Station, Static

CAUTION

The vehicular adapter contains components that are sensitive to damage by electrostatic discharge (ESD). Improper handling will result in component and assembly failure. Use extreme care when handling. Refer to DOD-HDBK-263 for proper handling procedures.

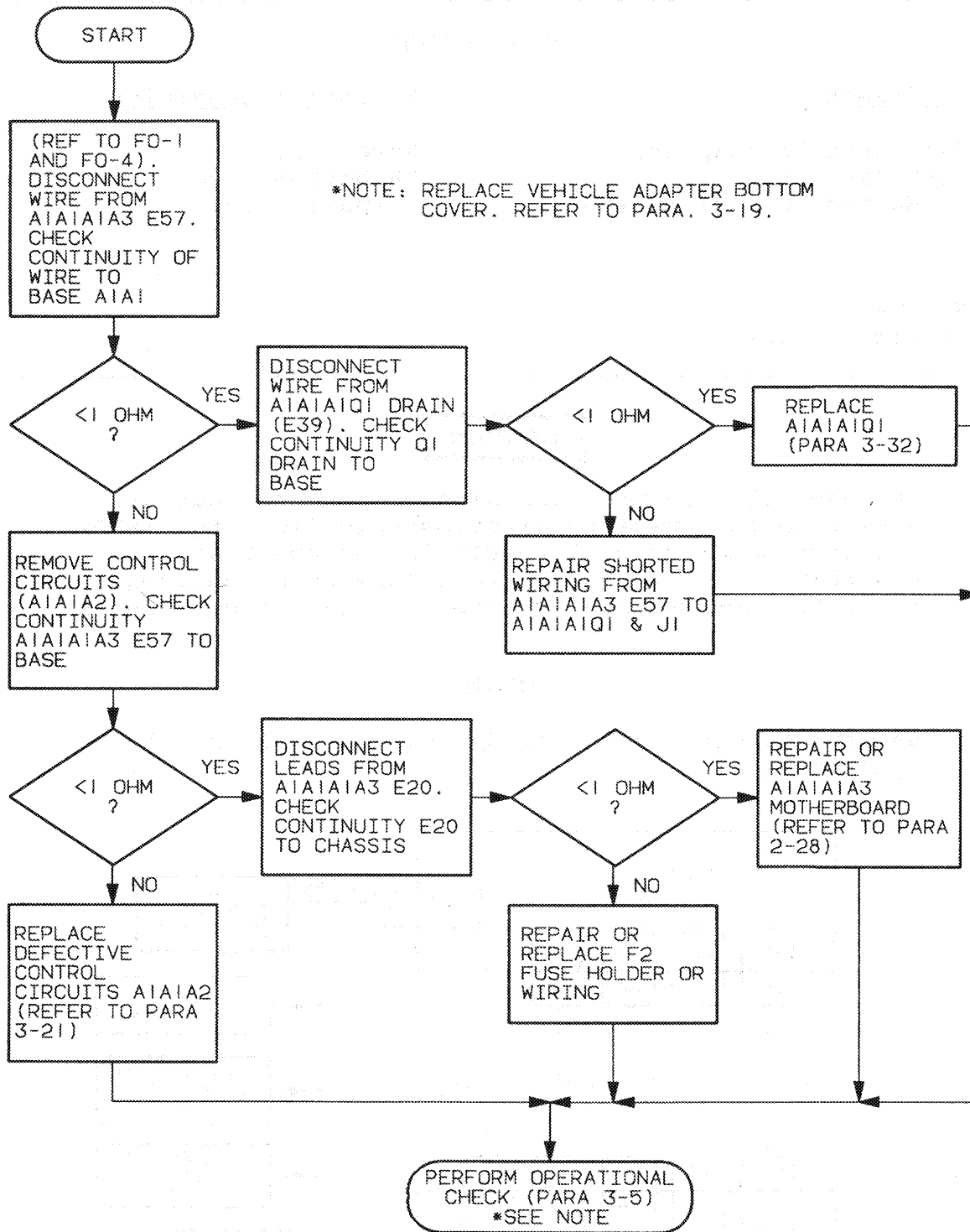
NOTE

VA fault light may be lit during test. It should be ignored.



* CONNECT AS REQUIRED

3-12. F2 OPENS (Cont.)



3-13. NO CONTROL TO RECEIVER/TRANSMITTER OR POWER AMPLIFIER/ANTENNA TUNING UNIT

INITIAL SETUP

Test Equipment

Test Set, Vehicle Adapter,
TS-4252/GRC-215
Digital Multimeter AN/USM-486

Equipment Condition

Power off
Test setup
VA bottom cover removed
(para 3-19)

Tools

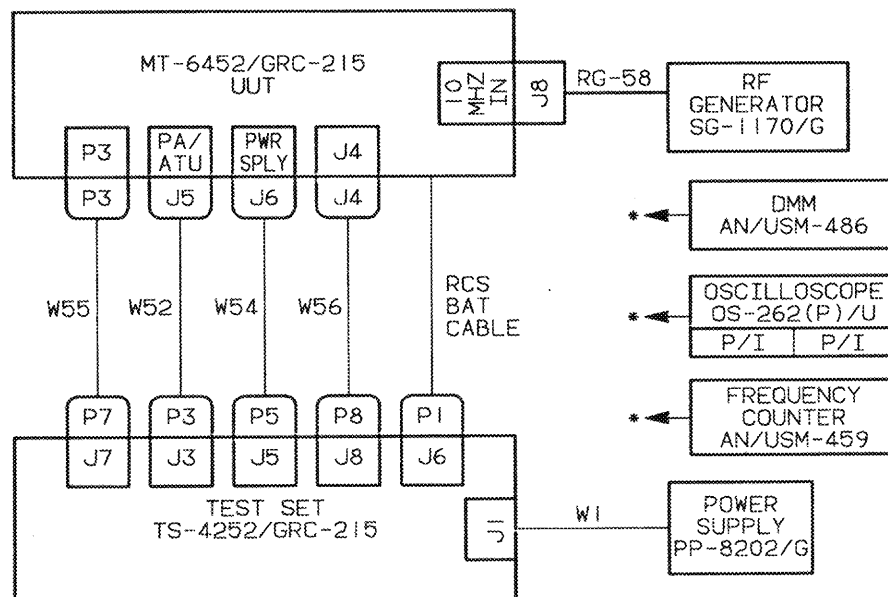
Tool Kit TK-17
Work Station, Static

CAUTION

The vehicular adapter contains components that are sensitive to damage by electrostatic discharge (ESD). Improper handling will result in component and assembly failure. Use extreme care when handling. Refer to DOD-HDBK-263 for proper handling procedures.

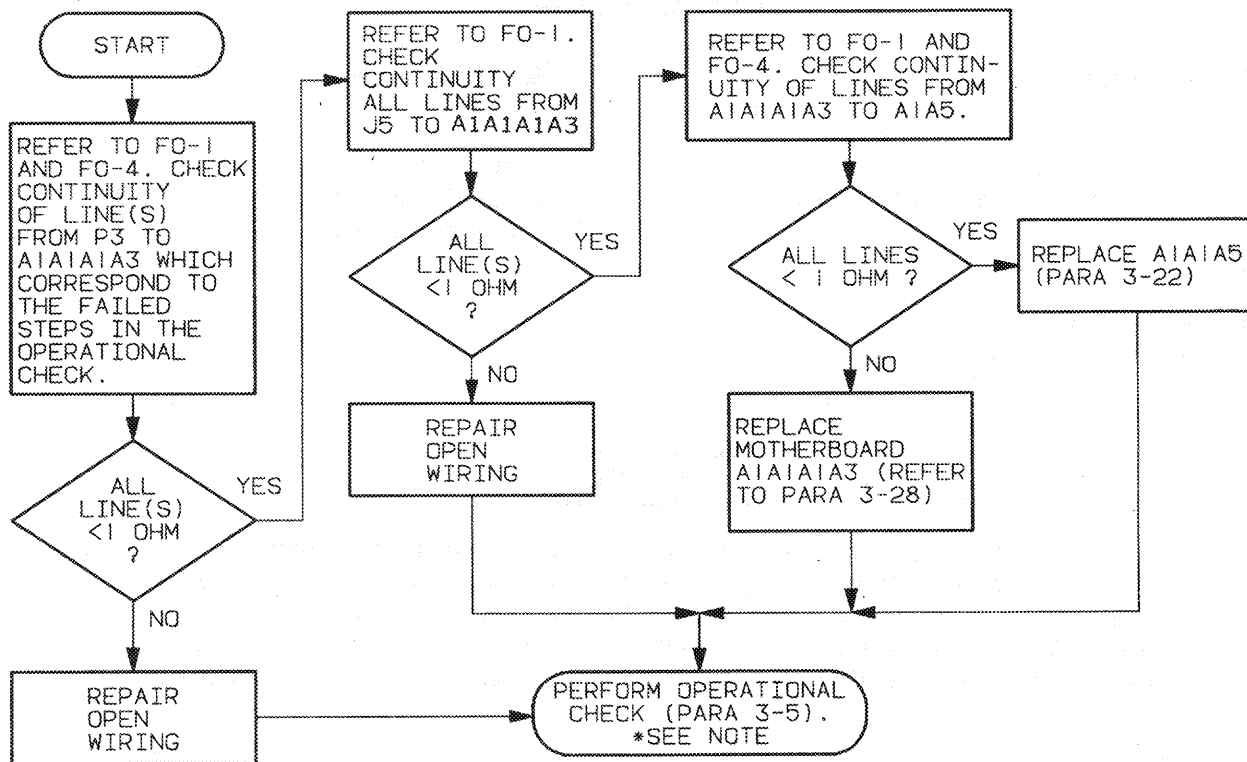
NOTE

VA fault light may be lit during test. It should be ignored.



* CONNECT AS REQUIRED

3-13. NO CONTROL TO RECEIVER/TRANSMITTER OR POWER AMPLIFIER/ANTENNA TUNING UNIT (Cont.)



*NOTE: REPLACE VEHICLE ADAPTER BOTTOM COVER. REFER TO PARA. 3-19.

3-14. WILL NOT CHARGE RCS BATTERY AT UNIT MAINTENANCE

INITIAL SETUP

Test Equipment

Test Set, Vehicle Adapter,
TS-4252/GRC-215
Digital Multimeter AN/USM-486
Power Supply PP-8202/G
RF Generator SG-1170/U
Oscilloscope, OS-262(P)/U
Plug in Units, Amplifier
AM-6785/U and T.B. TD-1159/U

Equipment Condition

Power off
Test setup
VA bottom cover removed
(para 3-19)
PP-8202/G dc power supply on
and set for +28 Vdc
RF generator set for 10 MHz at
0 dBm output

Tools

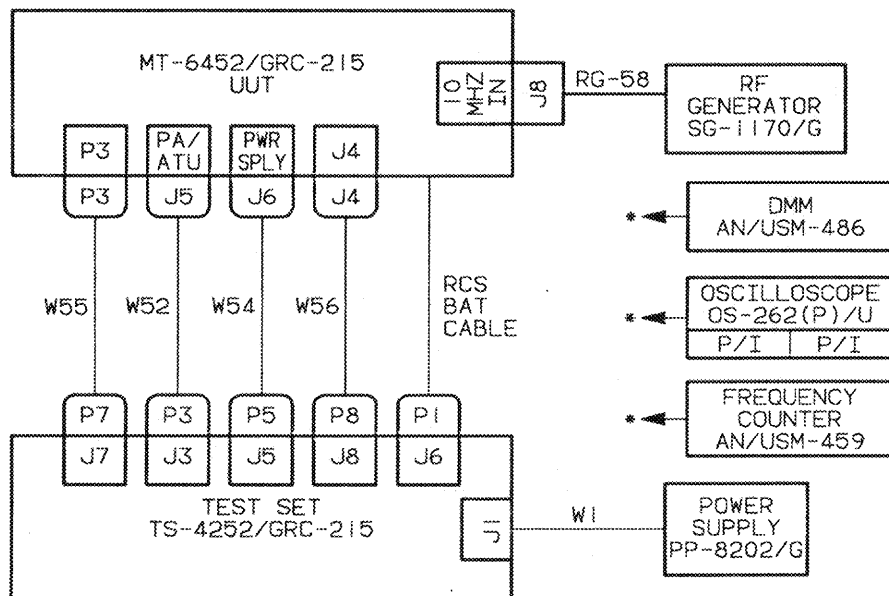
Tool Kit TK-17
Work Station, Static



The vehicular adapter contains components that are sensitive to damage by electrostatic discharge (ESD). Improper handling will result in component and assembly failure. Use extreme care when handling. Refer to DOD-HDBK-263 for proper handling procedures.

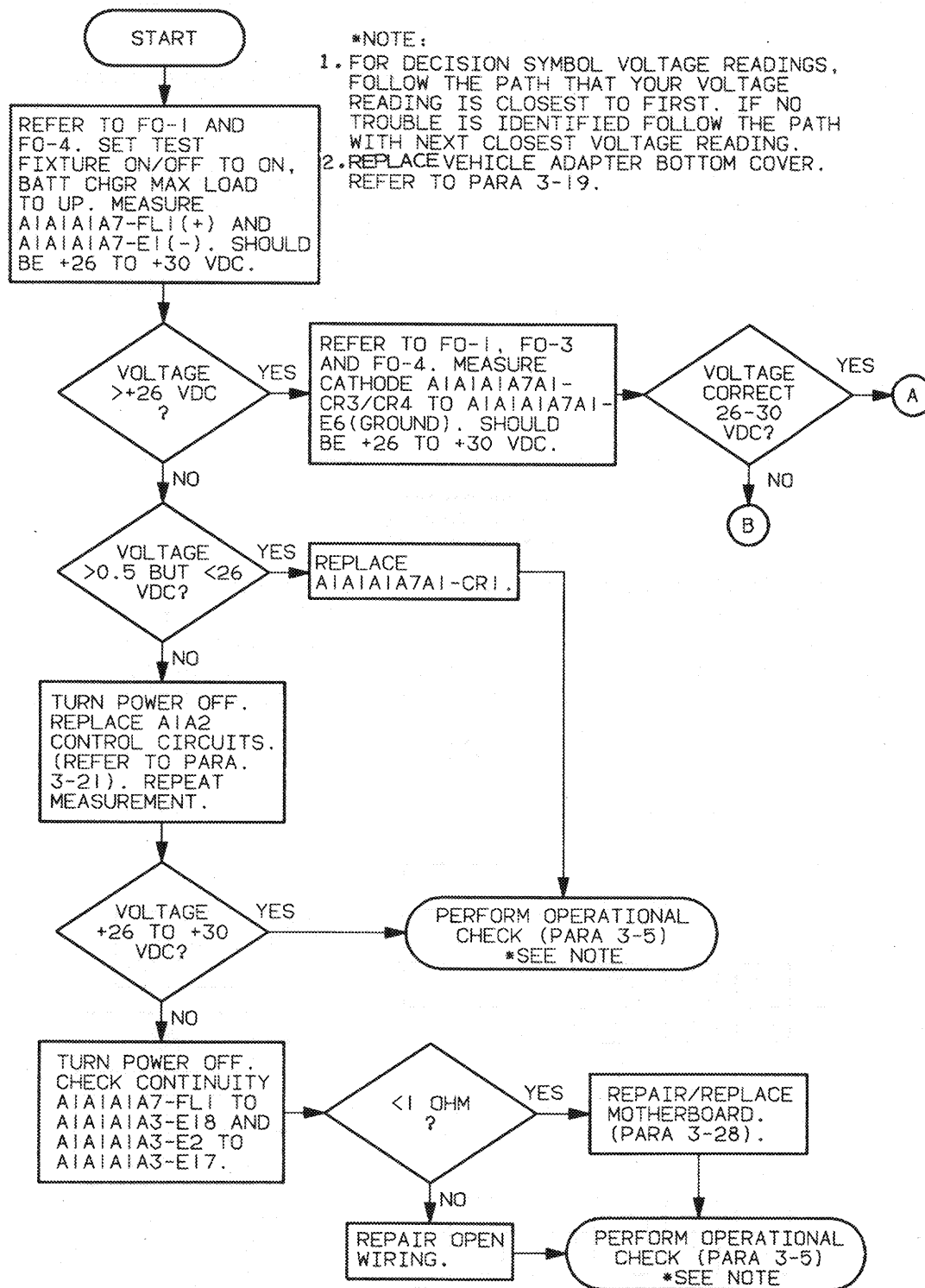
NOTE

VA fault light may be lit during test. It should be ignored.

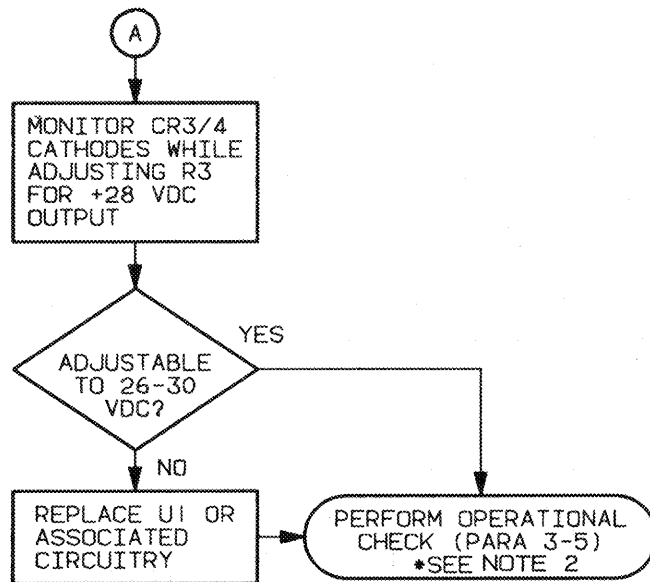


* CONNECT AS REQUIRED

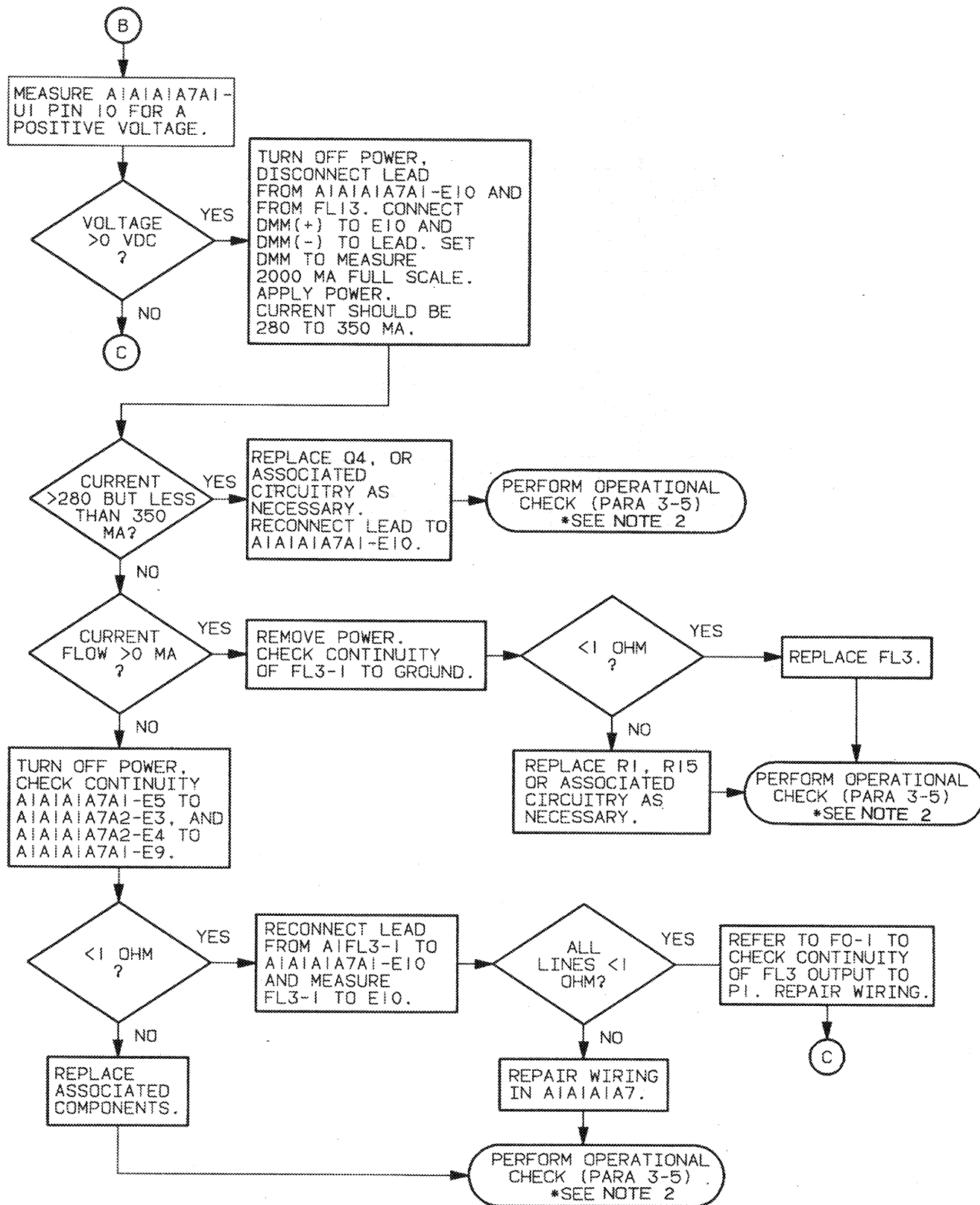
3-14. WILL NOT CHARGE RCS BATTERY AT UNIT MAINTENANCE (Cont.)



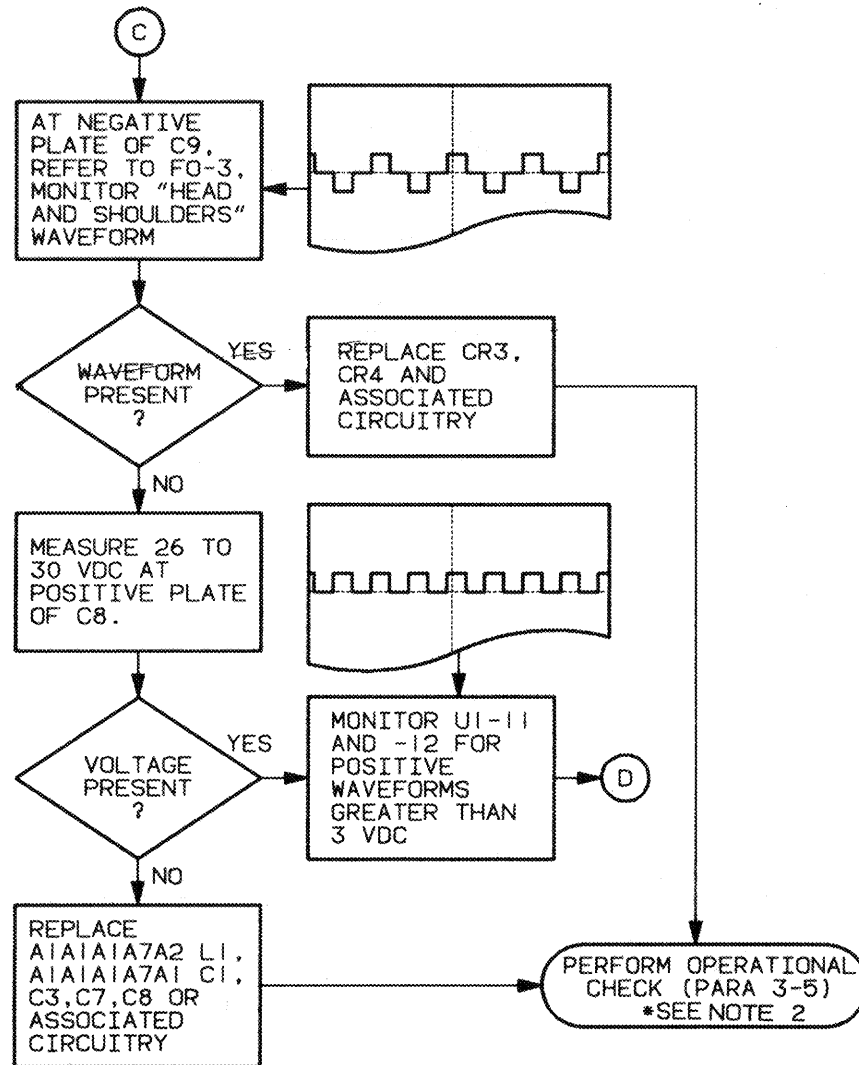
3-14. WILL NOT CHARGE RCS BATTERY AT UNIT MAINTENANCE (Cont.)



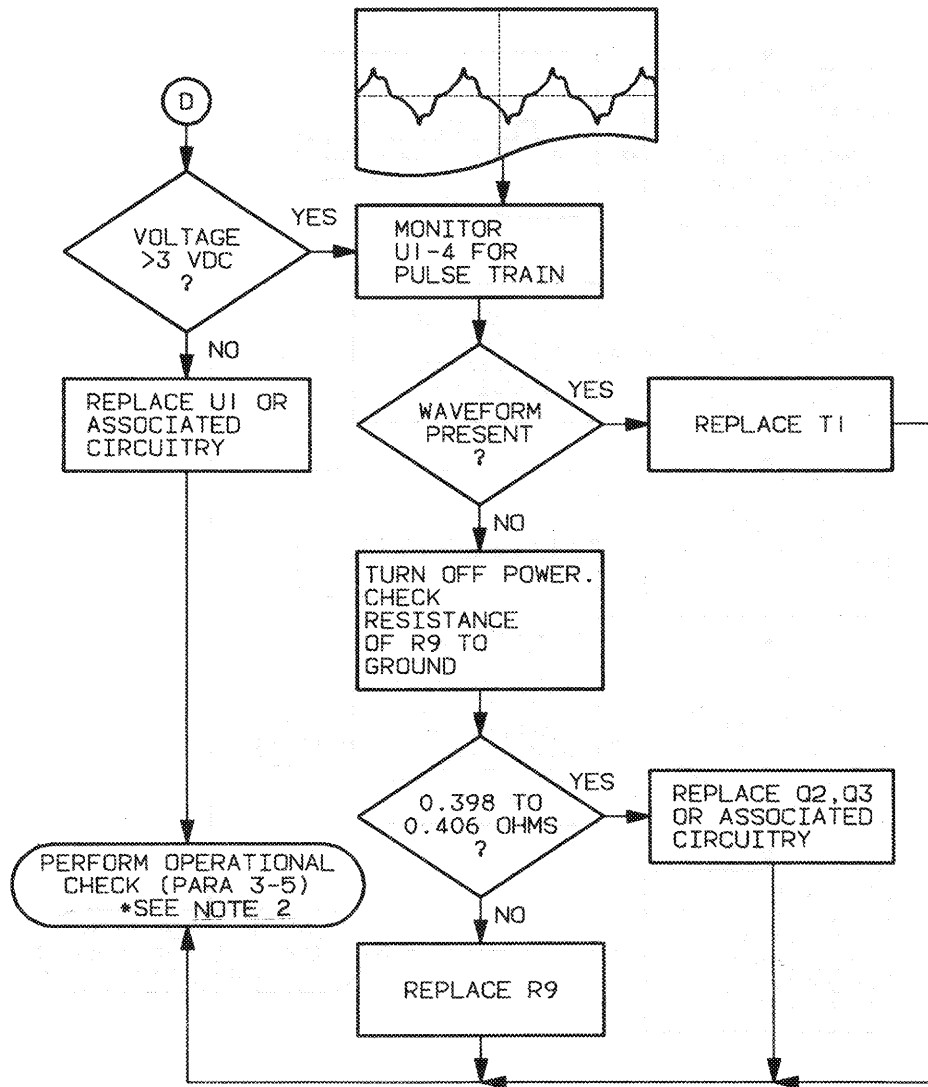
3-14. WILL NOT CHARGE RCS BATTERY AT UNIT MAINTENANCE (Cont.)



3-14. WILL NOT CHARGE RCS BATTERY AT UNIT MAINTENANCE (Cont.)



3-14. WILL NOT CHARGE RCS BATTERY AT UNIT MAINTENANCE (Cont.)



3-15. WILL NOT CHARGE MANPACK BATTERY

INITIAL SETUP

Test Equipment

Test Set, Vehicle Adapter,
 TS-4252/GRC-215
 Digital Multimeter AN/USM-486
 Power Supply PP-8202/G
 RF Generator SG-1170
 Frequency Counter AN/USM-459

Equipment Condition

Power off
 Test setup
 VA bottom cover removed
 (para 3-19)
 PP-8202/G dc power supply on
 and set for +28 Vdc
 RF generator set for 10 MHz at
 0 dBm output

Tools

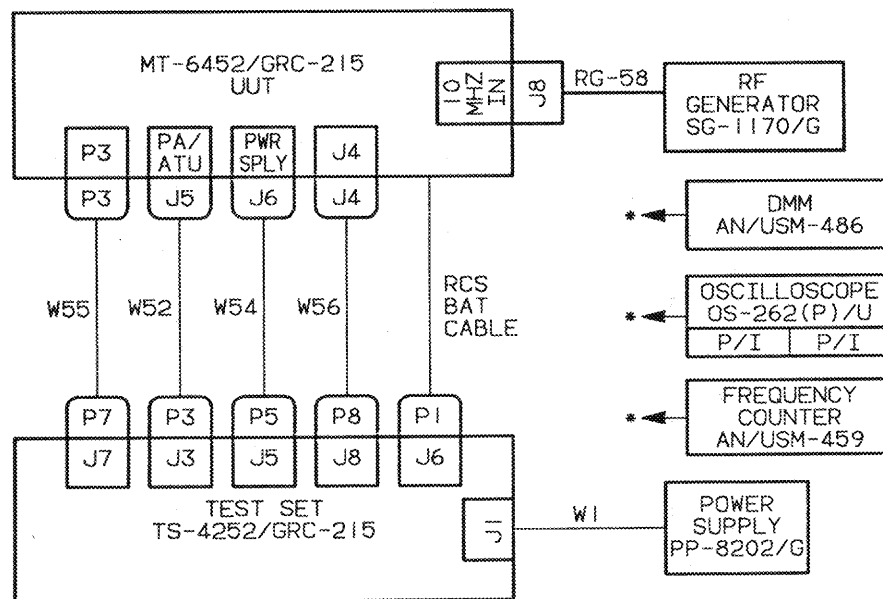
Tool Kit TK-17
 Work Station, Static



The vehicular adapter contains components that are sensitive to damage by electrostatic discharge (ESD). Improper handling will result in component and assembly failure. Use extreme care when handling. Refer to DOD-HDBK-263 for proper handling procedures.

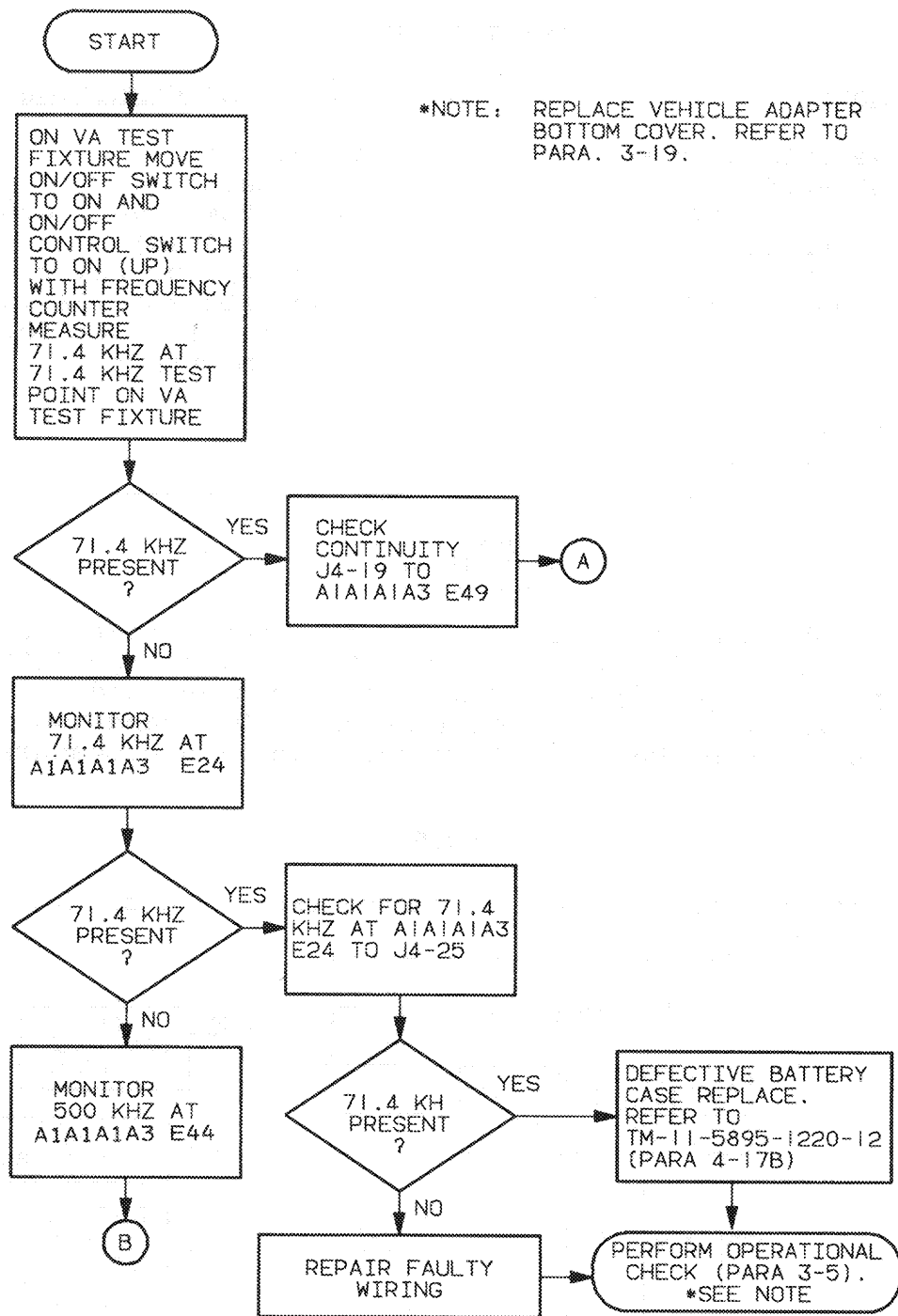
NOTE

VA fault light may be lit during test. It should be ignored.

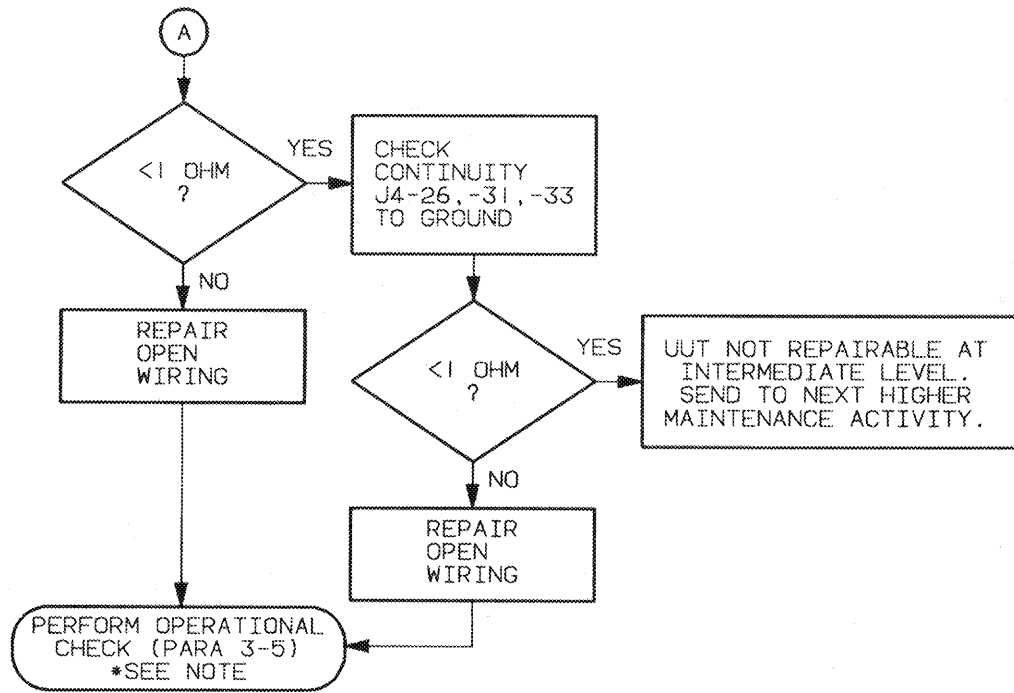


* CONNECT AS REQUIRED

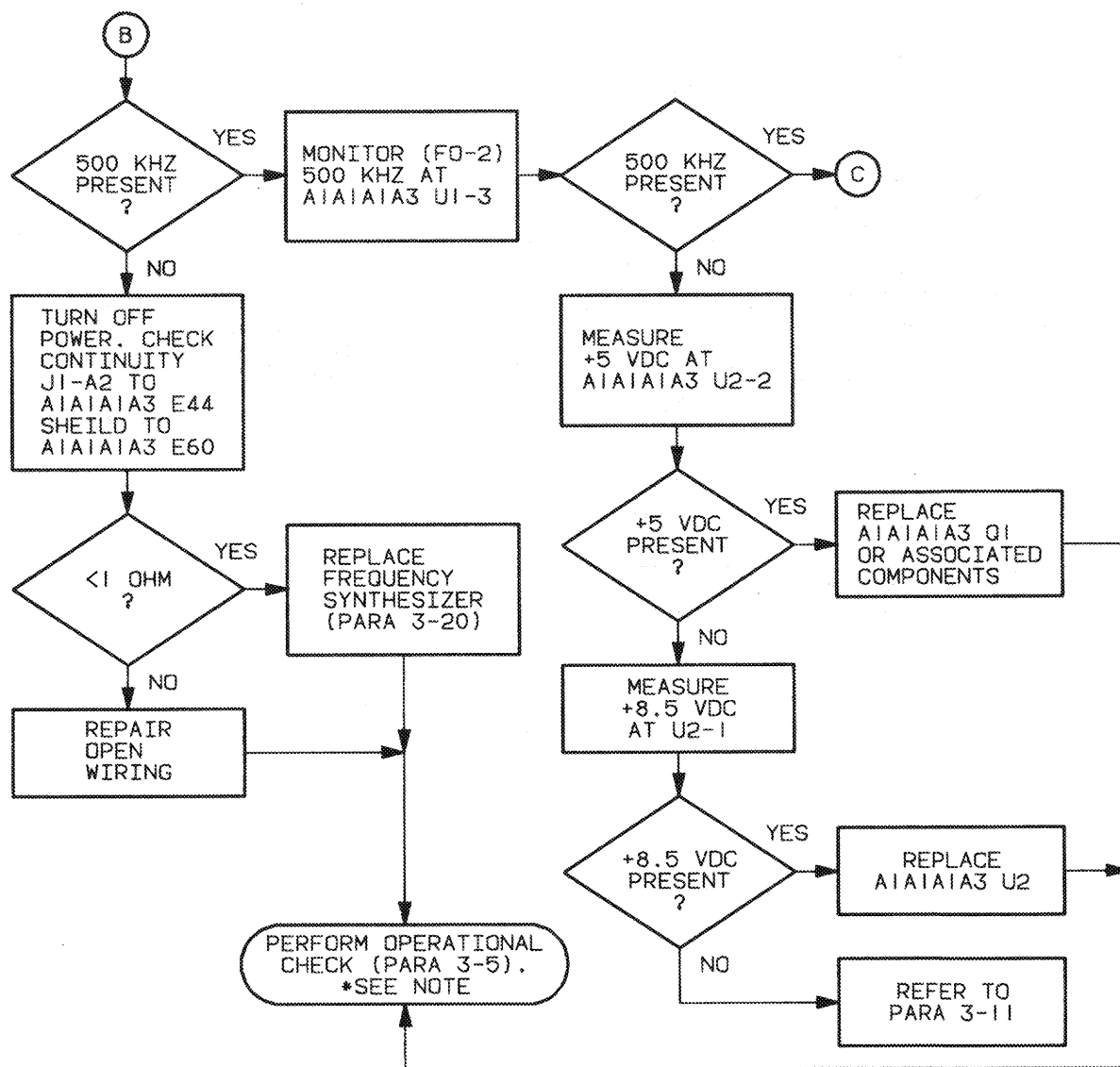
3-15. WILL NOT CHARGE MANPACK BATTERY (Cont.)



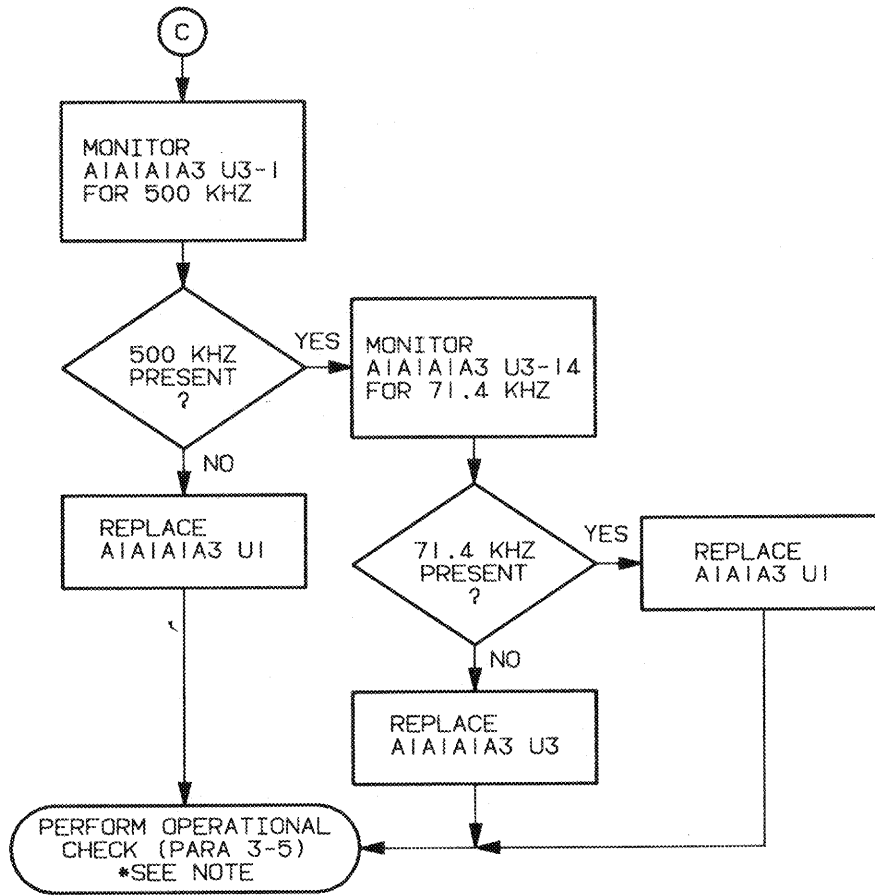
3-15. WILL NOT CHARGE MANPACK BATTERY (Cont.)



3-15. WILL NOT CHARGE MANPACK BATTERY AT (Cont.)



3-15. WILL NOT CHARGE MANPACK BATTERY (Cont.)



3-16. BLOWER INOPERATIVE

INITIAL SETUP

Test Equipment

Test Set, Vehicle Adapter,
TS-4252/GRC-215
Digital Multimeter AN/USM-486
Power Supply PP-8202/G
RF Generator SG-1170

Equipment Condition

Power off
Test setup
VA bottom cover removed
(para 3-19)
PP-8202/G dc power supply on
and set for +28 Vdc
RF generator set for 10 MHz at
0 dBm output

Tools

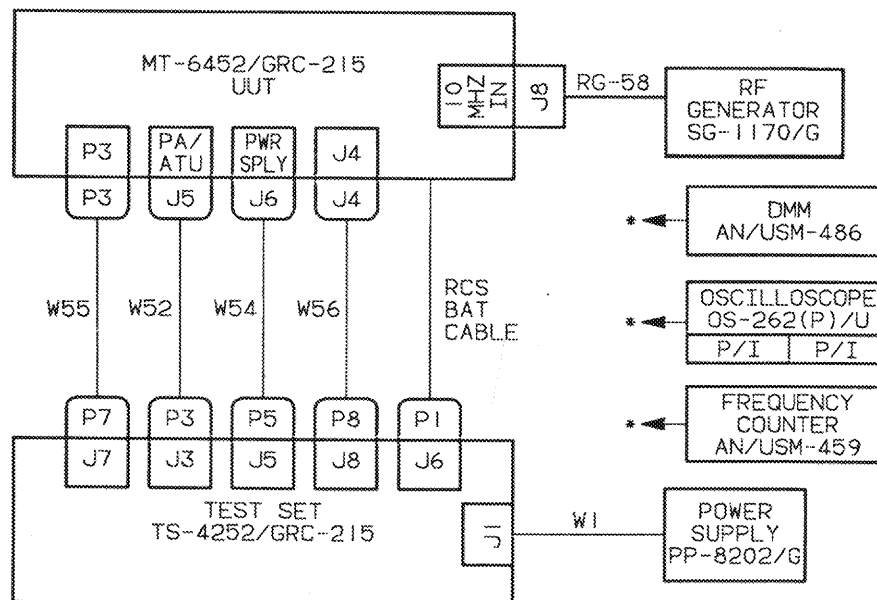
Tool Kit TK-17
Work Station, Static

CAUTION

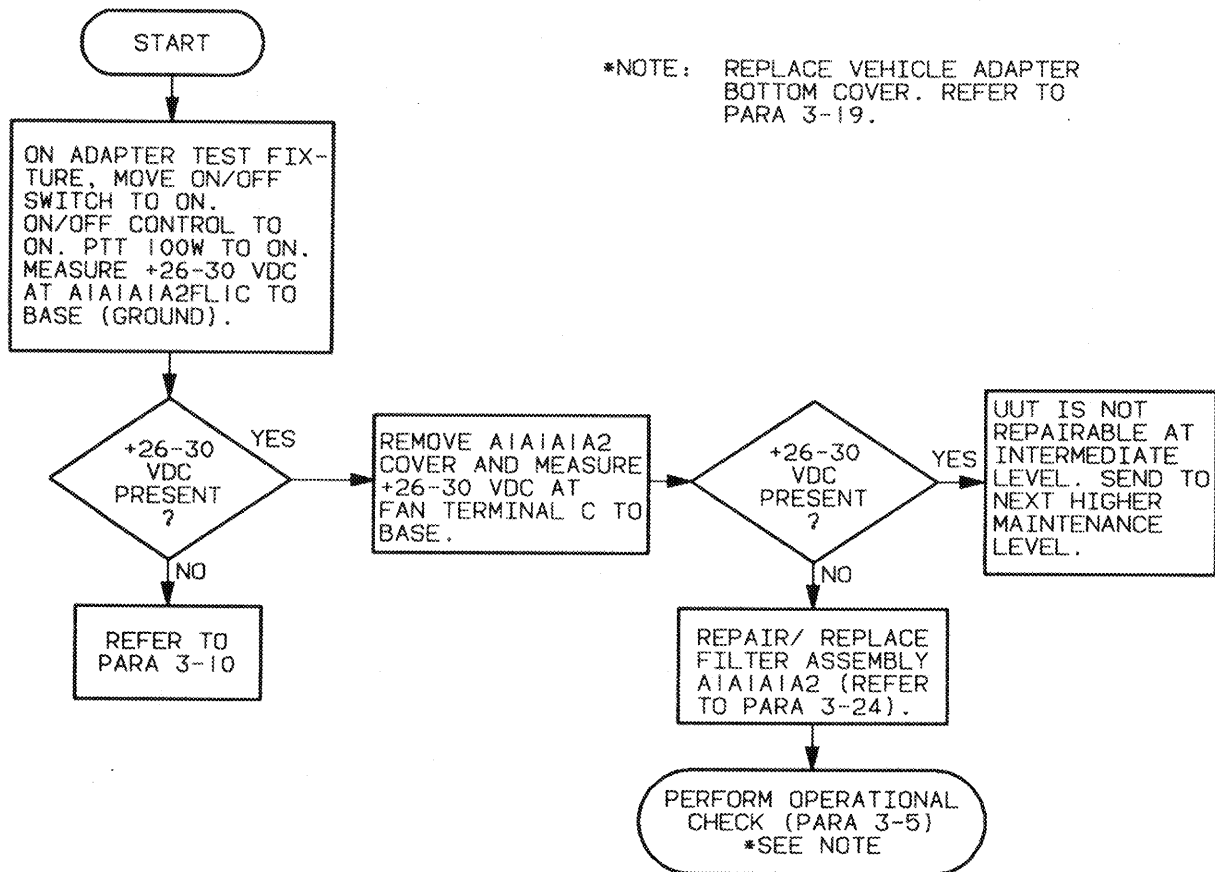
The vehicular adapter contains components that are sensitive to damage by electrostatic discharge (ESD). Improper handling will result in component and assembly failure. Use extreme care when handling. Refer to DOD-HDBK-263 for proper handling procedures.

NOTE

VA fault light may be lit during test. It should be ignored.



3-16. BLOWER INOPERATIVE (Cont.)



3-17. PASSES OPERATIONAL TEST, WILL NOT FUNCTION IN TEAM TERMINAL

55

INITIAL SETUP

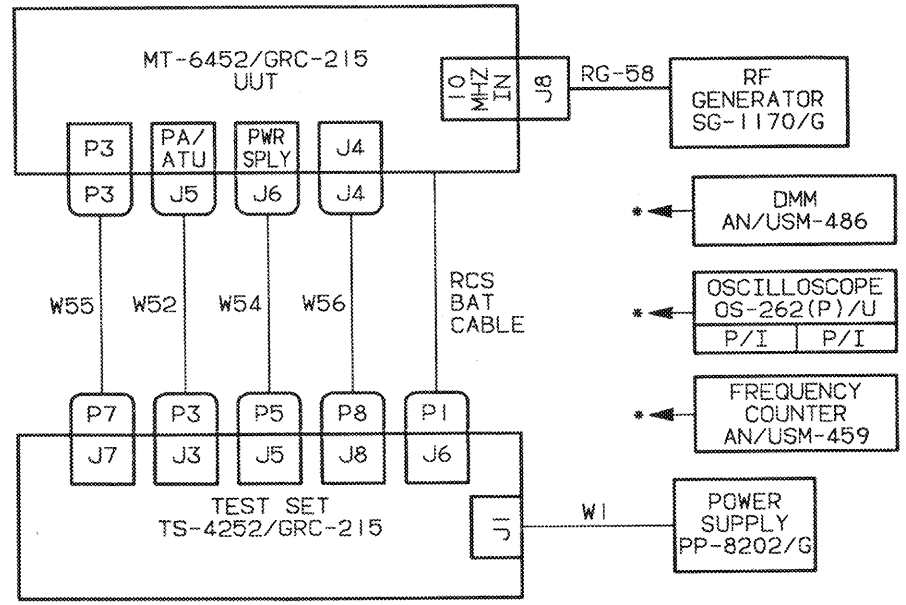
<u>Test Equipment</u>	<u>Equipment Condition</u>
Test Set, Vehicle Adapter, TS-4252/GRC-215	Power off Test setup
Power Supply PP-8202/G	VA bottom cover removed (para 3-19)
Frequency Counter AN/USM-459	Set rf frequency generator for 10 MHz at 0 dBm output
Digital Multimeter, AN/USM-486	PP-8202/G power supply on and set for +28 Vdc
RF Generator SG-1170	
Oscilloscope OS-262(P)/U	
Plug in Units, Amplifier AM-6785/U, and T.B. TD-1159/U	
	<u>Tools</u>
	Tool Kit TK-17
	Work Station, Static

CAUTION

The vehicular adapter contains components that are sensitive to damage by electrostatic discharge (ESD). Improper handling will result in component and assembly failure. Use extreme care when handling. Refer to DOD-HDBK-263 for proper handling procedures.

NOTE

VA fault light may be lit during test. It should be ignored.

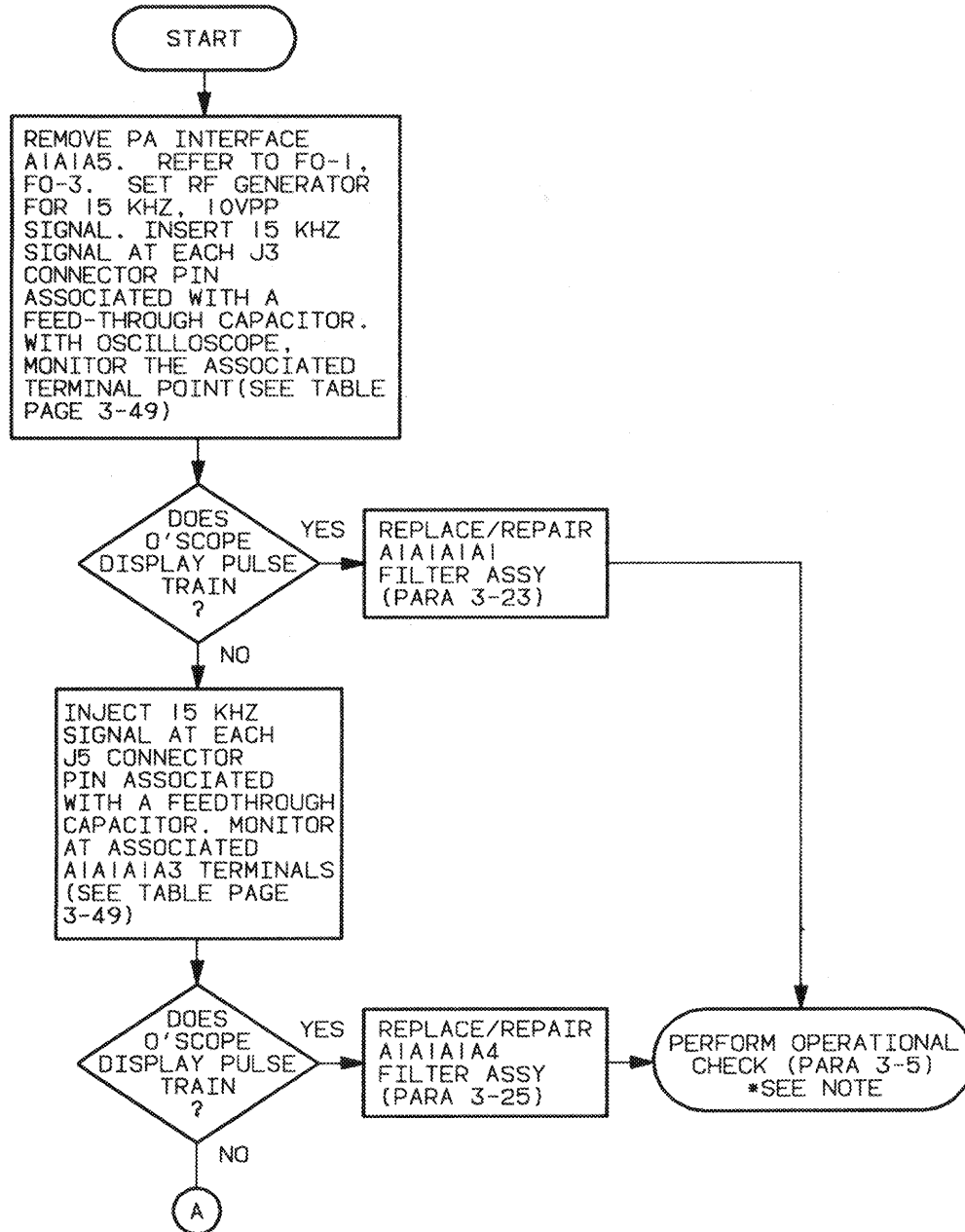


3-17. PASSES OPERATIONAL TEST, WILL NOT FUNCTION IN TEAM TERMINAL
(Cont.)

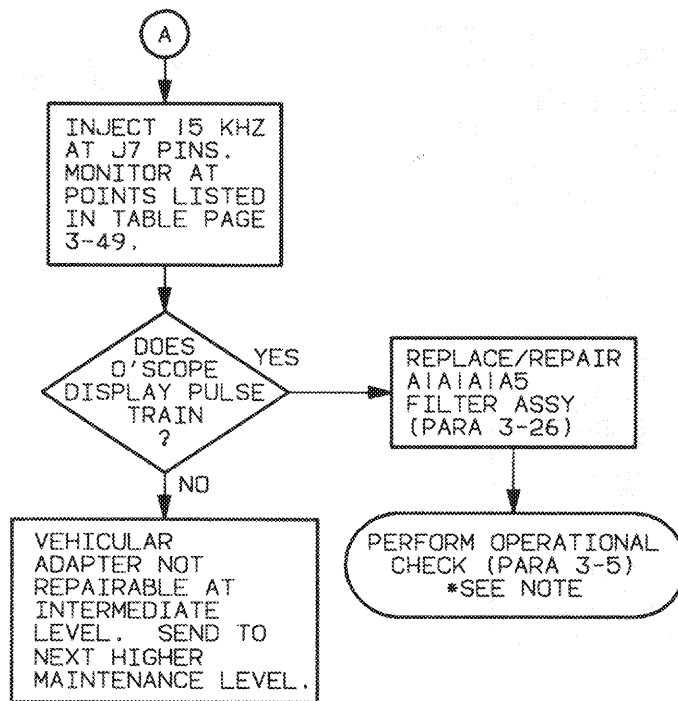
NOTE

THE OBJECTIVE OF THIS TEST IS TO INJECT AN INTERFERENCE SIGNAL (PULSE TRAIN) WHICH WILL BE SHUNTED TO GROUND IF THE EQUIPMENT IS OPERATING PROPERLY. NO PULSE TRAIN (INJECTED INTERFERENCE SIGNAL) VISIBLE AT THE OSCILLOSCOPE INDICATES PROPERLY OPERATING EQUIPMENT.

*NOTE: REPLACE VEHICLE ADAPTER BOTTOM COVER. REFER TO PARA 3-19.



3-17. PASSES OPERATIONAL TEST, WILL NOT FUNCTION IN TEAM TERMINAL
(Cont.)



3-17. PASSES OPERATIONAL TEST, WILL NOT FUNCTION IN TEAM TERMINAL
(Cont.)

15 KHZ INJECTION POINT	MONITOR POINT	15 KHZ INJECTION POINT	MONITOR POINT
J3-1	AIAI E2	J5-N	AIAIAIA3 E50
-3	AIAIAIA3 E8	-P	AIAIAIA3 E4
-5	AIAIAIA3 E28	-R	AIAIAIA3 E25
-6	AIAIAIA3 E6	-U	AIAIAIA3 E43
-7	AIAIAIA3 E47		
-8	AIAIAIA3 E5	-W	AIAIAIA3 E45
-9	AIAIAIA3 E55	-X	AIAIAIA3 E22
-10	AIAIAIA3 E36	-Y	AIAIAIA3 E41
-11	AIAIAIA3 E33	-Z	AIAIAIA3 E23
-12	AIAIAIA3 E15	-S	AIAIAIA3 E48
-13	AIAIAIA3 E37	-T	AIAIAIA3 E31
-14	AIAIAIA3 E35	-C	AIAIAIA3 E58
-15	AIAIAIA3 E27	J7-1	J1-1
-16	AIAIAIA3 E26	-2	J1-2
-17	AIAIAIA3 E51	-3	J1-3
-18	AIAIAIA3 E29	-4	J1-4
-23	AIAIAIA3 E10	-5	J1-5
-24	AIAIAIA3 E12	-6	J1-6
-34	AIAIAIA3 E32	-7	J1-7
-38	AIAIAIA3 E34	-8	J1-8
-39	AIAIAIA3 E13	-9	J1-24
-40	AIAIAIA3 E7	10	J1-9
-41	J1-23	-11	J1-10
J5-A	AIAI E4	-12	AIAIAIA3 E30
-B	AIAIAIA3 E12	-15	J1-11
-C	AIAIAIA3 E14	-16	J1-12
-D	AIAIAIA3 E46	-18	J1-23
-E	AIAIAIA3 E56	-19	J1-14
-F	AIAIAIA3 E19	-22	AIAIAIA3 E31
-G	AIAIAIA3 E52		
-H	AIAIAIA3 E3		
-J	AIAIAIA3 E2		
-K	AIAIAIA3 E1		
-L	AIAIAIA3 E30		
-M	AIAIAIA3 E9		

Section III. INTERMEDIATE GENERAL SUPPORT MAINTENANCE

3-18. GENERAL

Maintenance procedures that follow include all maintenance actions authorized at the Intermediate General Support level.

3-19. DISASSEMBLY AND ASSEMBLY OF VEHICULAR ADAPTER

Partial disassembly of the vehicular adapter is required to gain access to the assemblies, frequency synthesizer (A2), and mounting base (A1A1) wiring.

INITIAL SETUP

Tools

Equipment Condition

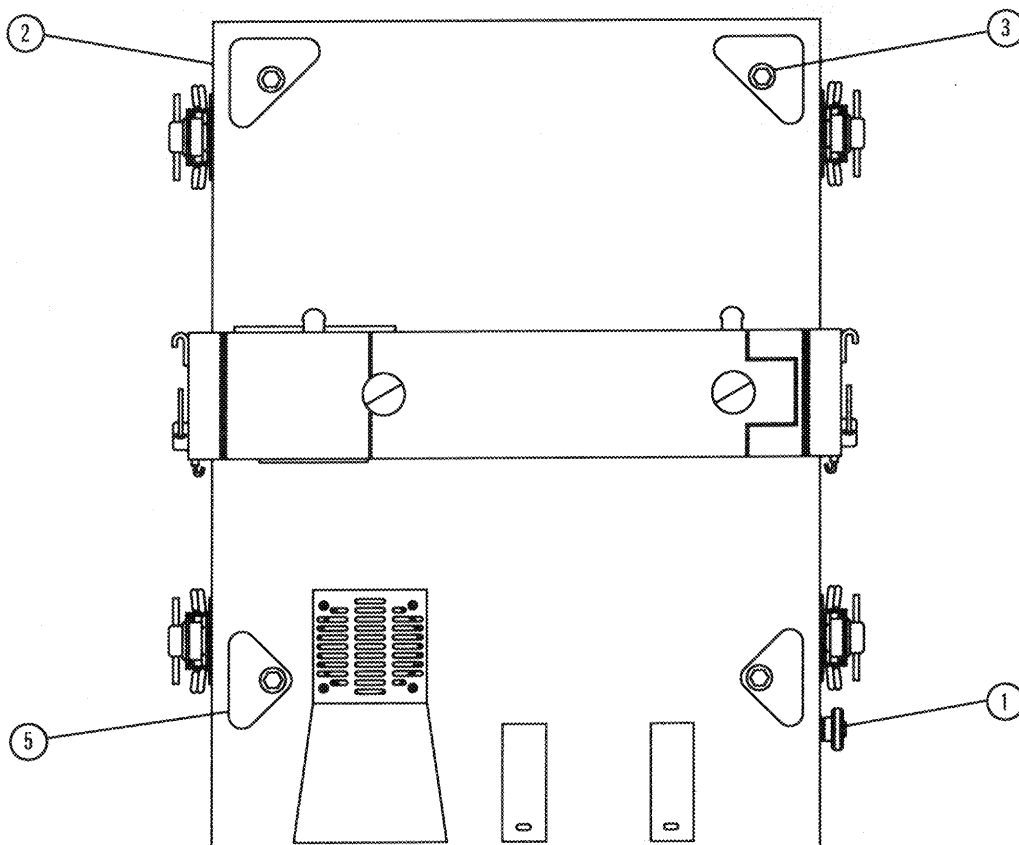
Tool Kit TK-17

Power off

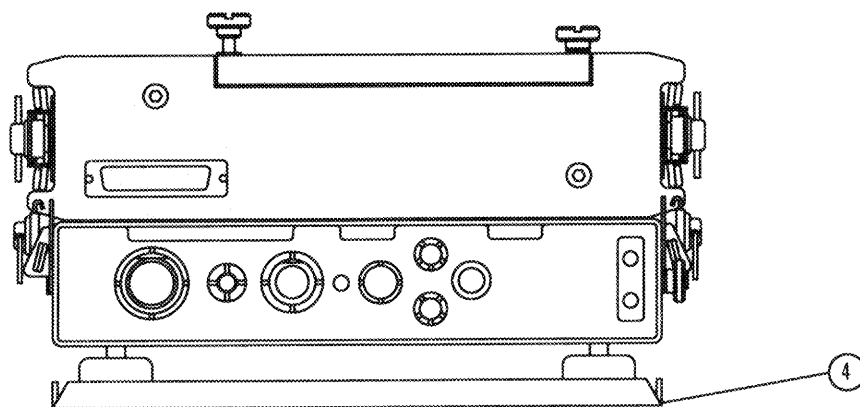
DISASSEMBLY OF VEHICULAR ADAPTER

- STEP 1. Loosen ground nut ① at side of mounting base ② and remove shock mount ground wire.
- STEP 2. Loosen four hex-head bolts ③ securing shock mount ④ to mounting base. Access to bolts is through openings ⑤ at the four top corners of the mounting base.
- STEP 3. Lift mounting base (A1A1) ② free of shock mount (A1A2) ④.

3-19. DISASSEMBLY AND ASSEMBLY OF VEHICULAR ADAPTER (Cont.)



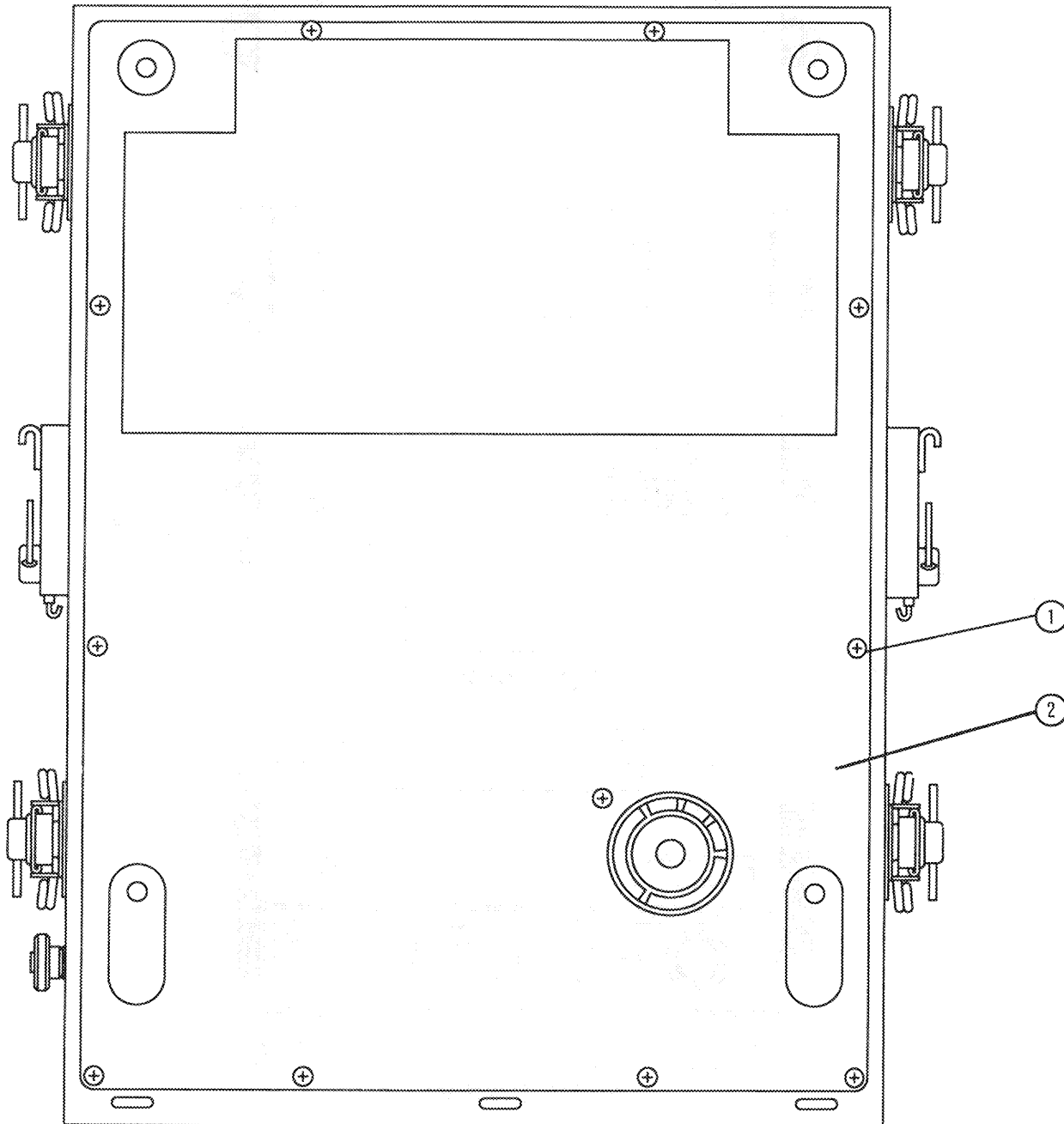
TOP VIEW



FRONT VIEW

3-19. DISASSEMBLY AND ASSEMBLY OF VEHICULAR ADAPTER (Cont.)

STEP 4. Loosen eleven captive crosstip screws (1) and remove bottom cover assembly (2).



BOTTOM VIEW

ASSEMBLY OF VEHICULAR ADAPTER

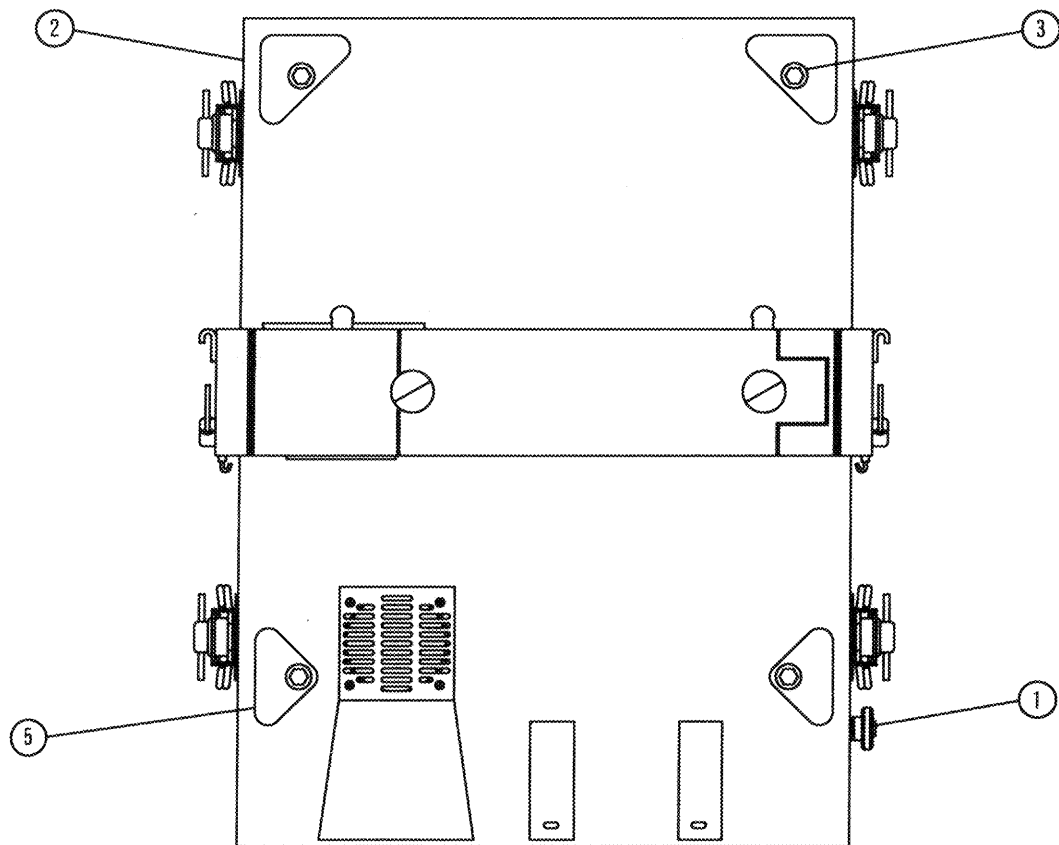
STEP 1. Place bottom cover (2) on mounting base (A1A1) and secure with eleven captive crosstip screws (1).

3-19. DISASSEMBLY AND ASSEMBLY OF VEHICULAR ADAPTER (Cont.)

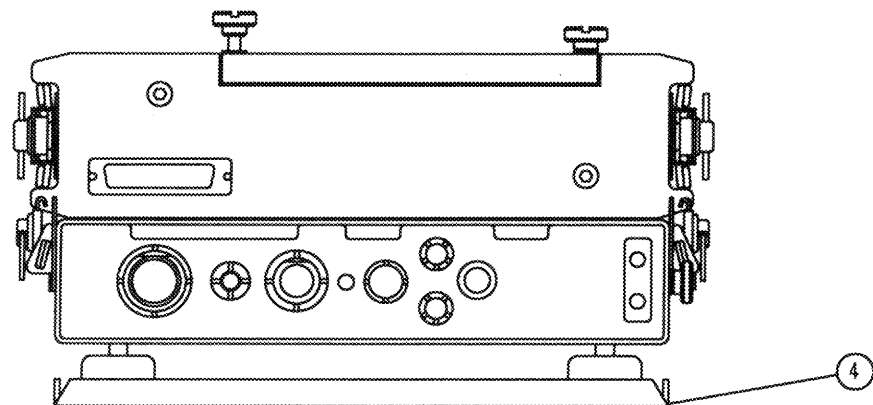
STEP 2. Place mounting base (A1A1) (2) on shock mount (A1A2) (4).

STEP 3. Secure vehicular adapter to tray mount by tightening four captive bolts (3). Access to bolts is through openings (5).

STEP 4. Insert shock mount ground wire into ground nut (1) and tighten.



TOP VIEW



FRONT VIEW

3-20. REPLACEMENT OF FREQUENCY SYNTHESIZER (A2)

INITIAL SETUP

Tools

Tool Kit TK-17
Work Station, Static

Equipment Condition

Power off
VA bottom cover removed
(para 3-19)

Materials/Parts

Frequency Synthesizer Assembly, A2, A3024340

CAUTION

The frequency synthesizer (A2) contains components that are sensitive to damage by electrostatic discharge (ESD). Improper handling will result in component and assembly failure. Use extreme care when handling. Refer to DOD-HDBK-263 for proper handling procedures.

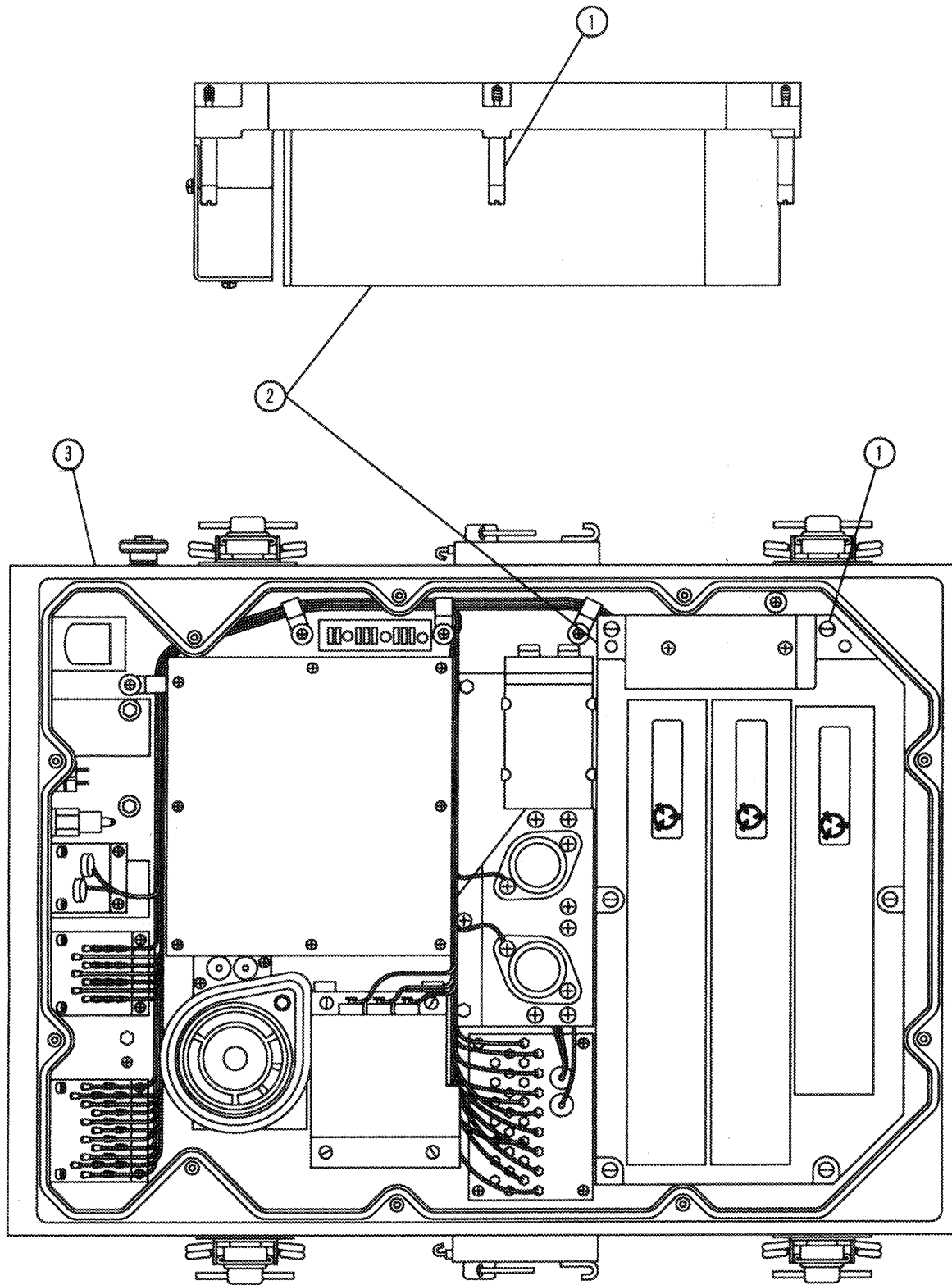
REMOVE FREQUENCY SYNTHESIZER

- STEP 1. Loosen six captive screws (1) securing frequency synthesizer (2) to base (3).
- STEP 2. Lift assembly straight out to disconnect module from connector.
- STEP 3. Lift frequency synthesizer free from the base.

REPLACE FREQUENCY SYNTHESIZER

- STEP 1. Lower frequency synthesizer (2) assembly straight down into base (3).
- STEP 2. Gently push straight down to engage frequency synthesizer (2) with connector.
- STEP 3. Tighten six captive screws (1) to secure frequency synthesizer (2) to base.
- STEP 4. Perform operational check (para 3-5).

3-20. REPLACEMENT OF FREQUENCY SYNTHESIZER (A2) (Cont.)



BOTTOM VIEW, COVER REMOVED

3-21. REPLACEMENT OF CONTROL CIRCUITS (A1A1A2)

INITIAL SETUP

Tools

Tool Kit TK-17
Work Station, Static

Equipment Condition

Power off
VA bottom cover removed
(para 3-19)

Materials/Parts

Control Circuits, A1A1A2, A3026061

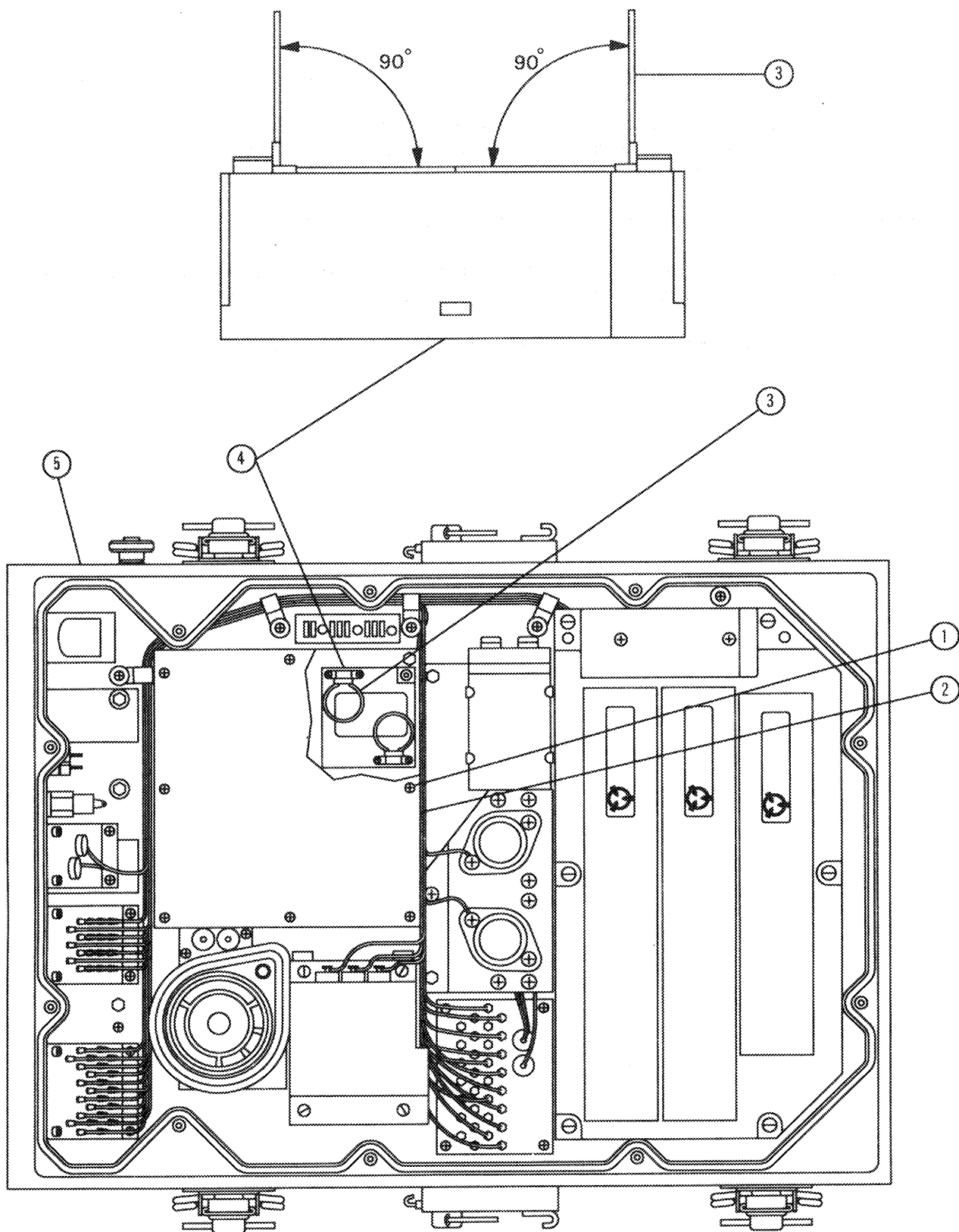
CAUTION

The control circuits (A1A1A2) contains components that are sensitive to damage by electrostatic discharge (ESD). Improper handling will result in component and assembly failure. Use extreme care when handling. Refer to DOD-HDBK-263 for proper handling procedures.

REMOVE CONTROL CIRCUITS

- STEP 1. Remove eight crosstip screws, lockwashers, and flatwashers ① securing cover assembly ② over motherboard. Remove cover ②.
- STEP 2. Rotate finger tabs ③ 90 degrees.
- STEP 3. Grasp finger tabs and lift straight out to disconnect control circuits ④ from connectors.
- STEP 4. Lift control circuits free from the base ⑤.

3-21. REPLACEMENT OF CONTROL CIRCUITS (A1A1A2) (Cont.)



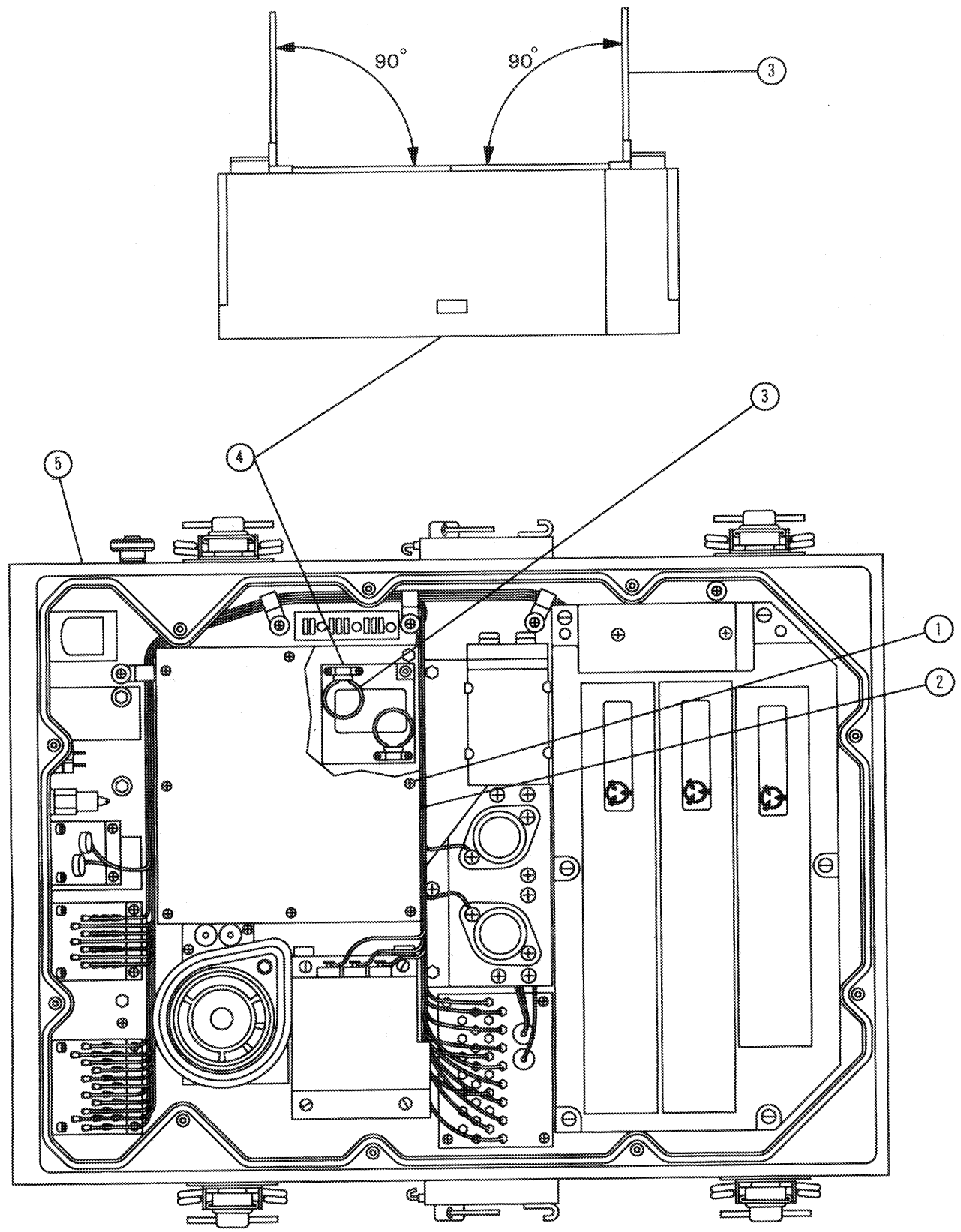
BOTTOM VIEW, COVER REMOVED

3-21. REPLACEMENT OF CONTROL CIRCUITS (A1A1A2) (Cont.)

REPLACE CONTROL CIRCUITS

- STEP 1. Lower control circuits (4) straight down into base (5).
- STEP 2. Grasp finger tabs (3) on control circuits and push straight down to engage control circuits with connectors.
- STEP 3. Fold finger tabs flush against control circuits.
- STEP 4. Place cover (2) in position over motherboard and secure with eight screws, lockwashers, and flatwashers (1).
- STEP 5. Perform operational check (para 3-5).

3-21. REPLACEMENT OF CONTROL CIRCUITS (A1A1A2) (Cont.)



BOTTOM VIEW, COVER REMOVED

3-22. REPLACEMENT OF PA INTERFACE (A1A1A5)

INITIAL SETUP

Tools

Tool Kit TK-17
Work Station, Static

Equipment Condition

Power off
VA bottom cover removed
(para 3-19)

Materials/Parts

PA Interface, A1A1A5, A3026064

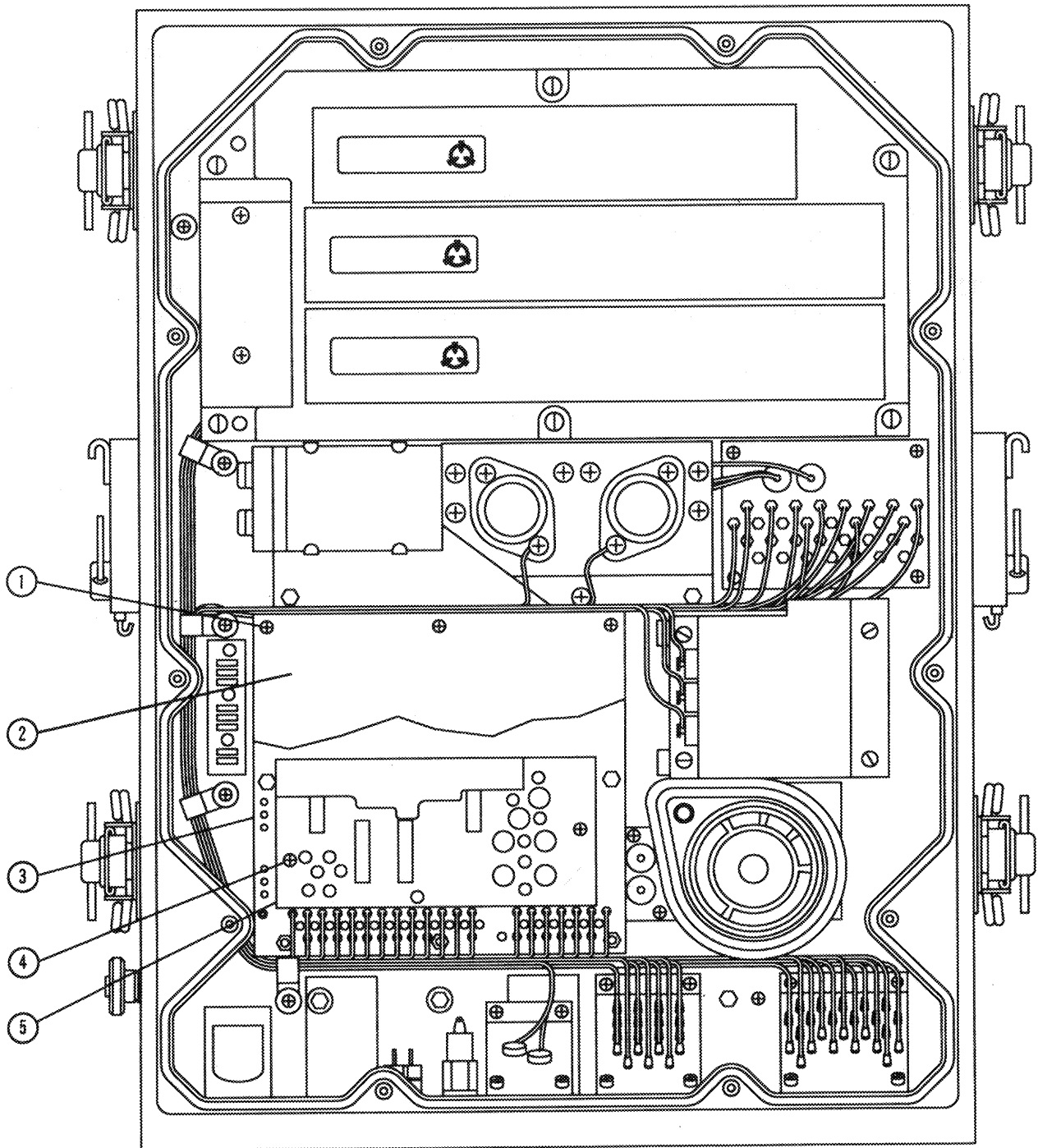


The PA interface (A1A1A5) contains components that are sensitive to damage by electrostatic discharge (ESD). Improper handling will result in component and assembly failure. Use extreme care when handling. Refer to DOD-HDBK-263 for proper handling procedures.

REMOVE PA INTERFACE

- STEP 1. Remove eight crosstip screws, lockwashers, and flatwashers (1) securing cover assembly (2) over motherboard (3). Remove cover (2).
- STEP 2. Remove two nuts (4) securing PA interface (5) to motherboard (3).
- STEP 3. Pull straight up on PA interface (5) to disconnect PA interface from connectors on motherboard (3).
- STEP 4. Lift PA interface (5) free from the motherboard (3).
- STEP 5. Perform operational check (para 3-5).

3-22. REPLACEMENT OF PA INTERFACE (A1A1A5) (Cont.)



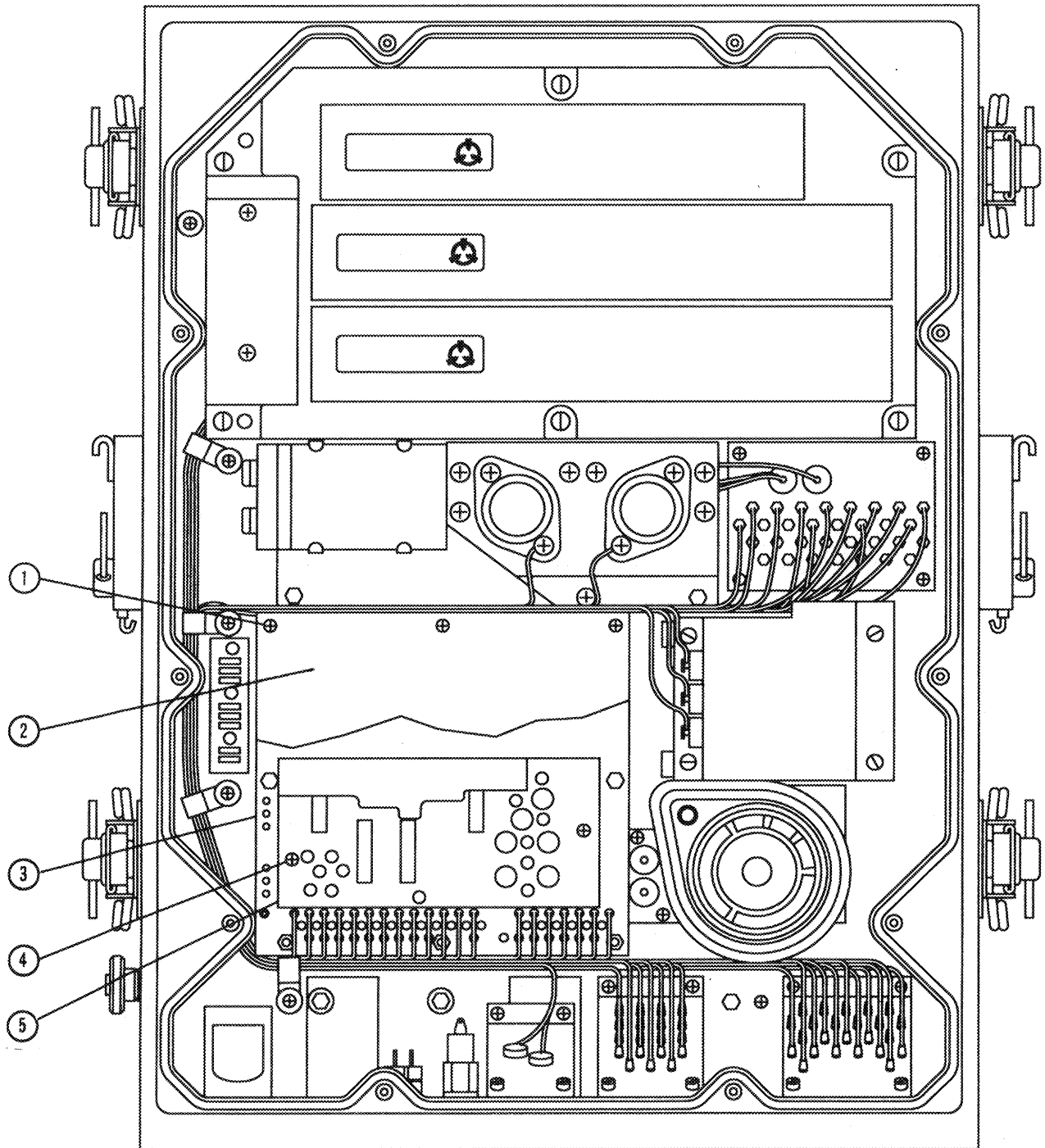
BOTTOM VIEW, COVER REMOVED

3-22. REPLACEMENT OF PA INTERFACE (A1A1A5) (Cont.)

REPLACE PA INTERFACE

- STEP 1. Lower PA interface (5) straight down onto motherboard (3).
- STEP 2. Gently push PA interface (5) straight down to engage with connectors on motherboard (3).
- STEP 3. Secure PA interface (5) to motherboard (3) with two mounting nuts (4).
- STEP 4. Place cover (2) in position over motherboard (3) and secure eight screws, lockwashers, and flatwashers (1).
- STEP 5. Perform operational check (para 3-5).

3-22. REPLACEMENT OF PA INTERFACE (A1A1A5) (Cont.)



BOTTOM VIEW, COVER REMOVED

3-23. REPLACEMENT OF A1 FILTER ASSEMBLY (A1A1A1A1)

INITIAL SETUP

<u>Tools</u>	<u>Equipment Condition</u>
Tool Kit TK-17	Power off
Work Station, Static	VA bottom cover removed (para 3-19)
<u>Materials/Parts</u>	Frequency synthesizer removed (para 3-20)
Filter Assembly, A1A1A1A1, A3027298-1	Control circuits removed (para 3-21)
	PA interface removed (para 3-22)

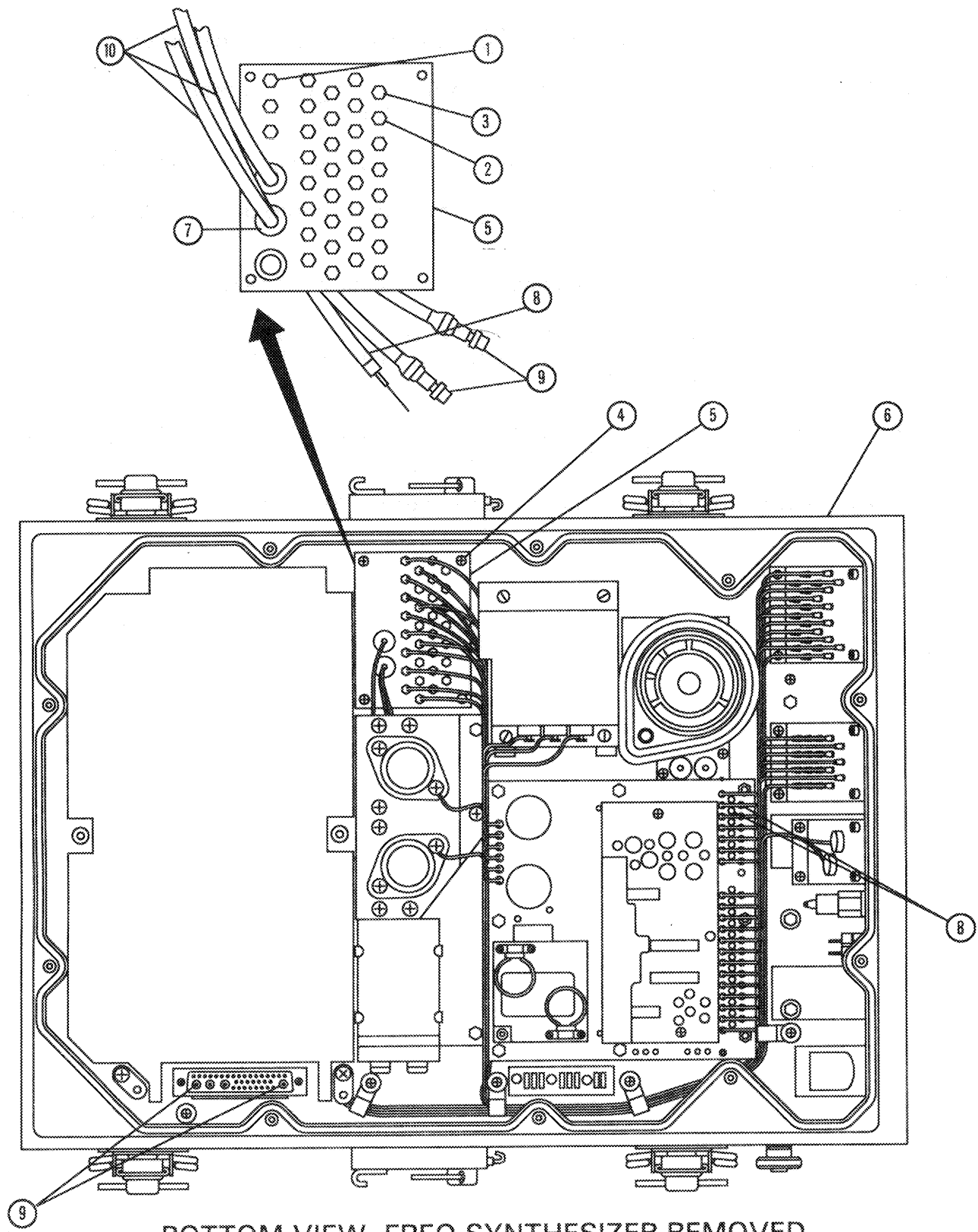
CAUTION

The vehicular adapter contains components that are sensitive to damage by electrostatic discharge (ESD). Improper handling will result in component and assembly failure. Use extreme care when handling. Refer to DOD-HDBK-263 for proper handling procedures.

REMOVE FILTER ASSEMBLY

- STEP 1. Tag and unsolder leads attached to C1 through C33 (1), E1 (2), and E2 (3).
- STEP 2. Remove four crosstip screws, lockwashers, and flatwashers (4) securing Filter Assembly (5) to Base (6). Raise filter assembly to access wires connected to back.
- STEP 3. Tag and unsolder leads attached to back side of C1 through C33 (1), E1 (2), and E2 (3).
- STEP 4. Remove two rubber grommets (7) from filter assembly. Tag and unsolder coaxial leads (8) from motherboard (A1A1A3E60 and E44).
- STEP 5. Tag and remove coaxial cables from connector pins A1A1A1J1A2, (9)
- STEP 6. Push coaxial cables (10) through rubber grommet.
- STEP 7. Lift filter assembly A1A1A1A1 from base.

3-23. REPLACEMENT OF A1 FILTER ASSEMBLY (A1A1A1A1) (Cont.)



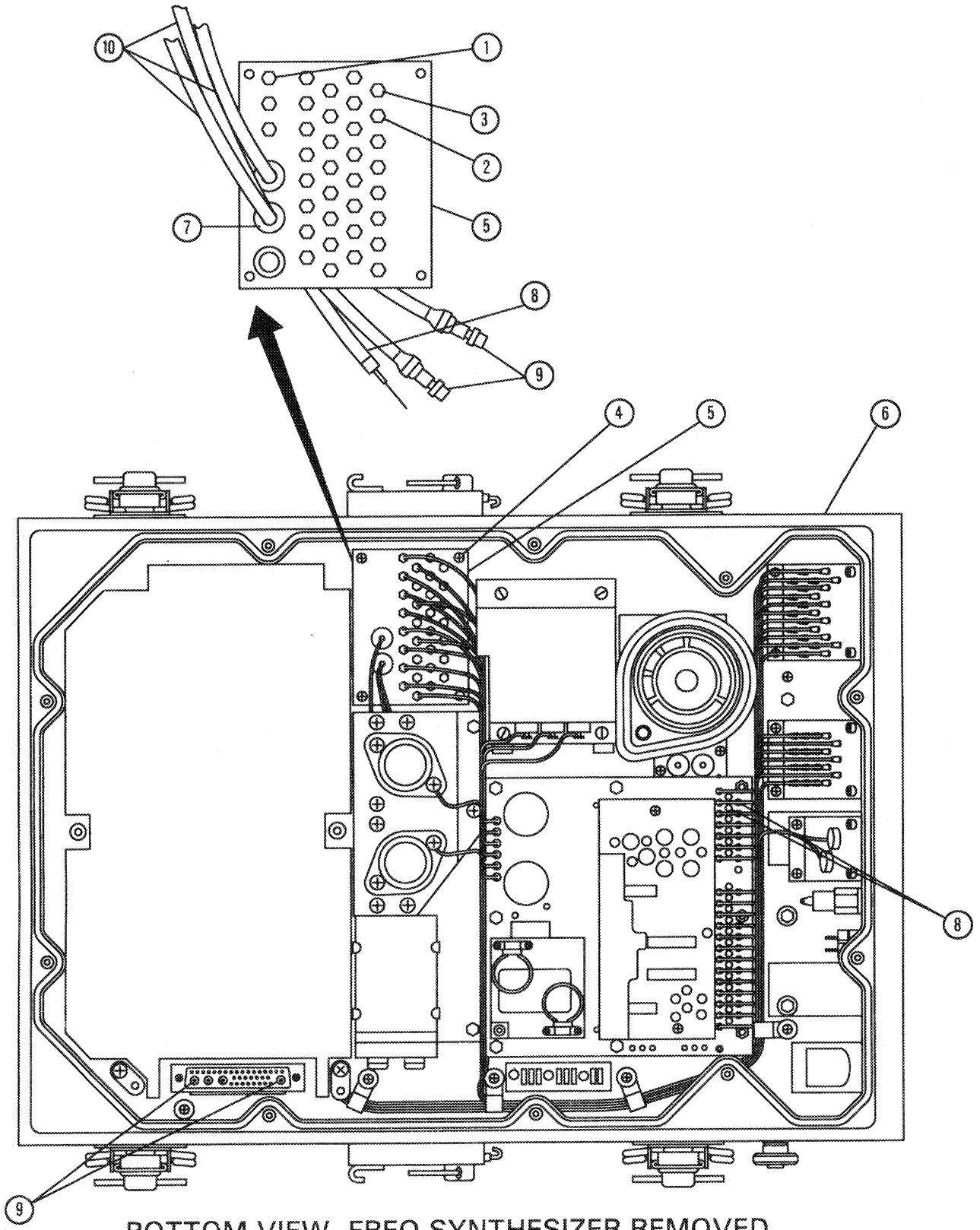
BOTTOM VIEW, FREQ SYNTHESIZER REMOVED

3-23. REPLACEMENT OF A1 FILTER ASSEMBLY (A1A1A1A1) (Cont.)

REPLACE FILTER ASSEMBLY

- STEP 1. Push coaxial cables (10) through rubber grommets (7).
- STEP 2. Solder tagged leads to back of filter assembly (8) to C1 through C33 (1), E1 (2), and E2 (3).
- STEP 3. Connect connector pins into A1A1A1J1A2 and A4 (9).
- STEP 4. Solder coaxial leads (8) to motherboard (A1A1A1A3E60 and E44).
- STEP 5. Insert rubber grommets into filter assembly (5).
- STEP 6. Place filter assembly into position in the base (6) and secure four crosstip screws, lockwashers, and flatwashers (4).
- STEP 7. Solder tagged leads to C1 through C33 (1), E1 (2), and E2 (3) of filter assembly (5).
- STEP 8. Perform operational check (para 3-5)

3-23. REPLACEMENT OF A1 FILTER ASSEMBLY (A1A1A1A1) (Cont.)



BOTTOM VIEW, FREQ SYNTHESIZER REMOVED

3-24. REPLACEMENT OF VENT FILTER ASSEMBLY (A1A1A1A2)

INITIAL SETUP

Tools

Tool Kit TK-17
 Work Station, Static

Equipment Condition

Power off
 VA bottom cover removed
 (para 3-19)
 PA Interface Cover removed
 (para 3-22)

Materials/Parts

Filter Assembly, A1A1A1A2,
 A3030268

CAUTION

The vehicular adapter contains components that are sensitive to damage by electrostatic discharge (ESD). Improper handling will result in component and assembly failure. Use extreme care when handling. Refer to DOD-HDBK-263 for proper handling procedures.

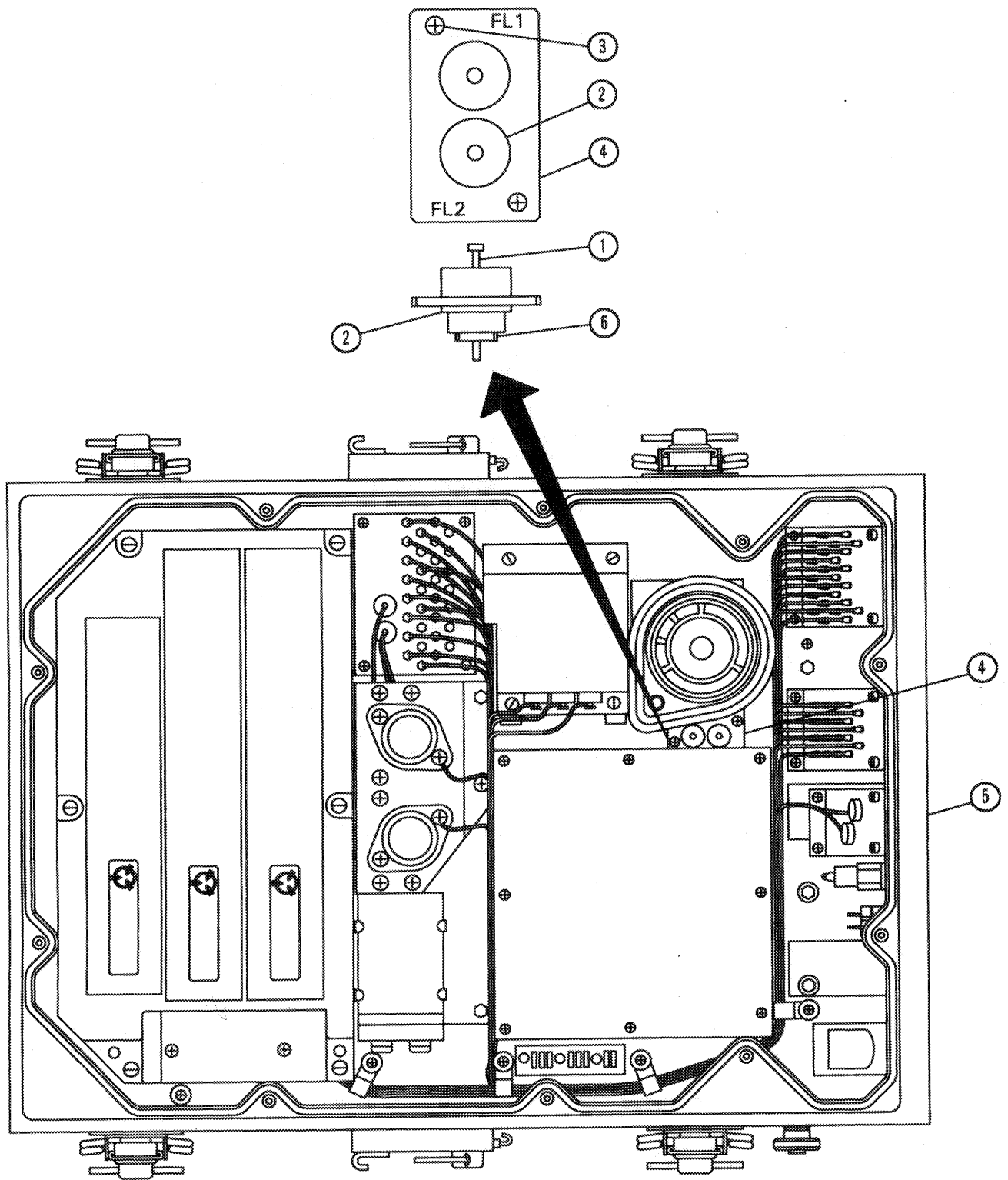
REMOVE VENT FILTER ASSEMBLY

- STEP 1. Tag and unsolder two leads connected to top ① of FL1 and FL2 ②.
- STEP 2. Remove two crosstip screws, lockwashers, and flatwashers ③ securing filter assembly ④ to base ⑤. Raise filter assembly.
- STEP 3. Tag and unsolder two leads from bottom ⑥ of FL1 and FL2.
- STEP 4. Lift filter assembly out of base.

REPLACE VENT FILTER ASSEMBLY

- STEP 1. Solder tagged leads to bottom ⑥ of FL1 and FL2 ②.
- STEP 2. Place filter assembly ④ into position and secure to base ⑤ with two crosstip screws ③.
- STEP 3. Solder tagged leads to top ① of FL1 and FL2 ②.
- STEP 4. Perform operational check (para 3-5)

3-24. REPLACEMENT OF VENT FILTER ASSEMBLY (A1A1A1A2) (Cont.)



BOTTOM VIEW, COVER REMOVED

3-25. REPLACEMENT OF A4 FILTER ASSEMBLY (A1A1A1A4)

INITIAL SETUP

Tools

Tool Kit TK-17
Work Station, Static

Equipment Condition

Power off
VA bottom cover removed
(para 3-19)

Materials/Parts

Filter Assembly, A1A1A1A4, A3027295

CAUTION

The vehicular adapter contains components that are sensitive to damage by electrostatic discharge (ESD). Improper handling will result in component and assembly failure. Use extreme care when handling. Refer to DOD-HDBK-263 for proper handling procedures.

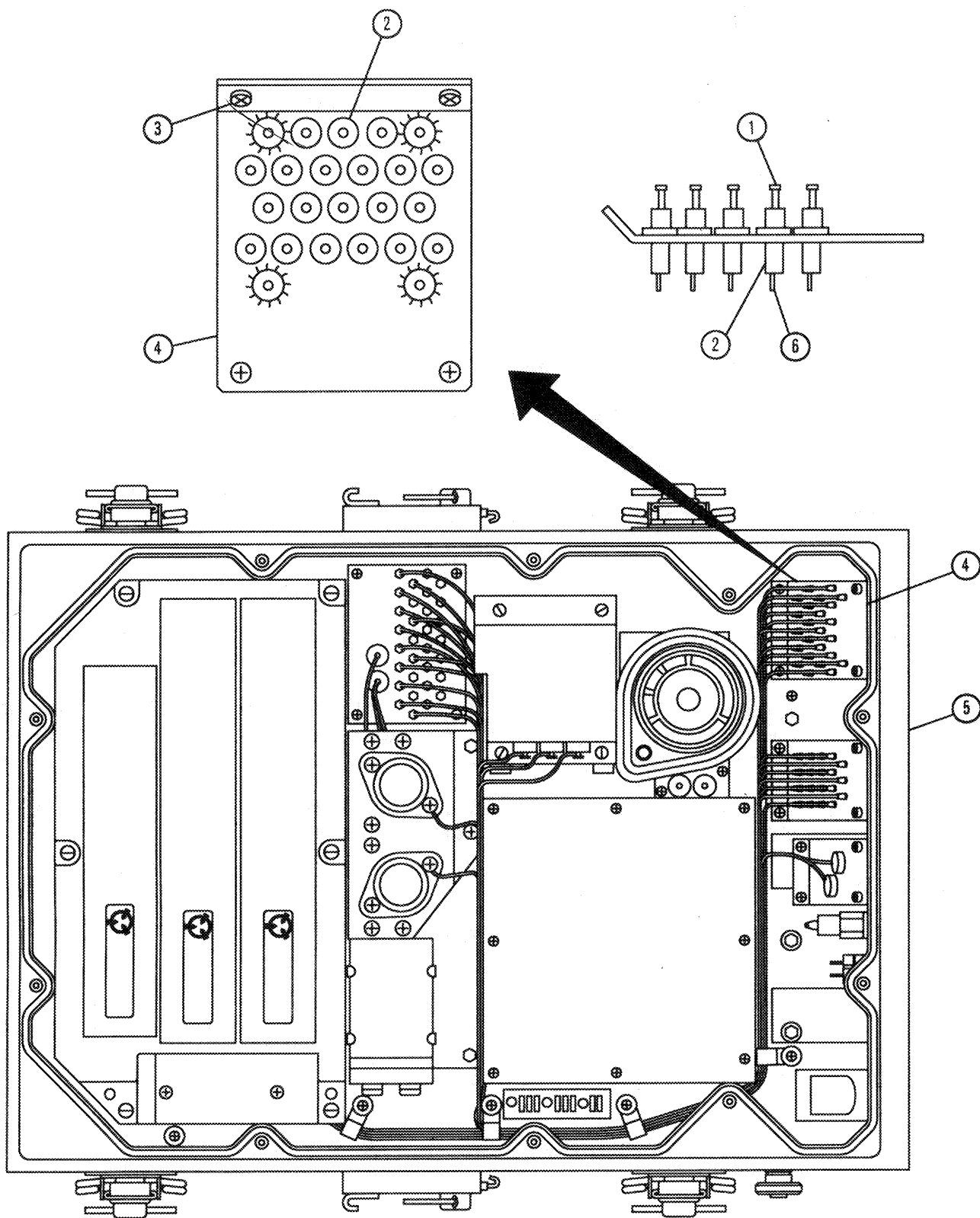
REMOVE A4 FILTER ASSEMBLY

- STEP 1. Tag and unsolder leads from top ① of FL1 through FL24 ②.
- STEP 2. Remove four crosstip screws, lockwashers, and flatwashers ③ securing filter assembly ④ to Base ⑤. Lift filter assembly ④ to gain access to bottom leads.
- STEP 3. Tag and unsolder leads from bottom ⑥ of FL1 through FL24. Remove filter assembly ④.

REPLACE A4 FILTER ASSEMBLY

- STEP 1. Solder tagged leads to bottom ⑥ of FL1 through FL24 ②.
- STEP 2. Place filter assembly ④ into base ⑤ and secure with four crosstip screws, lockwashers, and flatwashers ③.
- STEP 3. Solder tagged leads to top ① of FL1 through FL24.
- STEP 4. Perform operational check (para 3-5)

3-25. REPLACEMENT OF A4 FILTER ASSEMBLY (A1A1A1A4) (Cont.)



BOTTOM VIEW, COVER REMOVED

3-26. REPLACEMENT OF A5 FILTER ASSEMBLY (A1A1A1A5)

INITIAL SETUP

Tools

Tool Kit TK-17
Work Station, Static

Equipment Condition

Power off
VA bottom cover removed
(para 3-19)

Materials/Parts

Filter Assembly, A1A1A1A5, A3027292

CAUTION

The vehicular adapter contains components that are sensitive to damage by electrostatic discharge (ESD). Improper handling will result in component and assembly failure. Use extreme care when handling. Refer to DOD-HDBK-263 for proper handling procedures.

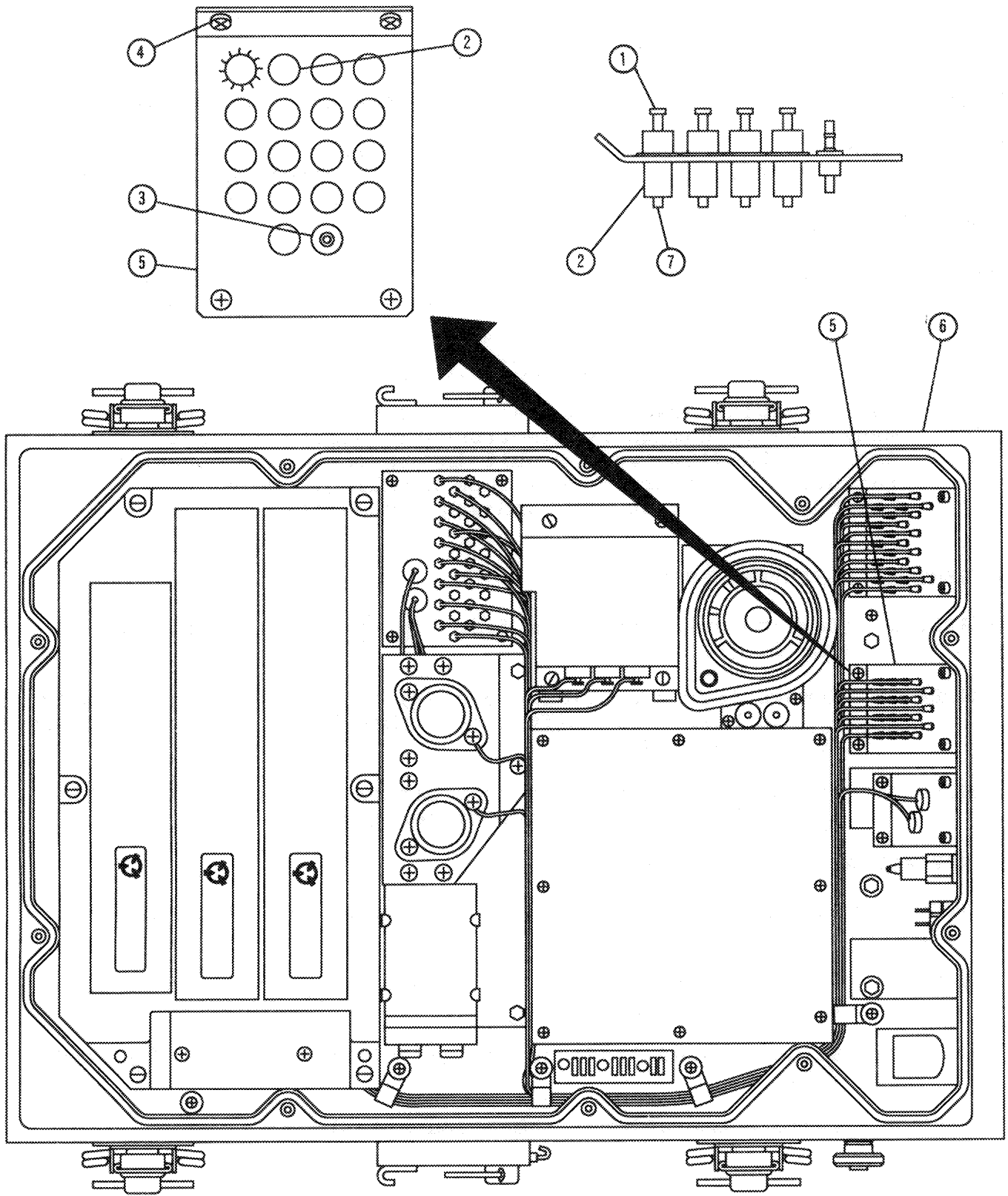
REMOVE A5 FILTER ASSEMBLY

- STEP 1. Tag and unsolder leads from top ① of FL1 through FL17 ② and E1 ③.
- STEP 2. Remove four crosstip screws ④ securing filter assembly ⑤ to base ⑥. Lift filter assembly to gain access to bottom leads.
- STEP 3. Tag and unsolder leads from bottom ⑦ of FL1 through FL17 and E1. Remove filter assembly ⑤.

REPLACE FILTER ASSEMBLY

- STEP 1. Solder tagged leads to bottom ⑦ of FL1 through FL17 ② and E1 ③.
- STEP 2. Place filter assembly ⑤ into base ⑥ and secure with four crosstip screws, lockwashers, and flatwashers ④.
- STEP 3. Solder tagged leads to top ① of FL1 through FL17 and E1.
- STEP 4. Perform operational check (para 3-5)

3-26. REPLACEMENT OF A5 FILTER ASSEMBLY (A1A1A1A5) (Cont.)



BOTTOM VIEW, COVER REMOVED

3-27. REPLACEMENT OF A6 FILTER ASSEMBLY (A1A1A1A6)

INITIAL SETUP

Tools

Tool Kit TK-17
Work Station, Static

Equipment Condition

Power off
VA bottom cover removed
(para 3-19)

Materials/Parts

Filter Assembly, A1A1A1A6, A3027297-1

CAUTION

The vehicular adapter contains components that are sensitive to damage by electrostatic discharge (ESD). Improper handling will result in component and assembly failure. Use extreme care when handling. Refer to DOD-HDBK-263 for proper handling procedures.

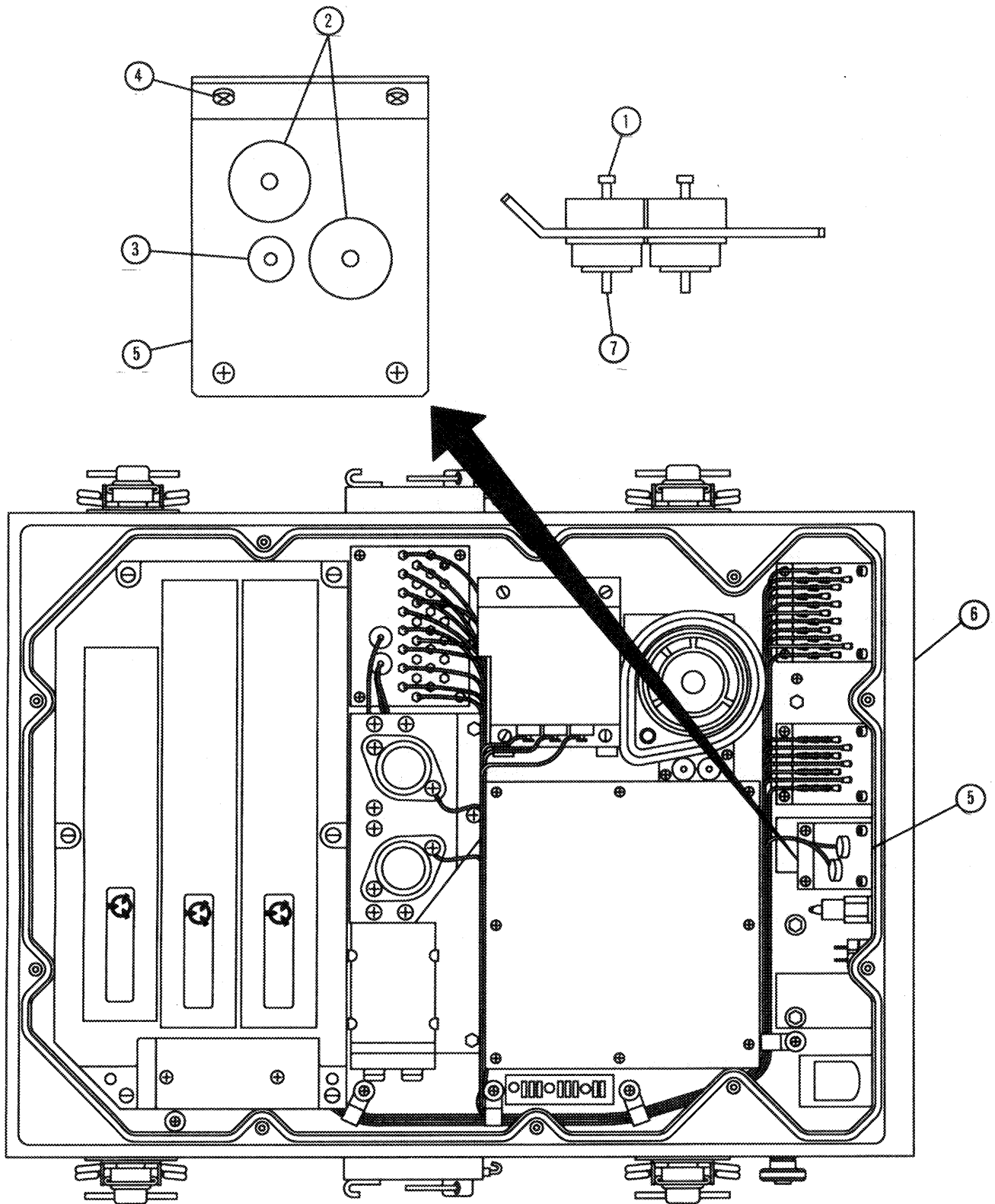
REMOVE A6 FILTER ASSEMBLY

- STEP 1. Tag and unsolder leads from top ① of FL1 ②, FL2 ②, and E1 ③.
- STEP 2. Remove four crosstip screws ④ securing filter assembly ⑤ to base ⑥. Lift filter assembly ⑤ to gain access to bottom leads.
- STEP 3. Tag and unsolder leads from bottom ⑦ of FL1 ②, FL2 ②, and E1 ③. Remove filter assembly ⑤.

REPLACE A6 FILTER ASSEMBLY

- STEP 1. Solder tagged leads to bottom ⑦ of FL1 ②, FL2 ②, and E1 ③.
- STEP 2. Place filter assembly ⑤ into base ⑥ and secure with four crosstip screws ④.
- STEP 3. Solder tagged leads to top ① of FL1 ②, FL2 ②, and E1 ③.
- STEP 4. Perform operational check (para 3-5)

3-27. REPLACEMENT OF A6 FILTER ASSEMBLY (A1A1A1A6) (Cont.)



BOTTOM VIEW, COVER REMOVED

3-28. REPLACEMENT OF MOTHERBOARD (A1A1A1A3)

INITIAL SETUP

Tools

Tool Kit TK-17
Work Station, Static

Materials/Parts

Motherboard, A1A1A1A3, A3030271

Equipment Condition

Power off
VA bottom cover removed
(para 3-19)
Control circuits module
removed (para 3-21)
PA interface removed (para
3-22)

CAUTION

The vehicular adapter contains components that are sensitive to damage by electrostatic discharge (ESD). Improper handling will result in component and assembly failure. Use extreme care when handling. Refer to DOD-HDBK-263 for proper handling procedures.

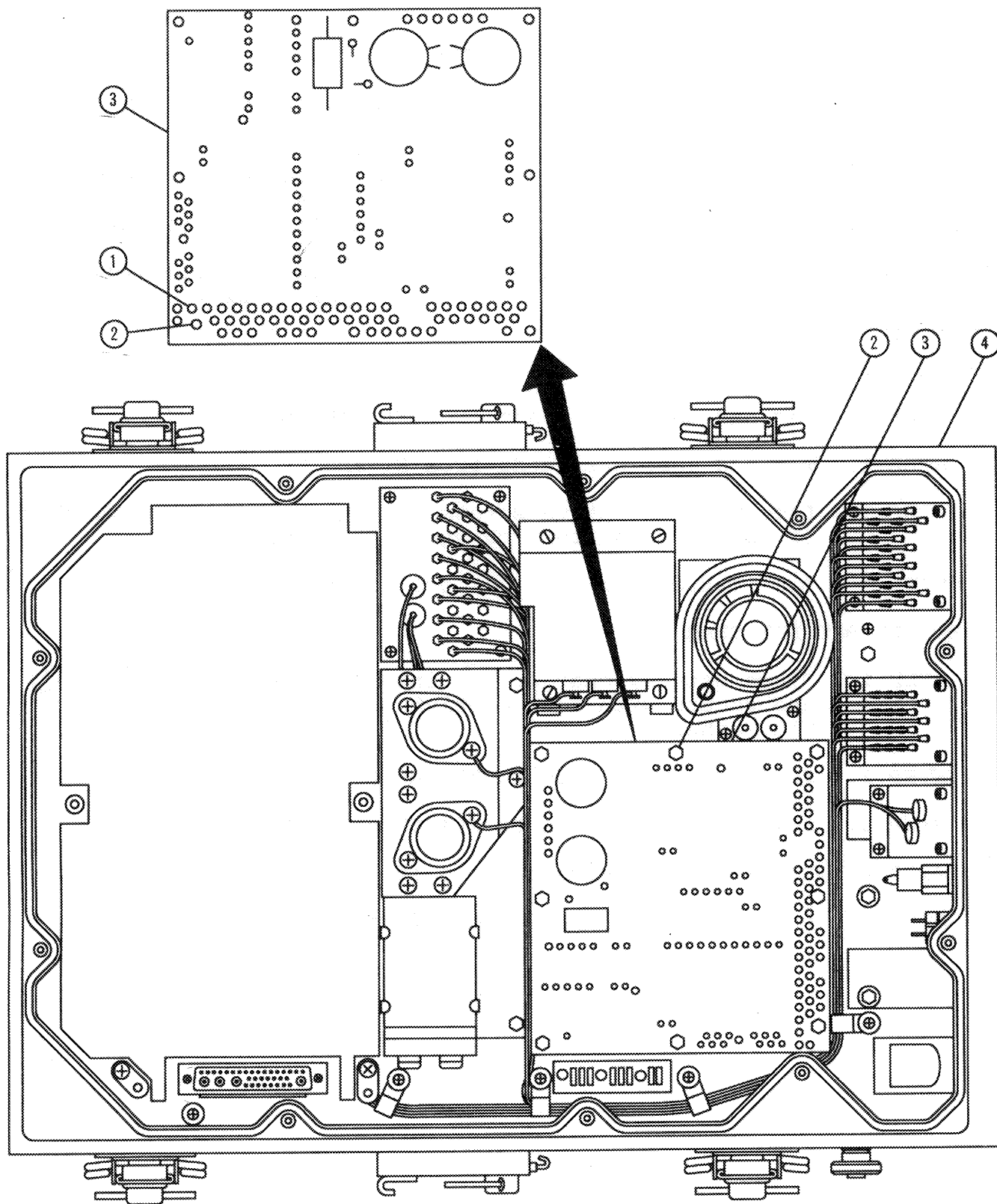
REMOVE MOTHERBOARD A1A1A1A3

- STEP 1. Tag and unsolder leads from turret terminals ① E1 through E61.
- STEP 2. Remove eight standoffs and lockwashers ② securing motherboard ③ to base ④.
- STEP 3. Lift motherboard ③ out of base ④.

REPLACE MOTHERBOARD A1A1A1A3

- STEP 1. Place motherboard ③ into position and secure to base ④ with eight standoffs and lockwashers ②.
- STEP 2. Solder tagged leads to turret terminals ① E1 through E61.
- STEP 3. Replace components removed in para 3-21 and 3-22.
- STEP 4. Perform operational check (para 3-5).

3-28. REPLACEMENT OF MOTHERBOARD (A1A1A1A3) (Cont.)



BOTTOM VIEW, A1A1A2, A1A1A5 REMOVED

3-29. REPLACEMENT OF BATTERY CHARGER A1A1A1A7

INITIAL SETUP

Tools

Tool Kit TK-17
Work Station, Static

Materials/Parts

Battery Charger, A1A1A1A7, A3031145

Equipment Condition

Power off
VA bottom cover removed
(para 3-19)
Control circuits removed
(para 3-21)
PA Interface removed
(para 3-22)

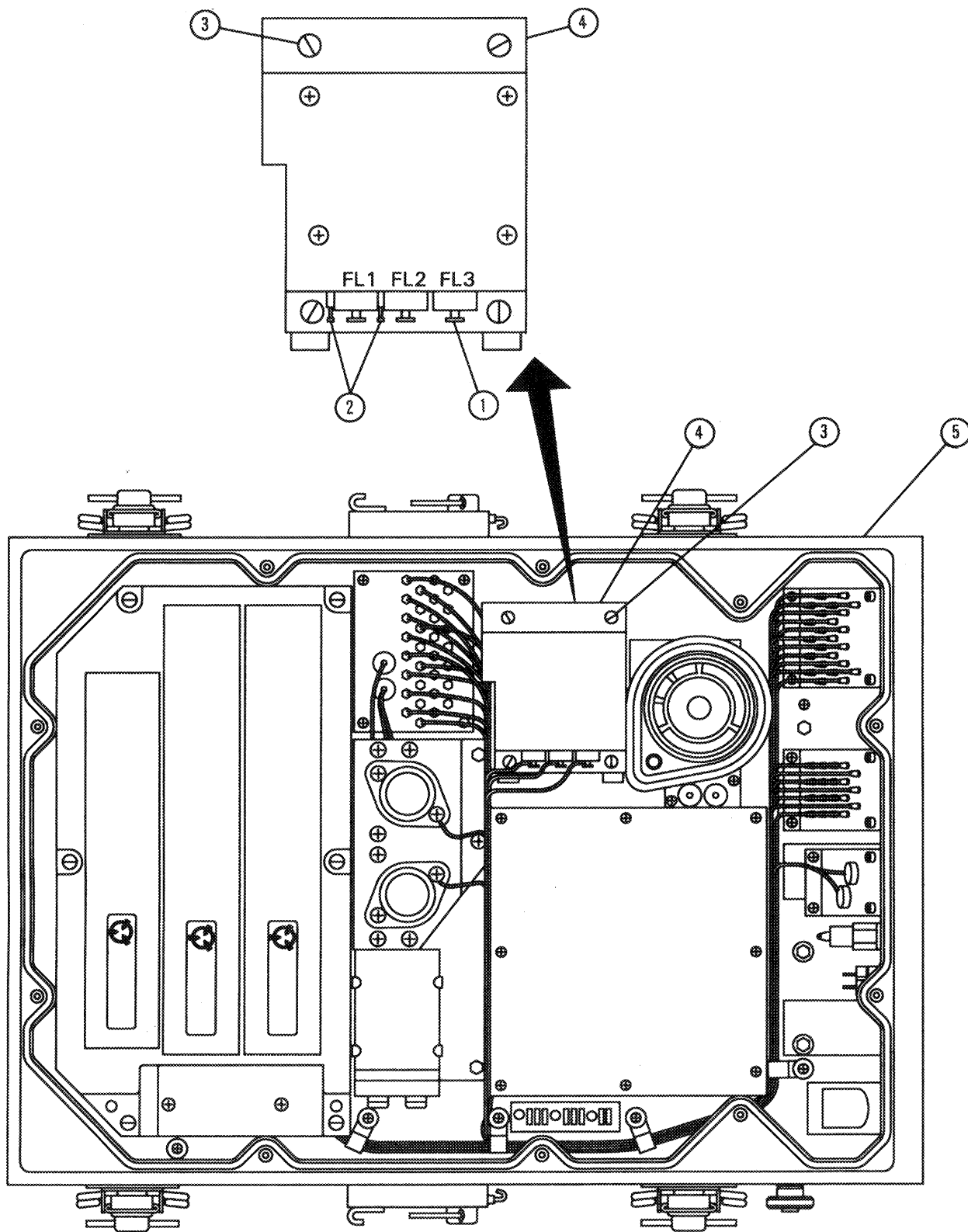
REMOVE BATTERY CHARGER

- STEP 1. Tag and unsolder leads from FL1 through FL3 ①.
- STEP 2. Tag and unsolder leads from E1 and E2 ②.
- STEP 3. Loosen four captive screws, lockwashers, and flatwashers ③ securing battery charger ④ to Base ⑤.
- STEP 4. Lift battery charger ④ out of base ⑤.

REPLACE BATTERY CHARGER

- STEP 1. Place battery charger ④ into position in the base ⑤ and secure with four captive screws, lockwashers, and flatwashers ③.
- STEP 2. Solder tagged leads to E1 and E2 ②.
- STEP 3. Solder tagged leads to FL1 through FL3 ①.
- STEP 4. Replace components removed in para 3-21 and 3-22.
- STEP 5. Perform operational check (para 3-5)

3-29. REPLACEMENT OF BATTERY CHARGER (A1A1A7) (Cont.)



BOTTOM VIEW, MODULES REMOVED

3-30. REPLACEMENT OF A1 CIRCUIT CARD ASSEMBLY (A1A1A1A7A1)

INITIAL SETUP

Tools

Tool Kit TK-17
Work Station, Static

Equipment Condition

Battery charger removed
(para 3-29)

Materials/Parts

Battery Charger, A1A1A1A7A1, A3031070

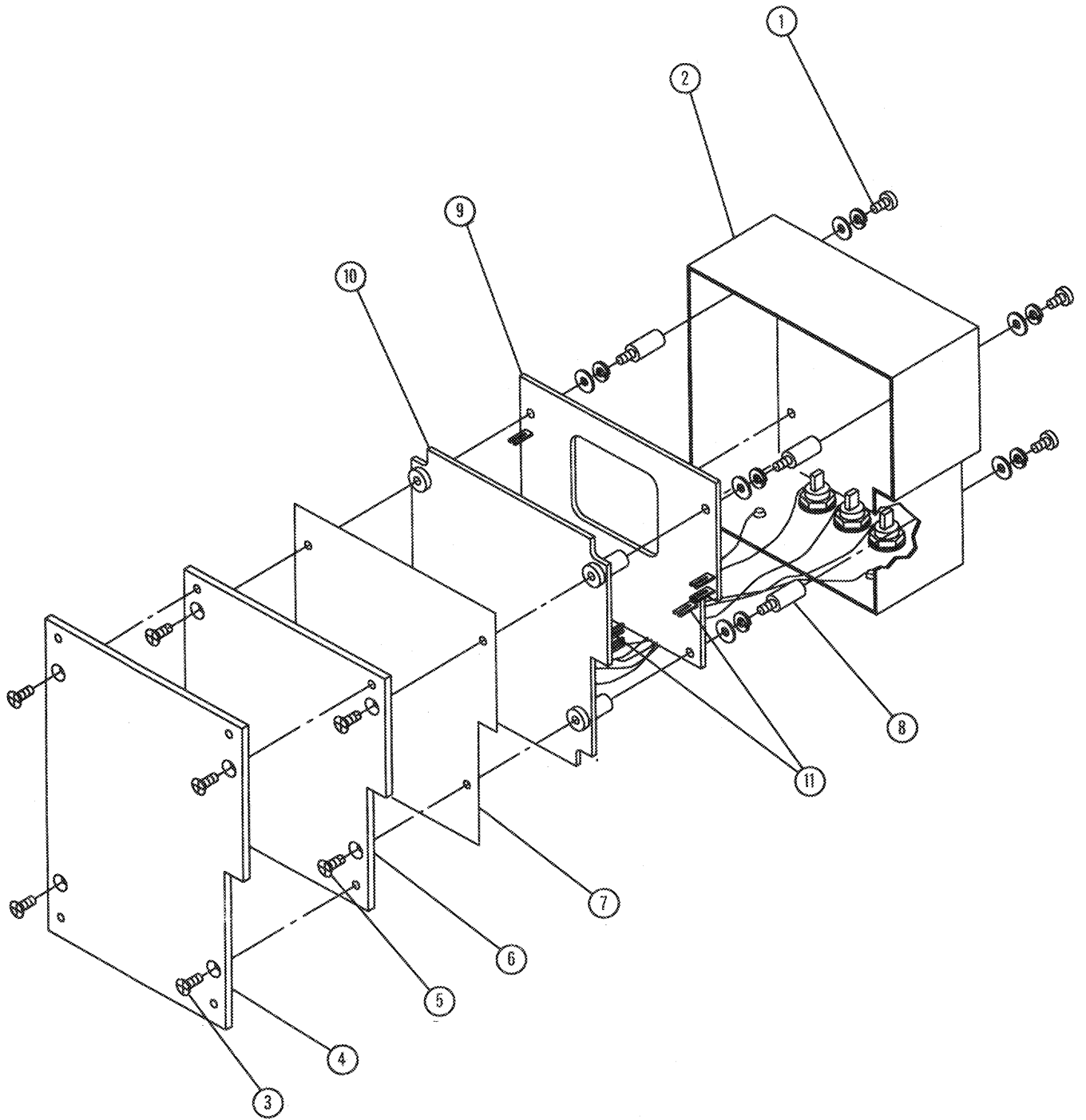
REMOVE A1 CCA

- STEP 1. Remove and retain four screws, lockwashers, and flat washers (1) securing cover (2) to battery charger.
- STEP 2. Remove four screws (3) securing heat sink (4) to bottom of battery charger. Remove heat sink (4).
- STEP 3. Remove four screws (5) securing bottom cover (6) to Battery Charger. Remove bottom cover (6) and insulator (7).
- STEP 4. Remove four stand-off studs (8) securing A2 CCA (9) to A1 CCA (10). Gently separate the connectors (11) to separate the CCAs.
- STEP 5. Disconnect and tag five leads connecting A1 CCA to the cover.

REPLACE A1 CCA

- STEP 1. Solder tagged lead from cover (2) to A1 CCA 10.
- STEP 2. Place insulator (7) and bottom cover (6) on A1 CCA and secure with four screws (5).
- STEP 3. Place heat sink (4) on bottom cover (6) and secure with four screws (3).
- STEP 4. Carefully engage A1 and A2 connectors (11) and slide the CCAs together.
- STEP 5. Replace four stand-off studs (8) to secure A2 CCA (9) to A1 CCA (10).
- STEP 6. Replace cover (2) and secure with four screws, lockwashers, and flatwashers (1).
- STEP 7. Install battery charger para 3-29.
- STEP 8. Perform operational check (para 3-5).

3-30. REPLACEMENT OF A1 CIRCUIT CARD ASSEMBLY (A1A1A1A7A1) (Cont.)



3-31. REPLACEMENT OF A2 CIRCUIT CARD ASSEMBLY (A1A1A1A7A2)

INITIAL SETUP

Tools

Tool Kit TK-17
Work Station, Static

Equipment Condition

Battery Charger removed
(para 3-29)

Materials/Parts

Battery Charger, A1A1A1A7A2, A3021071

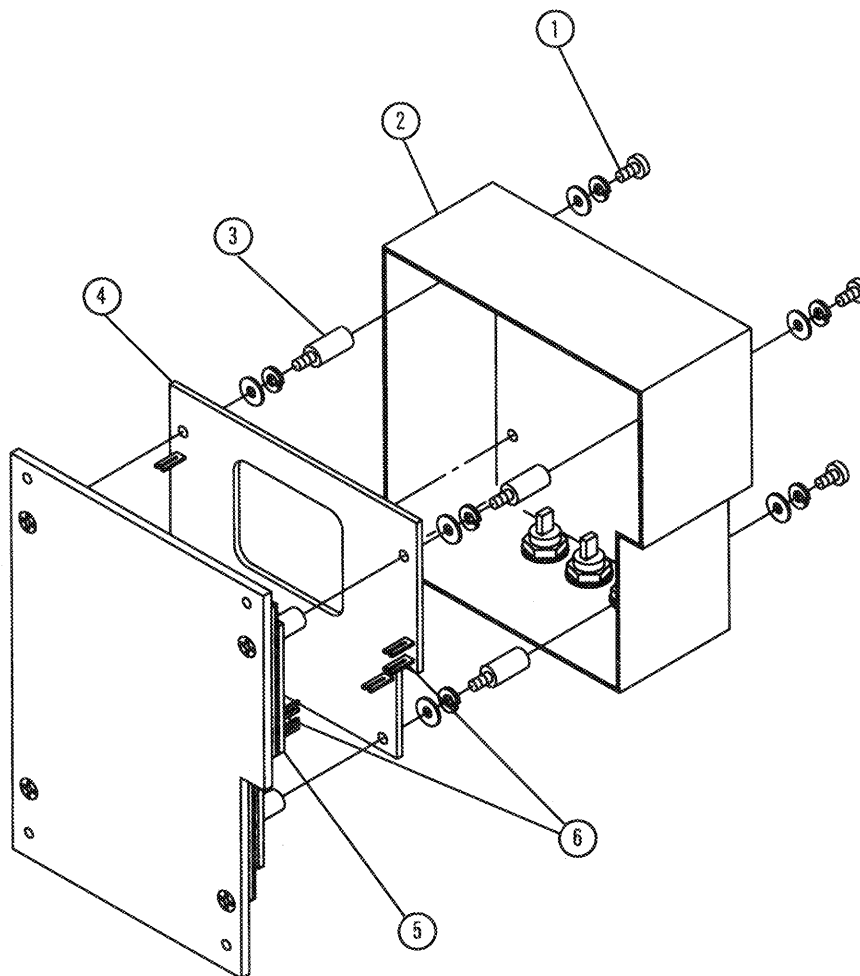
REMOVE A2 CCA

- STEP 1. Remove and retain four screws, lockwashers, and flatwashers ① securing cover ② to Battery Charger.
- STEP 2. Remove four stand-off studs ③ securing A2 CCA ④ to A1 CCA ⑤.
- STEP 3. Gently separate the connectors ⑥ to separate the CCA. Lift A2 CCA ④ away from A1 CCA ⑤.

REPLACE A2 CCA

- STEP 1. Carefully engage A2 CCA ④ connectors ⑥ with A1 CCA ⑤ and slide the CCAs together.
- STEP 2. Replace four stand-off studs ③ to secure A2 CCA ④ to A1 ⑤ CCA.
- STEP 3. Place cover ② on battery charger and secure with four screws, lockwashers, and flatwashers ①.
- STEP 4. Install battery charger para 3-29.
- STEP 5. Perform operational check (para 3-5).

3-31. REPLACEMENT OF A2 CIRCUIT CARD ASSEMBLY A1A1A1A7A2 (Cont.)



3-32. REPLACEMENT OF BASE-MOUNTED COMPONENTS (A1A1A1Q1/Q2)

INITIAL SETUP

Tools

Tool Kit TK-17
Work Station, Static

Equipment Condition

Power off
VA bottom cover removed
(para 3-19)

Materials/Parts

MOSFET Switches, A1A1A1Q1/A1A1A1Q2, A3030327-902

CAUTION

MOSFET switches A1A1A1Q1/Q2 are sensitive to damage by electrostatic discharge (ESD). Improper handling will result in component and assembly failure. Use extreme care when handling. Refer to DOD-HDBK-263 for proper handling procedures.

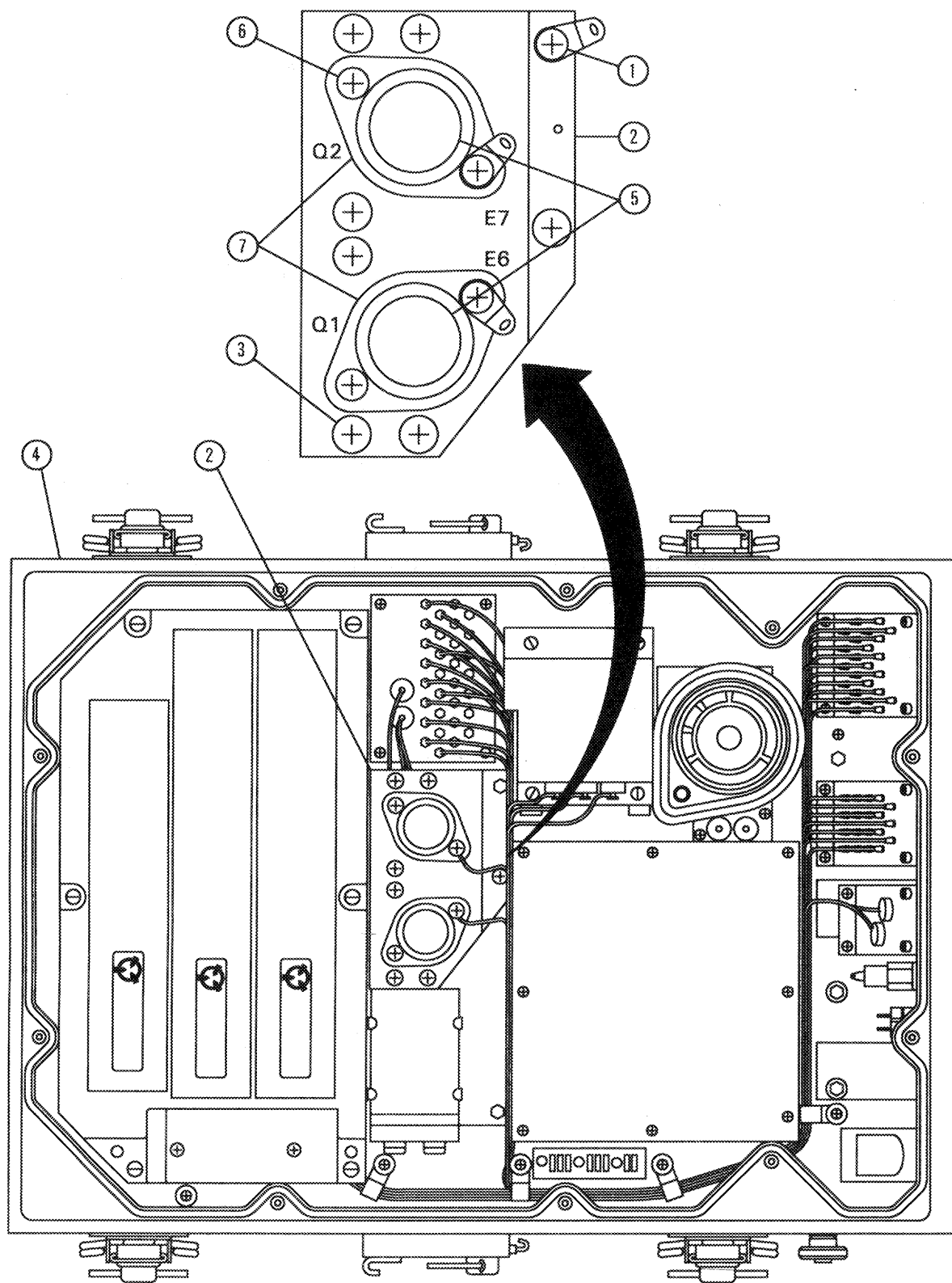
NOTE

If insulators are serviceable, keep and reuse them when replacing component. Insulators should be checked to ensure that there are no cracks, burns, or other evidence that the insulating properties have deteriorated. Replace if necessary.

REMOVE MOSFET SWITCH Q1/Q2

- STEP 1. Remove terminal lug ① from heatsink plate ②.
- STEP 2. Remove seven crosstip screws, lockwashers, and flatwashers ③ securing heatsink plate to base ④.
- STEP 3. Turn the heatsink over. On the component to be replaced ⑤, tag and unsolder wires from the component leads.
- STEP 4. Remove screws ⑥ (through the heatsink plate), wire terminal, flatwashers, screw insulator, and nuts.
- STEP 5. Lift the component and mica insulator ⑦ from the heatsink plate.

3-32. REPLACEMENT OF BASE-MOUNTED COMPONENTS (A1A1A1Q1/Q2) (Cont.)



BOTTOM VIEW, COVER REMOVED

3-32. REPLACEMENT OF BASE-MOUNTED COMPONENTS (A1A1A1Q1/Q2) (Cont.)

REPLACE MOSFET SWITCH Q1/Q2

STEP 1. Place an insulator ⑦ (mica or similar type) on the component ⑤ and position it on the heatsink plate ②.

NOTE

Make sure that component is positioned for the correct lead orientation, as shown on the heatsink plate, and that the leads are properly positioned.

STEP 2. Insert component lead insulators over the component wire leads and solder the leads in place.

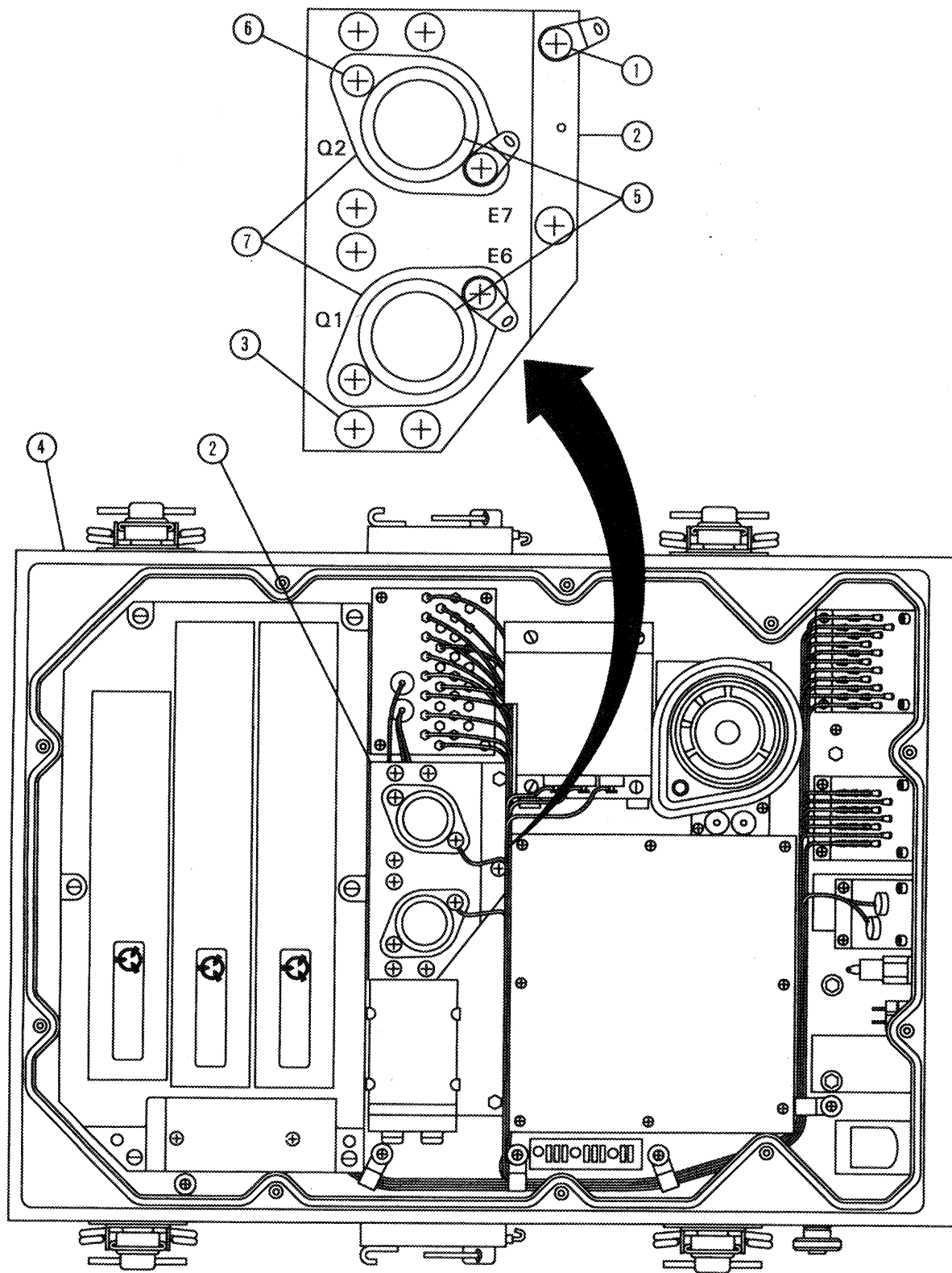
STEP 3. Place the screws ⑥ through the heatsink plate and install screw insulators, flatwasher, wire terminal, and nuts.

STEP 4. Place the heatsink plate into position in the base ④ and secure with seven crosstip screws, lockwashers, and flatwashers ③.

STEP 5. Connect terminal lug ① to heatsink plate.

STEP 6. Perform operational check (para 3-5).

3-32. REPLACEMENT OF BASE-MOUNTED COMPONENTS (A1A1A1Q1/Q2) (Cont.)



BOTTOM VIEW, COVER REMOVED

3-33. REPLACEMENT OF FAN (A1A1A1B1)

INITIAL SETUP

Tools

Tool Kit TK-17
Work Station, Static

Equipment Condition

Power off
VA bottom cover removed (para 3-19)
PA interface cover removed
(para 3-22)

Materials/Parts

Blower, Tubeaxial, A1A1A1B1, A3030323

REMOVE FAN

- STEP 1. Remove two crosstip screws, lockwashers, and flatwashers ① securing A1A1A1A2 ② to base ③ and raise A1A1A1A2 filter assembly.
- STEP 2. Unsolder two wires from back side of A1A1A1A2FL1 (red) and FL2 (black).
- STEP 3. Turn base over and remove four crosstip screws ④ securing fan ⑤ to base.
- STEP 4. Remove grid plate and fan ⑤ from base.

REPLACE FAN

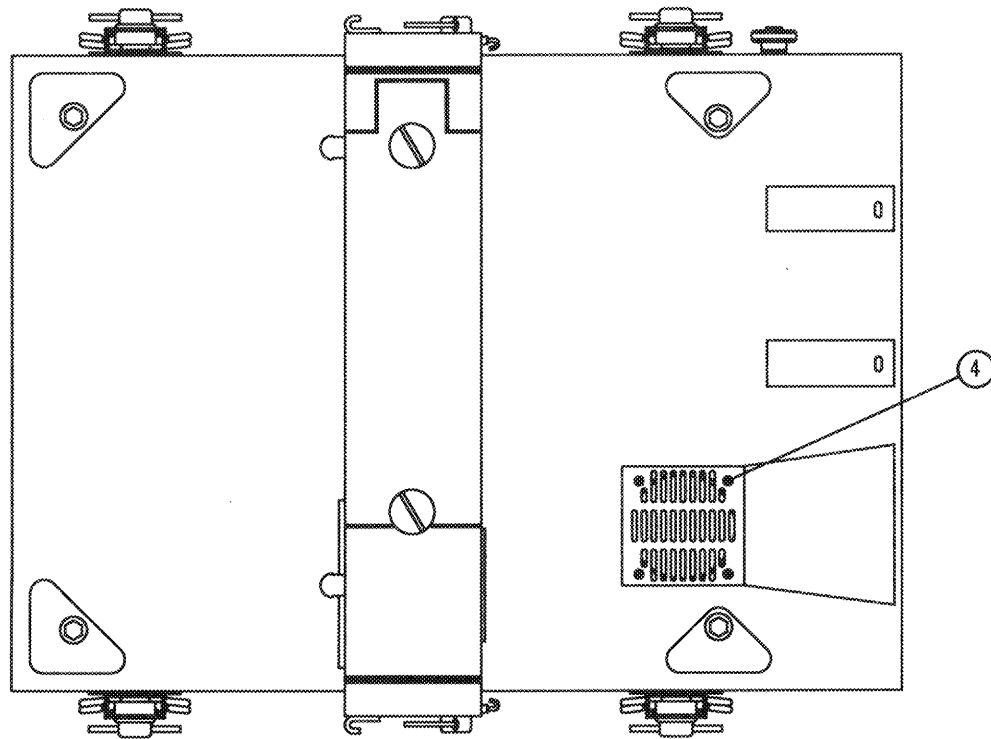
- STEP 1. Feed two wires from fan through the hole between the fan housing in base ③ and the filter assembly.

NOTE

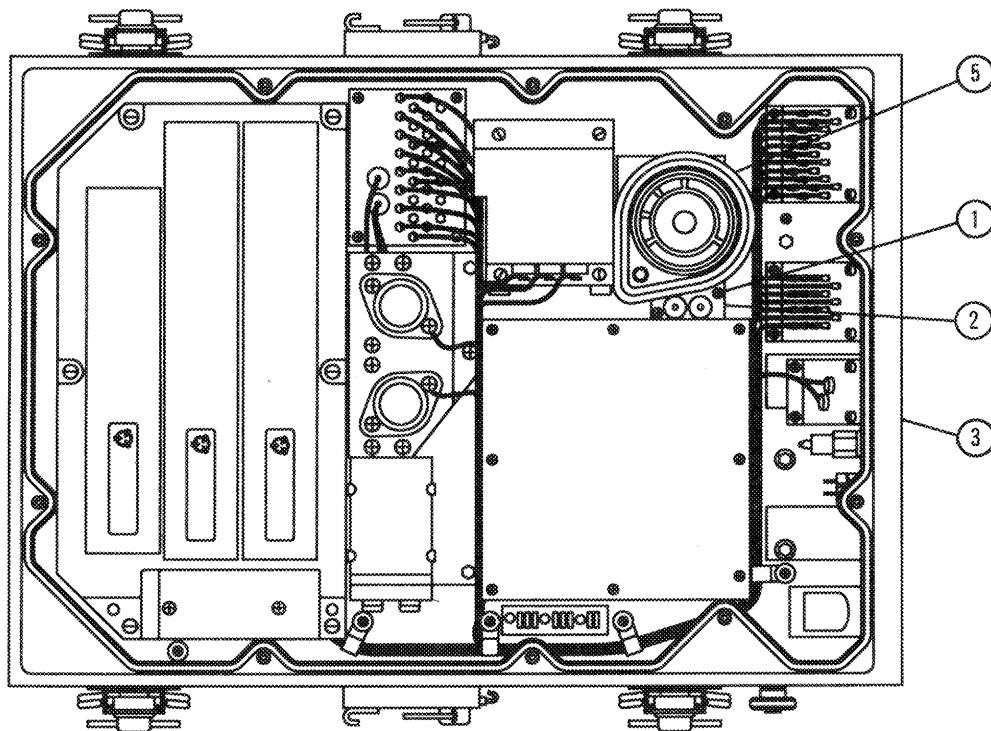
Ensure wires to FL1 and FL2 are not mashed between filter mounting plate and chassis.

- STEP 2. From bottom of base ③, insert fan ⑤ into opening. Hold in place, turn base over, insert grid plate, and secure fan to base with four crosstip screws ④.
- STEP 3. Solder wires to FL1 (red) and FL2 (black) of A1A1A1A2 filter assembly ②.
- STEP 4. Replace two crosstip screws, lockwashers, and flatwashers ① to secure A1A1A1A2 to base.
- STEP 5. Perform assembly procedures para 3-22 and 3-19.
- STEP 6. Perform operational check (para 3-5).

3-33. REPLACEMENT OF FAN (A1A1A1B1) (Cont.)



TOP VIEW



BOTTOM VIEW, COVER REMOVED

APPENDIX A REFERENCES

A-1. SCOPE

This appendix lists all forms, field manuals, technical manuals and miscellaneous publications referenced in this manual.

A-2 FORMS

Consolidated Index of Army
Publications and Blank Forms..... DA Pam 25-30

The Army Maintenance Management System (TAMMS)..... DA Pam 738-750

Navy Supply Publication 2002 Navy Stock List of
Publications and Forms..... NAVSUP 2002

Transportation Discrepancy Report (TDR)
(SF 361)..... NAVSUPINST 4610.33C

Maintenance Data Collection System..... AFM 66-267

Procedures for Destruction of Electronics Materiel
to Prevent Enemy Use (Electronics Command)..... TM 750-224-2

Reporting of Discrepancies (RPD) (SF 364)..... SECNAVINST 4355.18

Preservation, Packaging, and Packing of Military
Suppliers and Equipment Volume 2..... NAVSUP PUB 503

Release for Shipment of Ground Communication
Electronics Cryptographic Equipment..... AFR 67-31

Issue of Ships Maintenance and Material
Managements (3-M) Manual..... OPNAVINST 4790-4A

Product Quality Deficiency Report..... SF 368

Operator, Unit, Intermediate Direct Support And
General Support Maintenance Manual Including
Repair Parts And Special Tools List For Test Set,
Vehicular Adapter, TS-4252/GRC-215
(NSN 6625-01-263-5485) TM 11-6625-3212-14&P/
ET901-BA-OMP-010/TS4252-GRC215/
TO 33D7-50-1321-1

Organizational, Direct Support And General
Support Maintenance Repair Parts And Special
Tools List (Including Repair Parts And
Special Tools) For Vehicular Adapter,
MT-6452/GRC-215
(NSN 5975-01-207-8991) TM 11-5895-1321-24P/
EE005-LC-PLD-010/W110-MT6452/
TO 31R2-2GRC215-54

Electrostatic Discharge Control Handbook for
Protection of Electrical and Electronic Parts,
Assemblies and Equipment (Excluding Electrically
Initiated Explosive Devices) metric DOD-HDBK-263

Operator's And Unit Maintenance Manual
Radio Set AN/GRC-215
(NSN 5895-01-156-0456) TM 11-5895-1220-12/
EE160-RG-OMI-010/W110-GRC215/
TO 31R2-2GRC215-1

APPENDIX B MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

B-1. GENERAL

This appendix provides a summary of the maintenance operations for the Mounting Base, Electrical Equipment MT-6452/GRC-215. It authorizes levels of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

B-2. MAINTENANCE FUNCTION

Maintenance functions will be limited to and defined as follows:

- a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.
- b. Test. To verify serviceability and to detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.
- c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.
- d. Adjust. To maintain, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to the specified parameters.
- e. Aline. To adjust specified variable elements of an item to bring about optimum or desired performance.
- f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipments used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

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

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

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

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

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

B-3. COLUMN ENTRIES

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

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

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

d. Column 4, Maintenance Level. Column 4 specifies, by the listing of a work time figure in the appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance levels, appropriate work time figures will be shown for each category. The number of task-hours specified by the work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item, or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, troubleshooting time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. Subcolumns of column 4 are as follows:

UNIT

- C - Operator/Crew
- O - Organizational/Unit

INTERMEDIATE

- F - Direct Support
- H - General Support
- L - Special Repair Activity (SRA)

DEPOT

- D - Depot

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

f. Column 6, Remarks. Column 6 contains an alphabetic code which leads to the remark in section IV, Remarks, which is pertinent to the item opposite the particular code.

B-4. TOOL AND TEST EQUIPMENT REQUIREMENTS (SECT. III)

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

b. Maintenance Level. The codes in this column indicate the maintenance level allocated to tool or test equipment.

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

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

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

B-5. REMARKS (SECT. IV)

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

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

**SECTION II MAINTENANCE ALLOCATION CHART
FOR**

MT-6452/GRC-215

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINT. FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQPT.	(6) REMARKS	
			UNIT		INTERMEDIATE		DEPOT			
			C	O	F	H	D			
00	MOUNTING BASE ELECTRICAL EQUIPMENT MT-6452/GRC-215 (A3023796)	REPLACE TEST TEST REPAIR REPAIR OVERHAUL		0.1 0.1 0.1		2.0 1.0		50.0	1 3-13 1 2,6 TBD	A B C D,H C
01	VEHICULAR ADAPTER A1 (A3023806)	REPAIR				1.0				D
0101	TRAY MOUNT A1A2 (A3026058)	REPAIR				0.5			2	
0102	MOUNTING BASE A1A1 (A3026059)	REPAIR				1.0				D
010201	BASE ASSEMBLY A1A1A1 (A3026060)	REPAIR				1.0				D
01020101	MOTHERBOARD CCA A1A1A1A3 (A3030271)	REPAIR				1.0				D
01020102	VENT ASSEMBLY FILTER A1A1A1A2 (A3030268)	REPAIR				1.0				D
01020103	CONNECTOR ASSEMBLY, FILTER A1A1A1A1 (A3027298-1)	REPAIR				1.0				D
01020104	FILTER ASSEMBLY A1A1A1A4 (A3027295)	REPAIR				1.0				D
01020105	FILTER ASSEMBLY A1A1A1A5 (A3027292)	REPAIR				1.0				D
01020106	FILTER ASSEMBLY A1A1A1A6 (A3027297-1)	REPAIR				1.0				D
01020107	BATTERY CHARGER A1A1A1A7 (A3031145)	REPAIR				1.0				D
010201070	BATTERY CHARGER CCA #1 A1A1A1A7A1 (A3031070)	REPAIR				1.0				D
0102010702	BATTERY CHARGER CCA #2 A1A1A1A7A2 (A3031071)	REPAIR				1.0				D

**SECTION II MAINTENANCE ALLOCATION CHART
FOR**

MT-6452/GRC-215

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINT. FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQPT.	(6) REMARKS
			UNIT		INTERMEDIATE		DEPOT		
			C	O	F	H	D		
010202	CONTROL CIRCUITS MODULE A1A1A2 (A3026061)	REPLACE TEST REPAIR				0.2 L(1.5) L(1.5)		2.6 TBD TBD	F E,F E,F,I
01020201	CONTROL CIRCUIT CCA A1A1A2A1 (A3027301)	REPAIR				L(1.5)			D,E,F
010203	P.A. INTERFACE MODULE A1A1A5 (A3026064)	REPLACE TEST REPAIR				0.2 L(1.5) L(1.0)		2.6 TBD TBD	F E,F E,F,I
02	SYNTHESIZER A2 (A3024340)	REPLACE TEST REPAIR				0.2		2.6 TBD 2.0	F,G F F,I
0201	LOOP 1/SUM LOOP 1 ASSY A2A1 (A3024344)	REPAIR					2.0		D,F,I
020101	LOOP 1 CCA A2A1A1 (A3024346)	TEST REPAIR					1.0 1.0	TBD TBD	F F,I
020102	SUM LOOP 1 CCA A2A1A2 (A3024350)	TEST REPAIR					1.0 1.0	TBD TBD	F F,I
0202	LOOP 2/SUM LOOP 2 ASSY A2A2 (A3024354)	REPAIR					2.0		D,F,I
020201	LOOP 2 CCA A2A2A1 (A3024356)	TEST REPAIR					1.0 1.0	TBD TBD	F F,I
020202	SUM LOOP 2 CCA A2A2A2 (A3024360)	TEST REPAIR					1.0 1.0	TBD TBD	F F,I
0203	LOOP 3/REFERENCE ASSY A2A3 (A3024364)	REPAIR					2.0		D,F,I
020301	LOOP 3 CCA A2A3A1 (A3024366)	TEST REPAIR					1.0 1.0	TBD TBD	F F,I
020302	REFERENCE CCA A2A3A2 (A3024370)	TEST REPAIR					1.0 1.0	TBD TBD	F F,I
0204	CHASSIS ASSEMBLY A2A4 (A3024374)	REPAIR					1.0		D

**SECTION III TOOL AND TEST EQUIPMENT REQUIREMENTS
FOR**

MT-6452/GRC-215

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	O	TOOL KIT, TK-101/G	5180-00-064-5178	
2	H	TOOL KIT, ELEC., TK-17 (INCL. METRIC)	5180-01-195-0855	JENSEN JTK-17RM
3	H	TEST SET, VEHICULAR ADAPTER TS-4252/GRC-215	6625-01-263-5485	MX 950576-801
4	H	MULTIMETER, DIGITAL AN/USM-486	6625-01-145-2430	FLUKE 8050A-01
5	H	POWER SUPPLY PP-8202/G *	6130-00-160-0827	HP 6274B
6	H	WORK STATION, STATIC	4940-01-084-3458	3M 8021
7	H	RF GENERATOR SG-1170/U	6625-01-120-3501	WAVETEK3001-608
8	H	FREQUENCY COUNTER AN/USM-459	6625-01-061-8928	HP 5328-010/ 011/030/041
9	H	OSCILLOSCOPE/MEMORY OS-262(P)/U	6625-01-007-9416	TEK 7623A
10	H	PLUG-IN AMP AM-6785/U	6625-00-361-5318	TEK 7A26
11	H	PROBE	6625-01-014-0391	TEK 010-6053-13
12	H	PLUG-IN T.B. TD-1159/U	6625-00-261-5139	TEK 7B53A
13	H	KIT, TEST LEAD (FOR FLUKE)	6625-00-444-4041	
		* PP-8214/G (NSN 6130-00-150-0028) PROVIDES IDENTICAL CAPABILITY WHEN SOURCE POWER IS 230V, 50 CYCLE. AIR FORCE USE ONLY.		

SECTION IV REMARKS

MOUNTING BASE, ELECTRICAL EQUIPMENT
MT-6452/GRC-215

<u>REFERENCE CODE</u>	<u>REMARKS</u>
A	IF UNIT MAINTENANCE REPLACES THE MOUNTING BASE AND THE FAST SYNTHESIZER A2 IS DETERMINED TO BE FAULTY (VIA BIT), THE LRU SHOULD BE SO MARKED SINCE INTERMEDIATE MAINTENANCE HAS LITTLE ADDITIONAL INDICATION OF FAULTY SYNTHESIZER WITHOUT THE ECCM BIT CAPABILITY AVAILABLE.
B	BUILT-IN-TEST (BIT). TESTED AS PART OF NEXT HIGHER ASSEMBLY.
C	MMCT FAULT ISOLATES AT TEAM TERMINAL TO DEFECTIVE SYNTHESIZER A2 AND VEHICLE ADAPTER USING COMBINATION ECCM BIT/FAULT LIGHT AND REPLACES DEFECTIVE UNIT. INTERMEDIATE (GS) MAINTENANCE REPAIRS VEHICLE ADAPTER TO PIECE LEVEL EXCEPT FOR TWO SUBASSEMBLIES: CONTROL CIRCUITS MODULE A1A1A2 AND P.A. INTERFACE ASSY A1A1A5 WHICH ARE REPLACED.
D	TEST/REPAIR AS PART OF NEXT HIGHER ASSEMBLY.
E	SPECIALIZED REPAIR ACTIVITY (SRA). NOTE: INITIAL SRA REPAIR WILL BE PERFORMED BY THE CONTRACTOR. RETURN DEFECTIVE UNIT(S) TO DEPOT.
F	ELECTRO STATIC SENSITIVE COMPONENTS.
G	MOBILE MAINTENANCE CONTACT TEAM (MMCT) MAY REMOVE/REPLACE AT TEAM TERMINAL.
H	UNIT LEVEL REPLACES DEFECTIVE MOUNTING BASE AND FRONT PANEL CONNECTOR COVERS, FUSES, LAMP, AND FASTENERS.
I	PIECE PART REPAIR.

APPENDIX C EXPENDABLE/DURABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

C-1. SCOPE

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

C-1.1. 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. E").

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

- C - Operator/Crew
- O - Unit Maintenance
- F - Intermediate Direct Support Maintenance
- H - Intermediate General Support Maintenance
- L - Special Repair Activity (SRA)

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

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

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

Section II. EXPENDABLE/DURABLE SUPPLIES AND MATERIALS TABLE

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
1	O	6850-00-105-3084	TRICHLOROTRIFLUOROETHANE	oz

GLOSSARY OF ABBREVIATIONS, ACRONYMS AND UNUSUAL TERMS

Section I. ABBREVIATIONS AND ACRONYMS

A

ac alternating current
ASSY Assembly
ATU Antenna Tuning Unit

B

BIT Built In Test
BITE Built In Test Equipment

C

CCA Circuit Card Assembly
CMOS Complimentary Metal-Oxide Semiconductor

D

dc direct current

E

ECCM Electronic Counter-Countermeasure
EIR Equipment Improvement Recommendations
EMP Electromagnetic Pulse
ESD Electrostatic Discharge

F

FREQ Frequency

G

GND Ground

H

Hz Hertz

I, J

IAW In Accordance With
IF Intermediate Frequency, or
..... Injection Frequency
I/O Input/Output

GLOSSARY (Cont.)

K

kHz kiloHertz

L

LED Light Emitting Diode
LRU Line Replaceable Unit

M, N, O, P, Q

MAC Maintenance Allocation Chart
MDCS Maintenance Data Collection Subsystem
MHz MegaHertz
MOSFET Metal-Oxide-Semiconductor Field Effect Transistor
MWO Modification Work Order
NI & RP Numerical Index and Requirements Table
PA Power Amplifier
PTT Push To Talk (Key)
PMCS Preventive Maintenance Checks and Services
PWM Pulse Width Modulator
PWR Power

R

R/T Receiver/Transmitter
RCS Remote Control Set
RF Radio Frequency
RFO Reference Frequency Oscillator
ROD Report of Discrepancy

S, T

SYS System
TMDE Test, Measurement, and Diagnostic Equipment
TT Team Terminal
TTL Transistor-Transistor Logic
TDR Transportation Discrepancy Report

U

UUT Unit Under Test

V, W, X, Y, Z

VA Vehicular Adapter
Vac Voltage, alternating current
Vcc Voltage, collector circuit
Vdc Volts, direct current

GLOSSARY (Cont.)

Section II. DEFINITION OF UNUSUAL TERMS

AUDIO - Frequencies which can be heard by the human ear, usually between 15 Hz and 20 kHz.

HERTZ - A unit of frequency equal to one cycle per second.

INTERFACE - A device or equipment making possible interoperation between two circuits or systems.

INTERLOCK - A circuit in which the action of one portion of the circuit is dependent upon conditions of an associated circuit.

MANPACK - Man-portable communication set of equipment.

SYNTHESIZER - A device that can generate a number of controlled frequencies for multichannel communications equipment.

TRICHLOROTRIFLUOROETHANE - A cleaning solution.

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

SOMETHING WRONG WITH THIS PUBLICATION?

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)
 Commander
 Stateside Army Depot
 ATTN: AMSTA-US
 Stateside, N.J. 07703-5007

DATE SENT
 10 July 1975

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

BE EXACT... PIN-POINT WHERE IT IS

PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.
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IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

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

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

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

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

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

REASON: To replace the cover plate.

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

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

TEAR ALONG PERFORATED LINE

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER
 SSG I. M. DeSpirito 999-1776

SIGN HERE

FILL IN YOUR
UNIT'S ADDRESS

FOLD BACK

DEPARTMENT OF THE ARMY

POSTAGE AND FEES PAID
DEPARTMENT OF THE ARMY
DOD 314

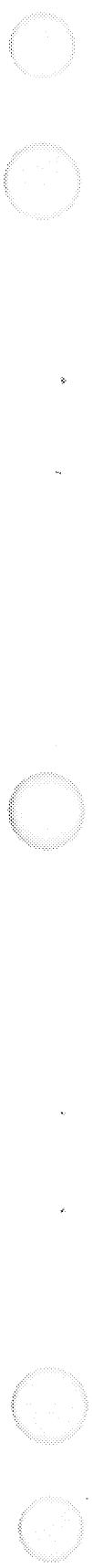


OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE \$300

SAMPLE

Commander
US Army Communications-Electronics Command
and Fort Monmouth
ATTN: AMSEL-LC-ME-PS
Fort Monmouth, New Jersey 07703-5000

TEAR ALONG PERFORATED LINE



RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS



SOMETHING WRONG WITH THIS PUBLICATION?

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PUBLICATION DATE
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Electrical Equipment
MT-6452/GRC-215

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PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.
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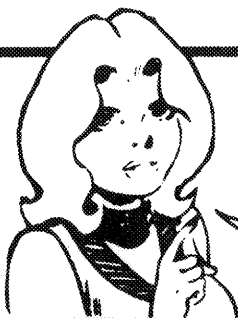
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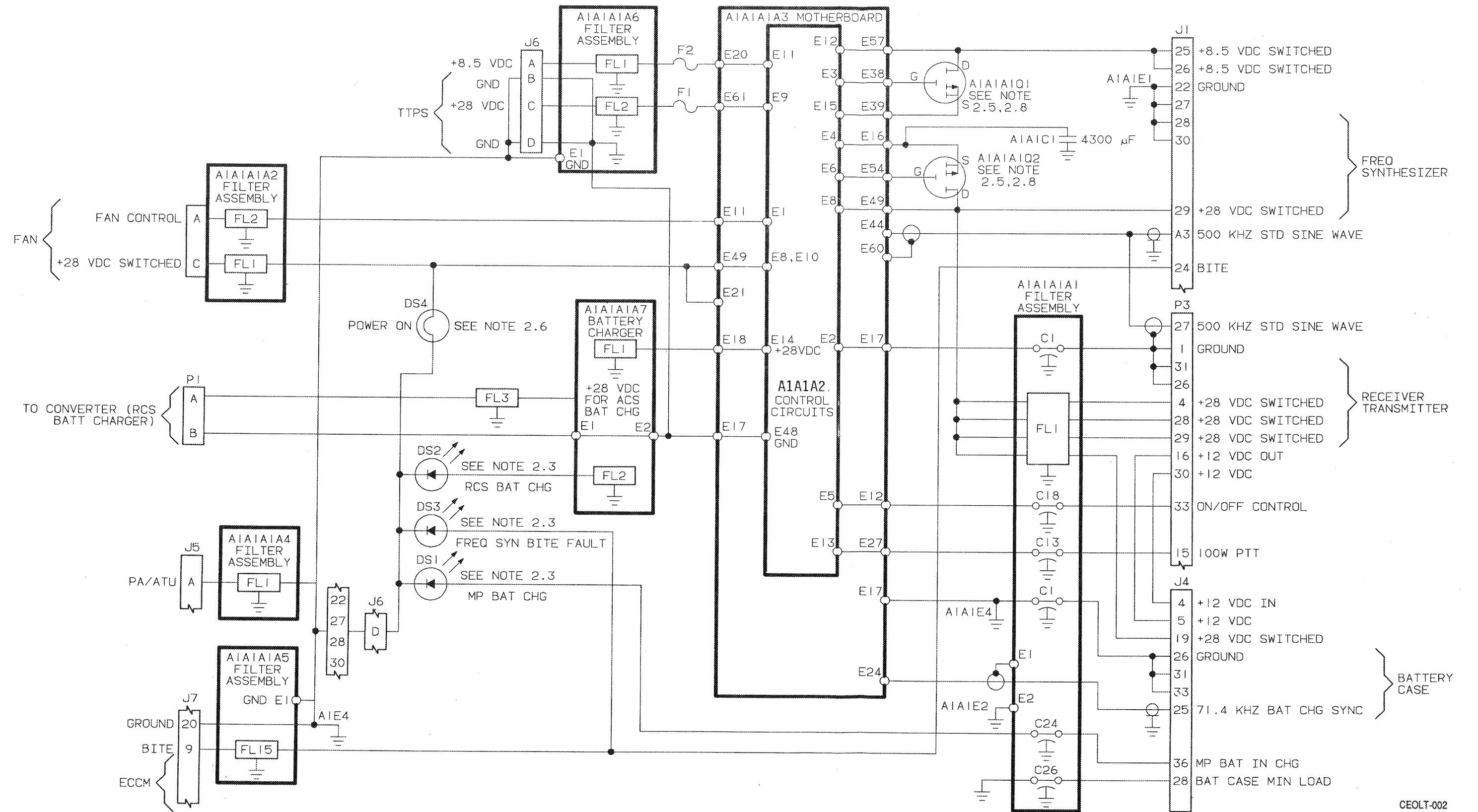
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- 2.1 UNLESS OTHERWISE SPECIFIED:
RESISTANCE VALUES ARE IN OHMS.
RESISTANCE VALUES ARE 1%, 5%.
CAPACITANCE VALUES ARE IN PICOFARADS.
VOLTAGES ARE DC.
- 2.2 PARTIAL REFERENCE DESIGNATIONS ARE SHOWN;
FOR COMPLETE DESIGNATION PREFIX WITH UNIT
NUMBER AND SUBASSEMBLY DESIGNATION A1A1A1.
- 2.3 PART NUMBER A3027516-2.
- 2.4 PART NUMBER A3027516-1.
- 2.5 PART NUMBER A3030327-902.
- 2.6 PART NUMBER MS25237-327.
- 2.7 REFERENCE:
ASSEMBLY NUMBER A3026060.
TEST SPECIFICATION NUMBER A3030701.
ASSEMBLY NUMBER A3027298-1.
ASSEMBLY NUMBER A3030268.
ASSEMBLY NUMBER A3030271.
ASSEMBLY NUMBER A3027295.
ASSEMBLY NUMBER A3027292.
ASSEMBLY NUMBER A3027297-1.
ASSEMBLY NUMBER A3031145.

REFERENCE DESIGNATION	
HIGHEST USED	NOT USED
A7 C1 DS4 F2 J8 Q2	J2-J7
A1 ASSY A3027298-1	
C23 FL1 J4	J1-J3
A2 ASSY A3030268	
FL2	
A3 ASSY A3030271	
E61	E24, E42 E53, E60
A4 ASSY A3027295	
A1 J5	J1-J4
A4A1 ASSY A3030309	
FL24	
A5 ASSY A3027292	
A1 E1 J7	J1-J6
A5A1 ASSY A3027293	
FL18	
A6 ASSY A3027297-1	
E1 FL2 J6	J1-J5
A7 ASSY A3031145	
E2 FL3	

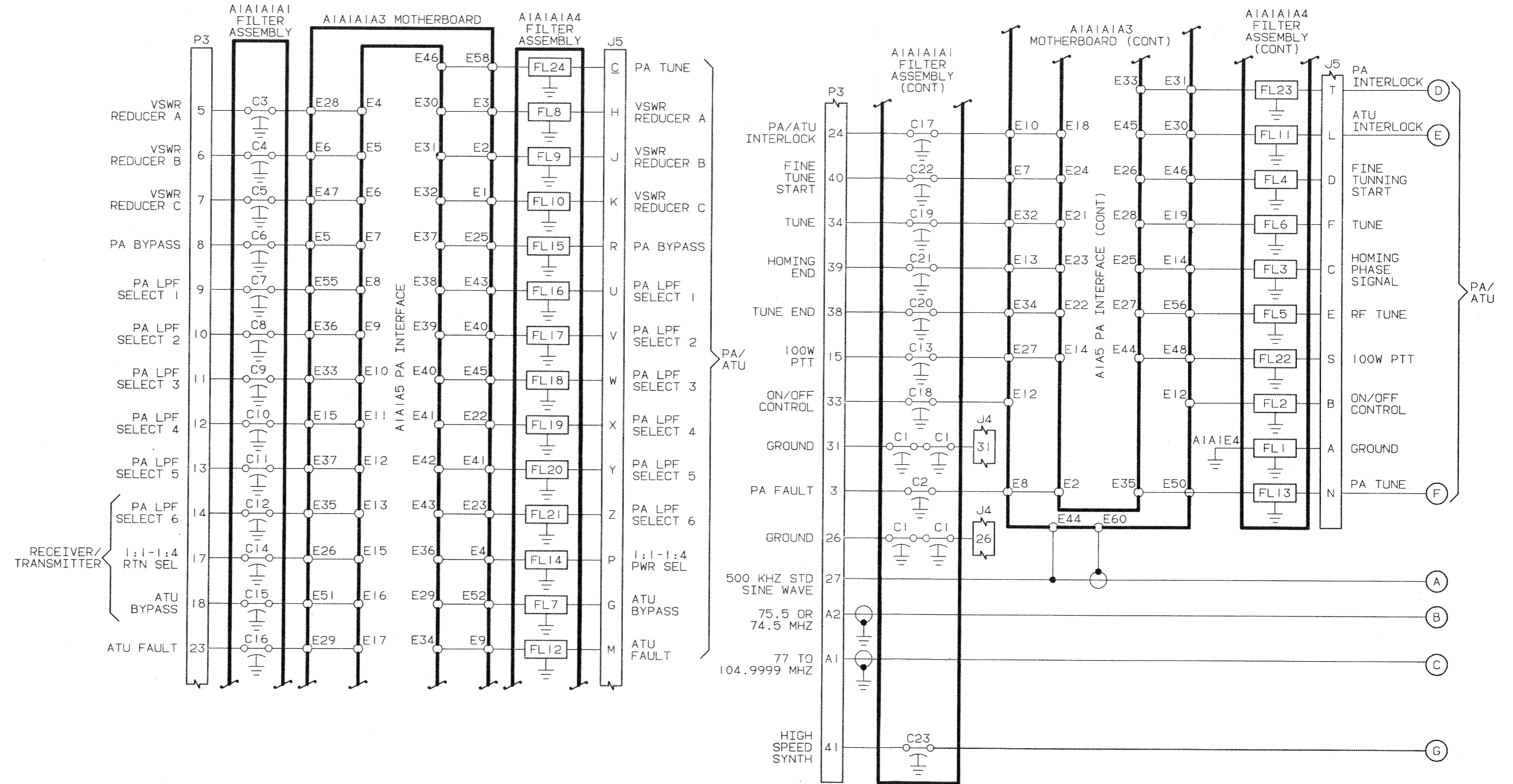
CEOLT-001

Figure FO-1. Vehicular Adapter
Base Schematic Diagram
(Sheet 1 of 4)



CEOLT-002

Figure FO-1. Vehicular Adapter Base Schematic Diagram (Sheet 2 of 4)



CEOLT-003

Figure FO-1. Vehicular Adapter Base Schematic Diagram (Sheet 3 of 4)

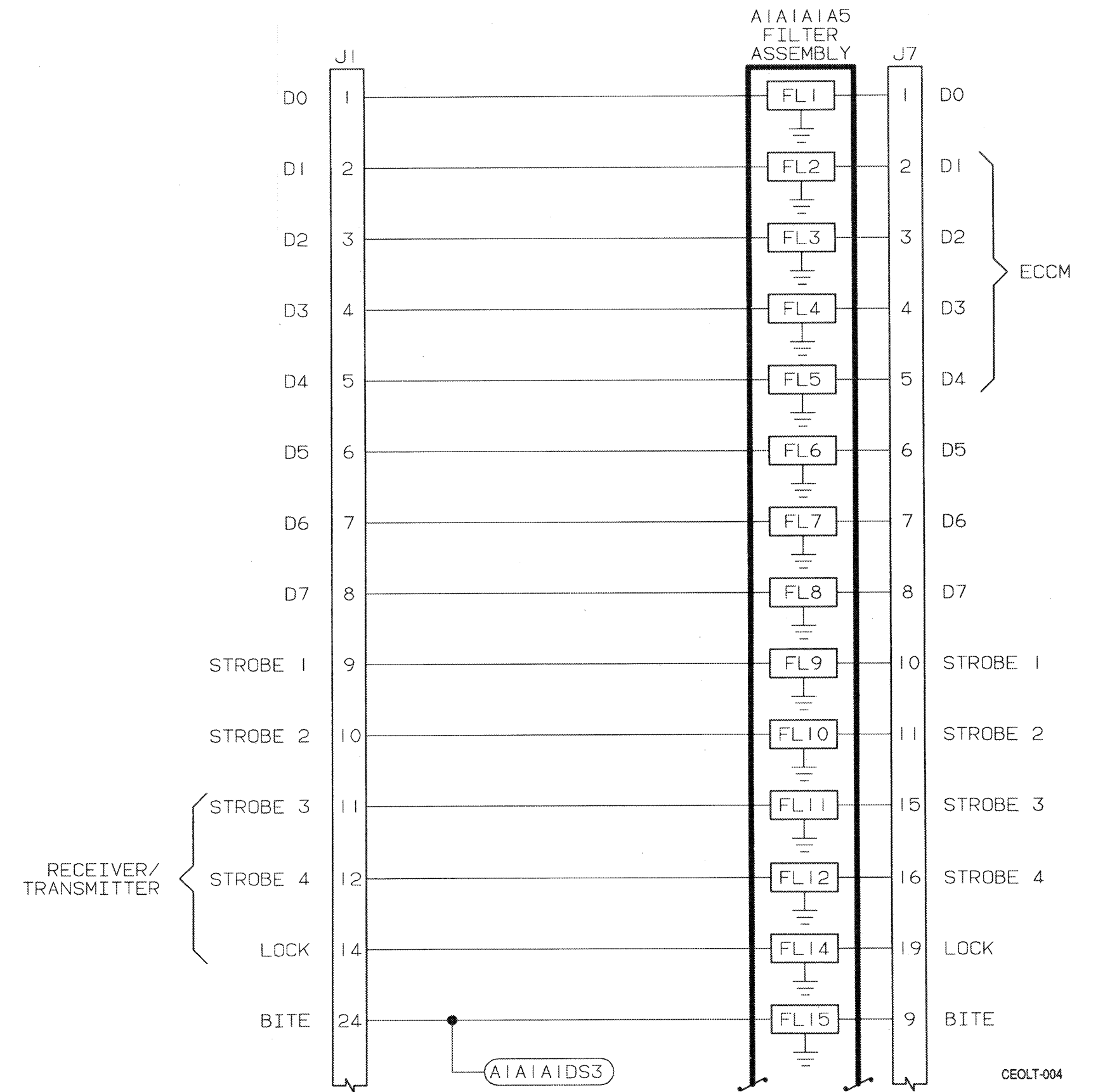
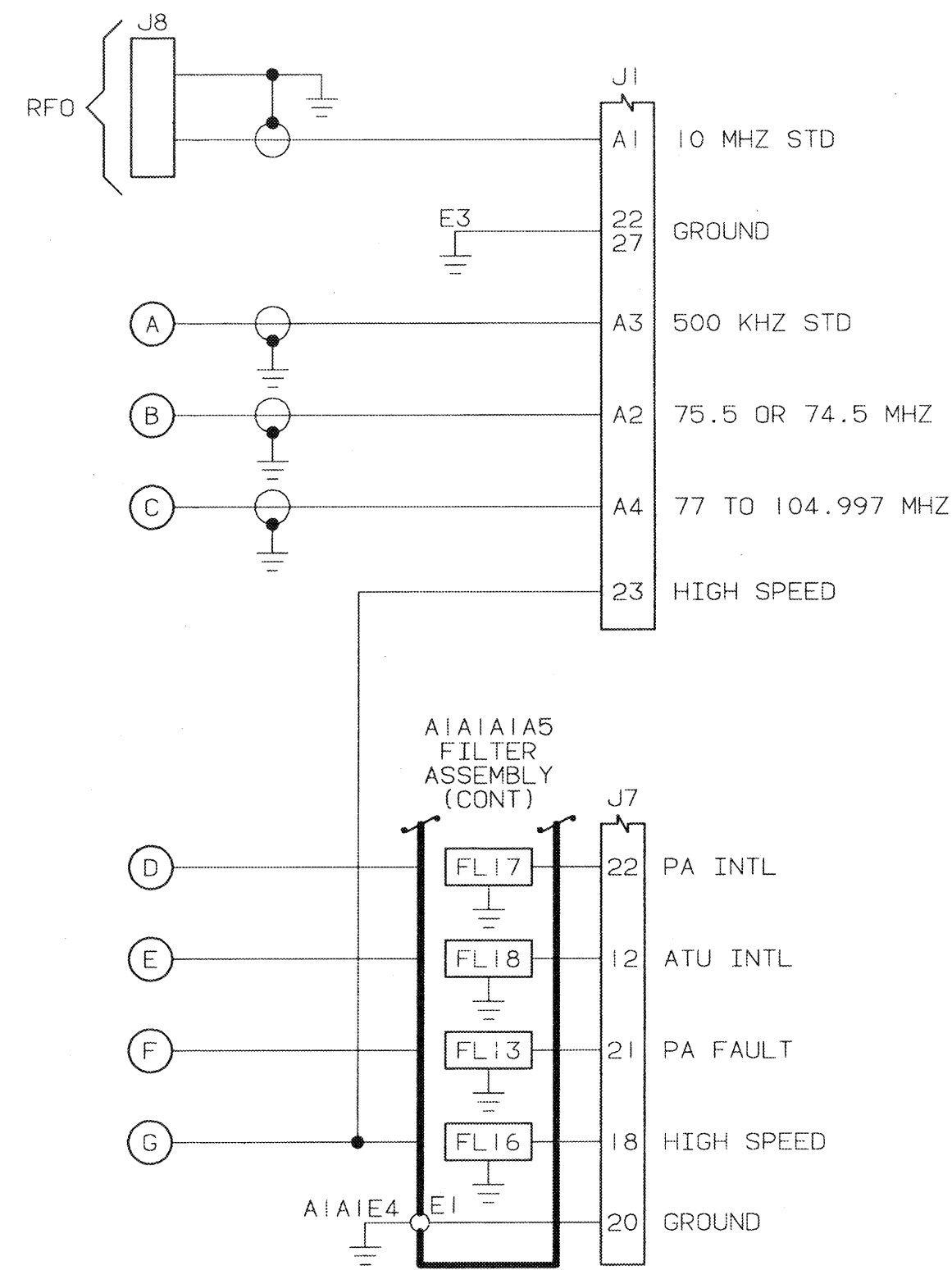
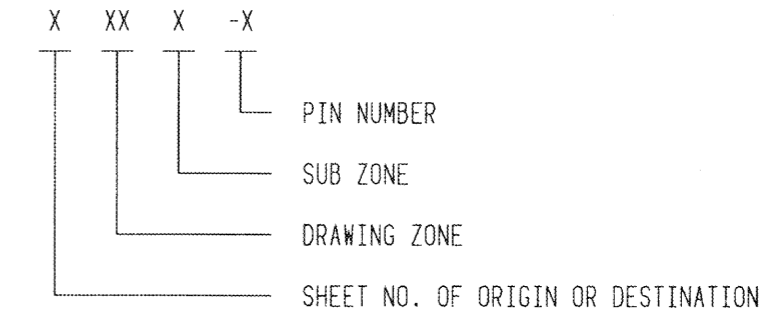


Figure FO-1. Vehicular Adapter Base Schematic Diagram (Sheet 4 of 4)

REFERENCE DESIGNATION	
HIGHEST USED	NOT USED
C8 CR2 E61 J61 L6 U3 Q1 R8	E53 J19,20

INTEGRATED CIRCUIT TABLE					
REFERENCE DESIGNATION	SECOND TAGGING LINE SYMBOL	PART NUMBER	POWER PINS		SEE NOTE
			+5V	GND	
U1 (ML1)	M1	A3026799-2	I	8	1.4
U3 (Z1)	M2	A3030201-1	NA	NA	NA
U2 (ML2)	M3	A3030218-3	NA	8	1.4



TYPICAL CIRCUIT CONTINUATION CODE


NOTES:

1.0 SPECIFIC:

1.1 UNLESS OTHERWISE SPECIFIED:
 RESISTANCE VALUES ARE IN OHMS.
 RESISTORS ARE 5%, 1/8W.
 CAPACITANCE VALUES ARE IN MICROFARADS.
 VOLTAGES ARE DC.
 DIODES AND/OR TRANSISTORS ARE JANTX TYPE.
 INDUCTANCE VALUES ARE IN MICROHENRIES.

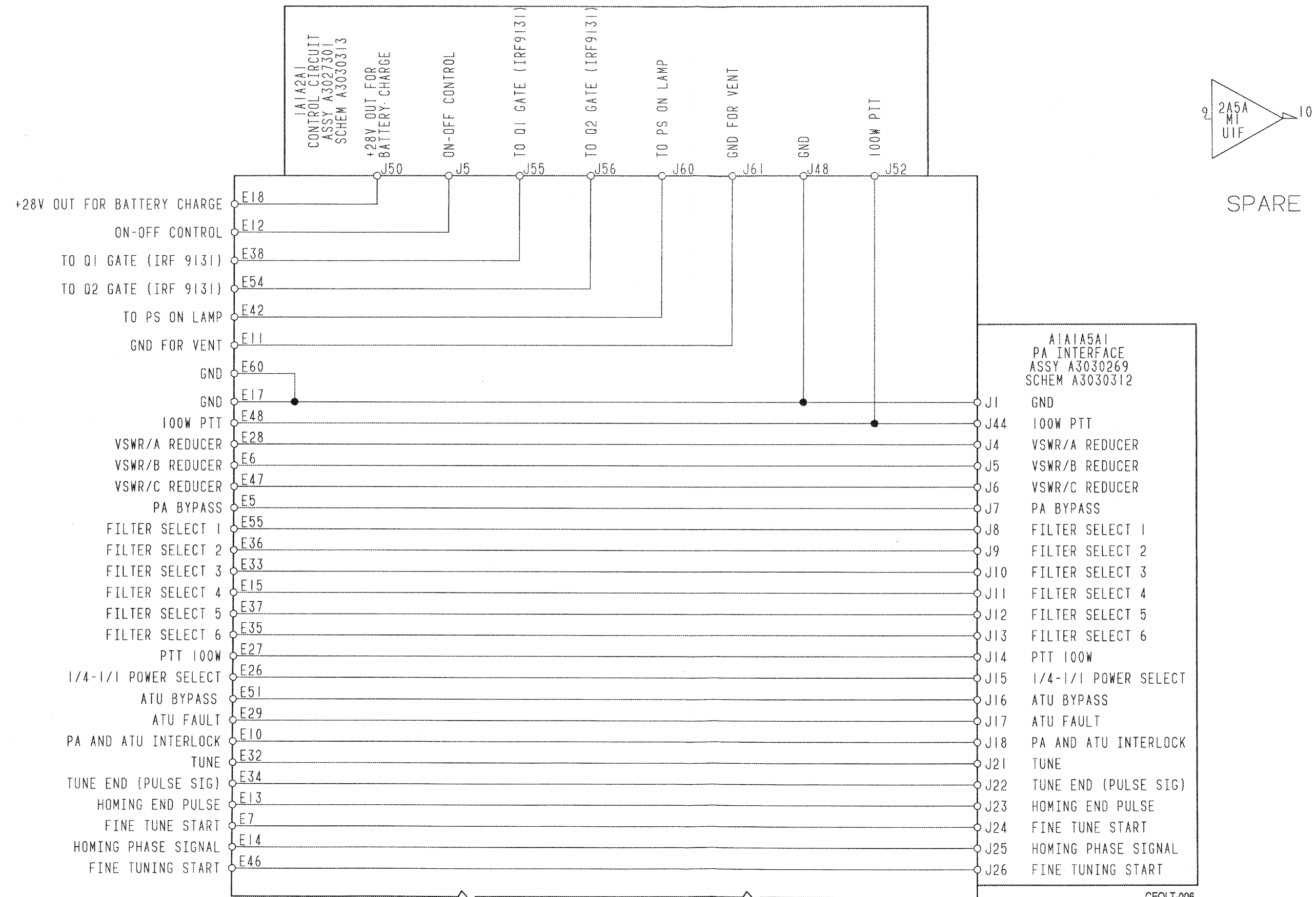
1.2 PARTIAL REFERENCE DESIGNATIONS ARE SHOWN:
 FOR COMPLETE DESIGNATION PREFIX WITH UNIT
 NUMBER AND SUBASSEMBLY DESIGNATION A1A1A1A3.

1.3 FOR CONTINUATION OF CIRCUIT SEE
 SCHEMATIC A3030311.

1.4  THIS DEVICE REQUIRES SPECIAL HANDLING
 AND PROCESSING TO PREVENT DAMAGE FROM
 ELECTROSTATIC DISCHARGE TRANSIENTS.

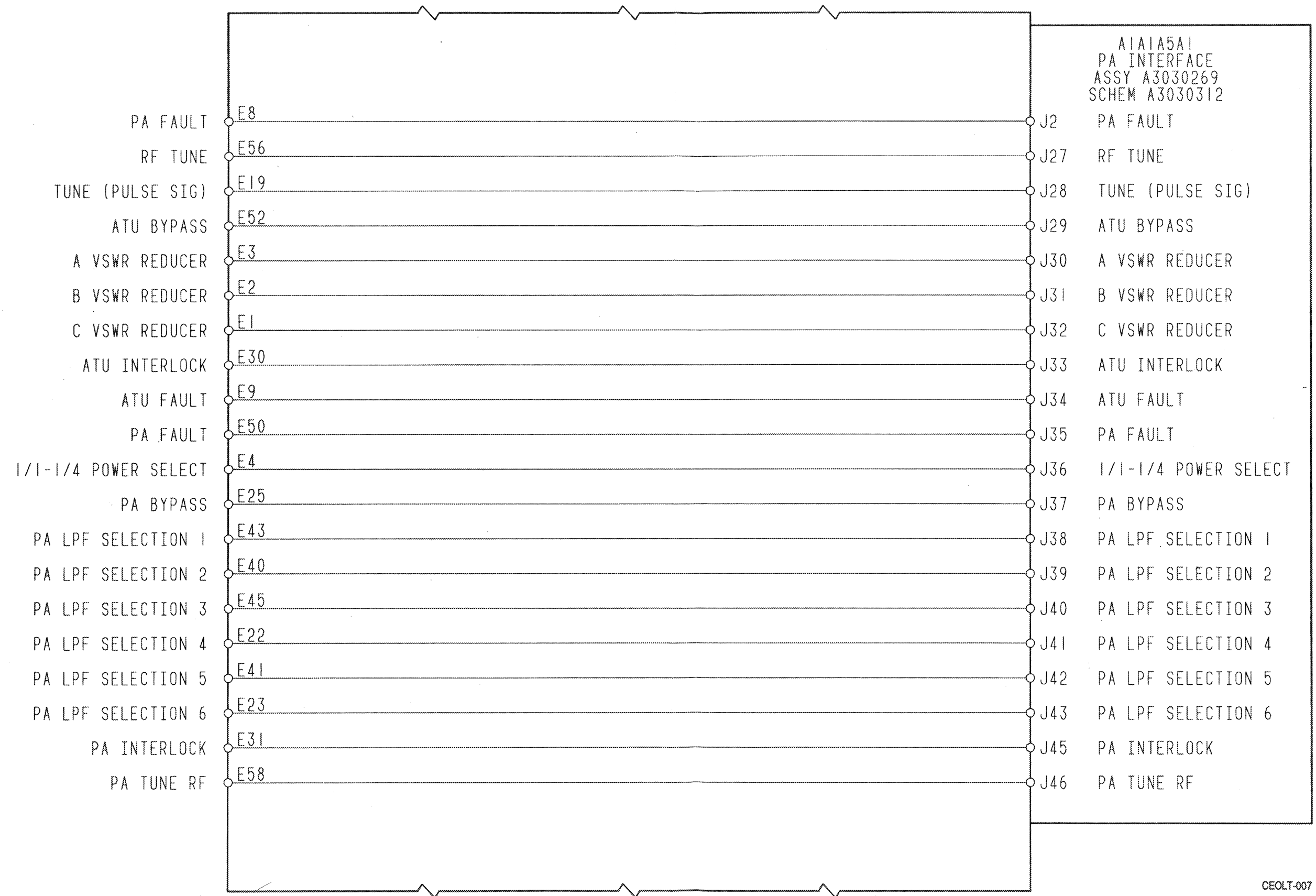
1.5 REFERENCE:
 ASSEMBLY NUMBER A3030271
 PRINTED WIRING BOARD A3030307

CEOLT-005



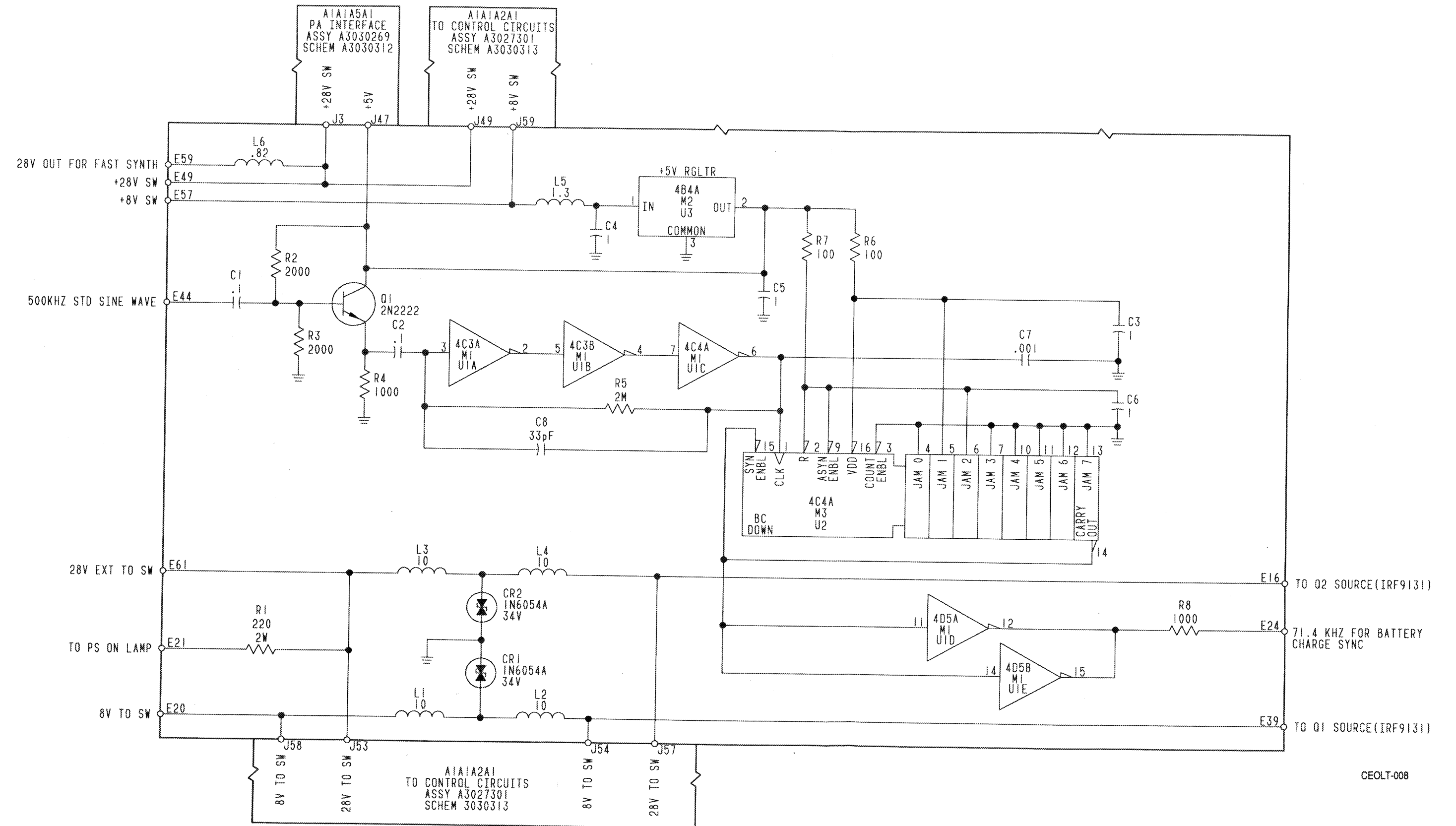
CEOLT-006

Figure FO-2. Motherboard Schematic Diagram (Sheet 2 of 4)



CEOLT-007

Figure FO-2. Motherboard Schematic Diagram (Sheet 3 of 4)

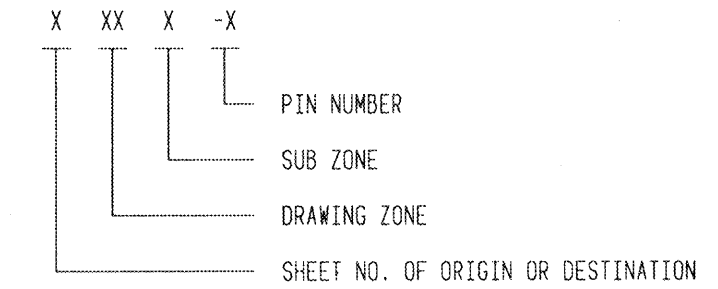


CEOLT-008

Figure FO-2. Motherboard Schematic Diagram (Sheet 4 of 4)


REFERENCE DESIGNATIONS	
HIGHEST USED	NOT USED
A7 ASSY A3031145	
A2 E2 FL3	
A1 ASSY A3031070	
C10 CR4 E10 L1 UI (ML1) Q4 R17 T1	
A2 ASSY A3031071	
E7 L1 Q1 R3	

INTEGRATED CIRCUIT TABLE			
REFERENCE DESIGNATION	SECOND TAGGING LINE SYM	PART NUMBER	POWER INPUT PIN
			GND
UI (ML1)	M2	A3027142	8



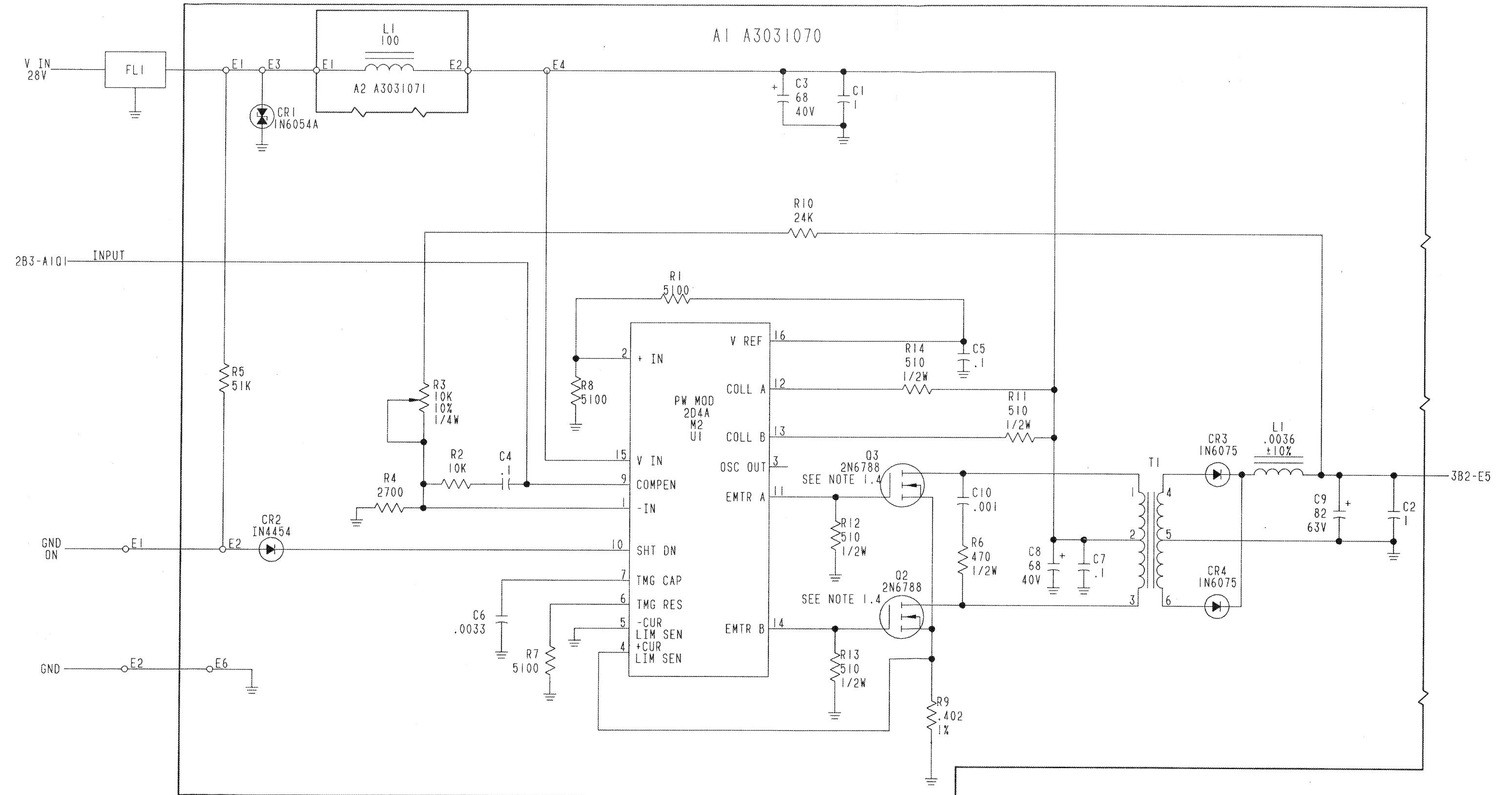
TYPICAL CIRCUIT CONTINUATION CODE

NOTES:

- 1.0 SPECIFIC:
 - 1.1 UNLESS OTHERWISE SPECIFIED:
RESISTANCE VALUES ARE IN OHMS.
RESISTORS ARE 5%, 1/8W.
CAPACITANCE VALUES ARE IN MICROFARADS.
VOLTAGES ARE DC.
DIODES AND/OR TRANSISTORS ARE JANTX TYPE.
INDUCTANCE VALUES ARE IN MICROHENRIES.
 - 1.2 PARTIAL REFERENCE DESIGNATIONS ARE SHOWN:
FOR COMPLETE DESIGNATION PREFIX WITH UNIT
NUMBER AND SUBASSEMBLY DESIGNATION
A1A1A1A7.
 - 1.3 FOR CONTINUATION OF CIRCUIT SEE
SCHEMATIC A3030311.
 - 1.4  THIS DEVICE REQUIRES SPECIAL HANDLING
AND PROCESSING TO PREVENT DAMAGE FROM
ELECTROSTATIC DISCHARGE TRANSIENTS.
 - 1.5 REFERENCE:
ASSEMBLY NUMBER A3031145
A1 ASSEMBLY NUMBER A3031070
PRINTED WIRING BOARD A3031066
A2 ASSEMBLY NUMBER A3031071
PRINTED WIRING BOARD A3031067
 - 1.6 PART NUMBER A3030362.
 - 1.7 PART NUMBER A3030193.

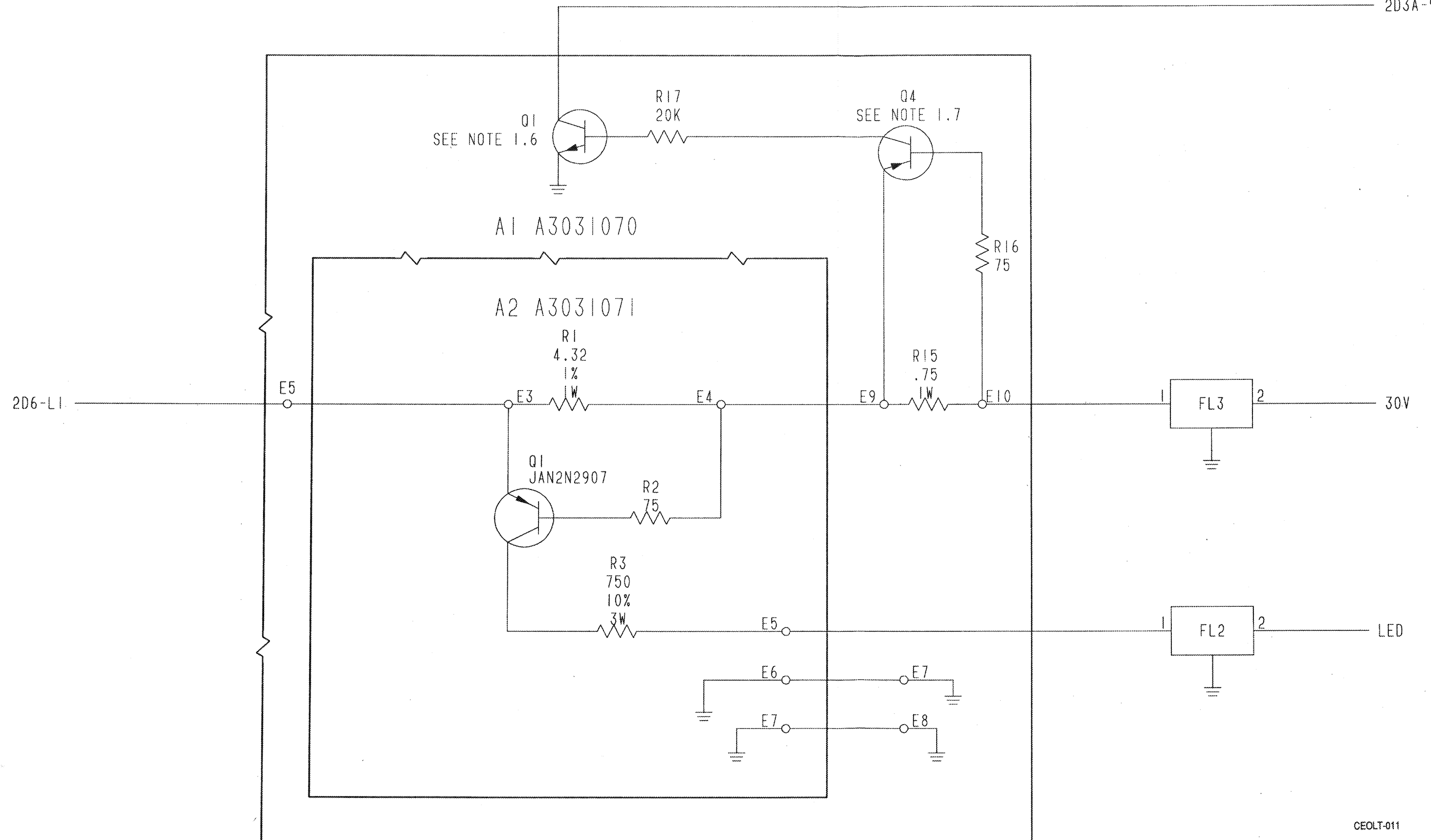
CEOLT-009

Figure FO-3. Battery Charger
Schematic Diagram
(Sheet 1 of 3)



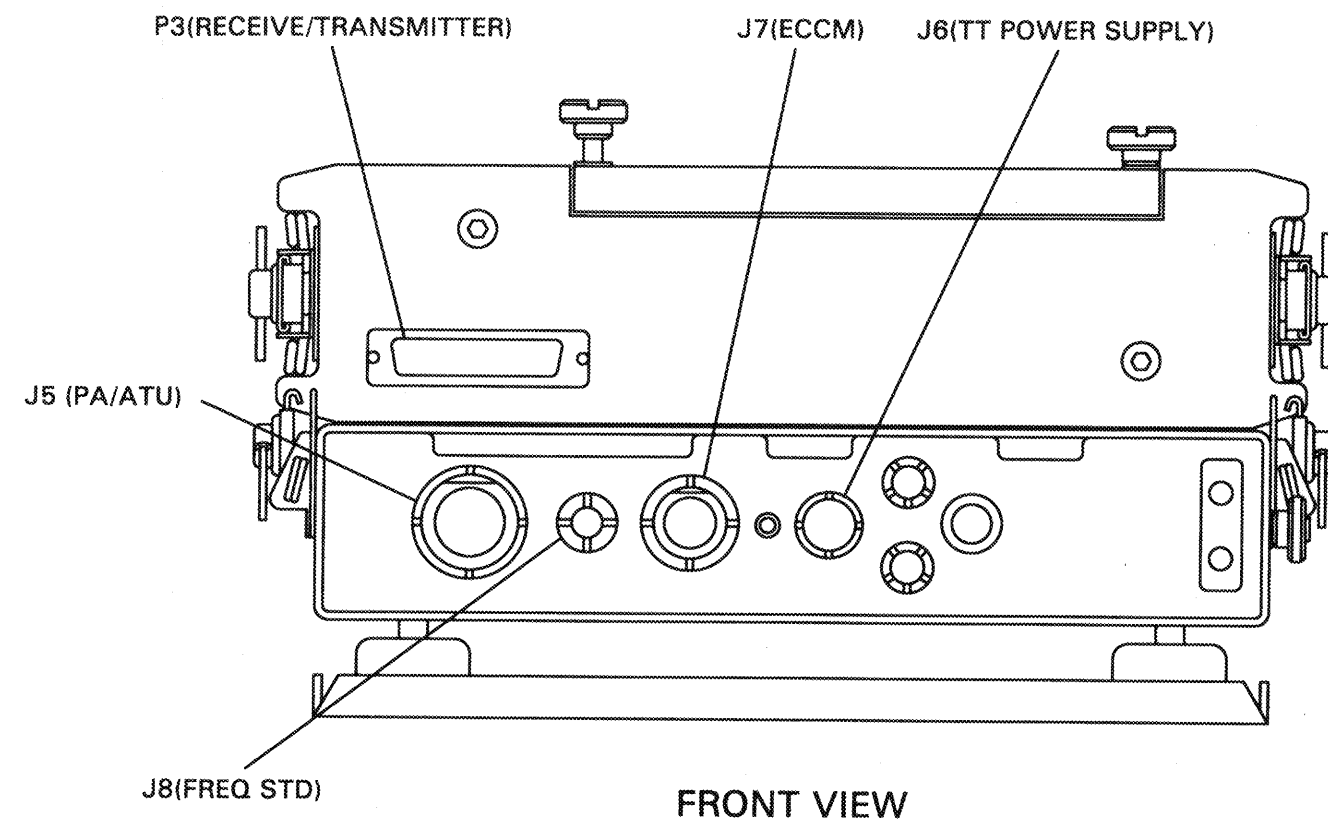
CEOLT-010

Figure FO-3. Battery Charger
Schematic Diagram
(Sheet 2 of 3)

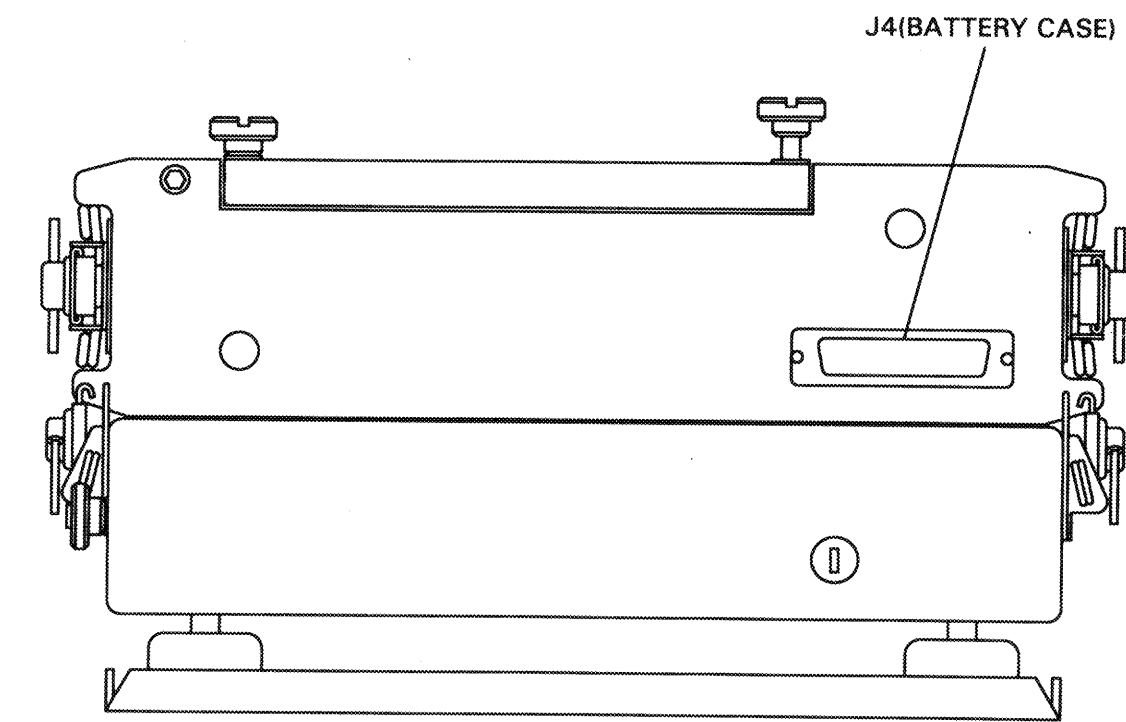


GEOLT-011

Figure FO-3. Battery Charger Schematic Diagram (Sheet 3 of 3)



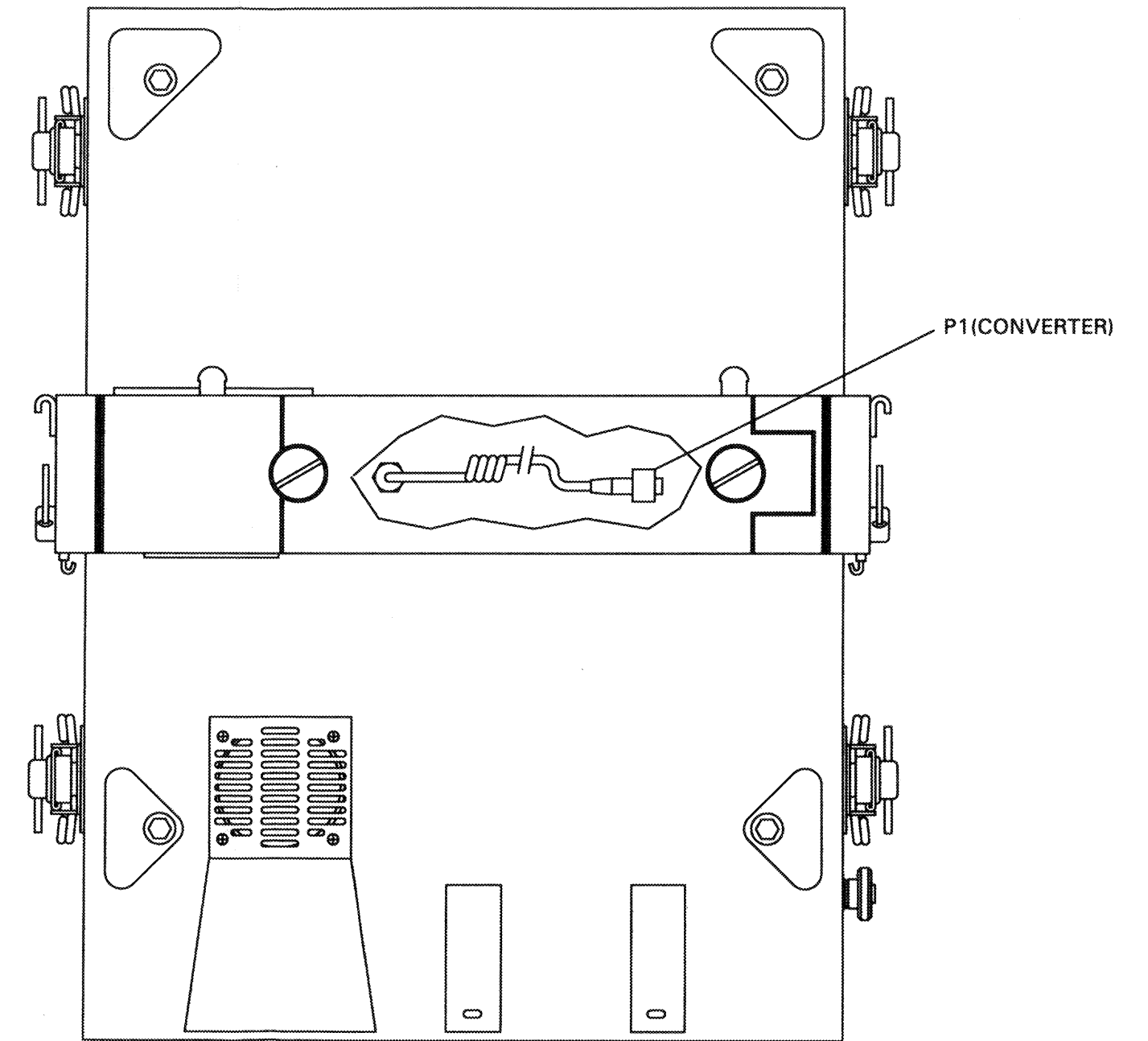
FRONT VIEW



REAR VIEW

CEOLT-012

Figure FO-4. Vehicular Adapter
Test Point Locations
(Sheet 1 of 5)



CEOLT-013

Figure FO-4. Vehicular Adapter
Test Point Locations
(Sheet 2 of 5)

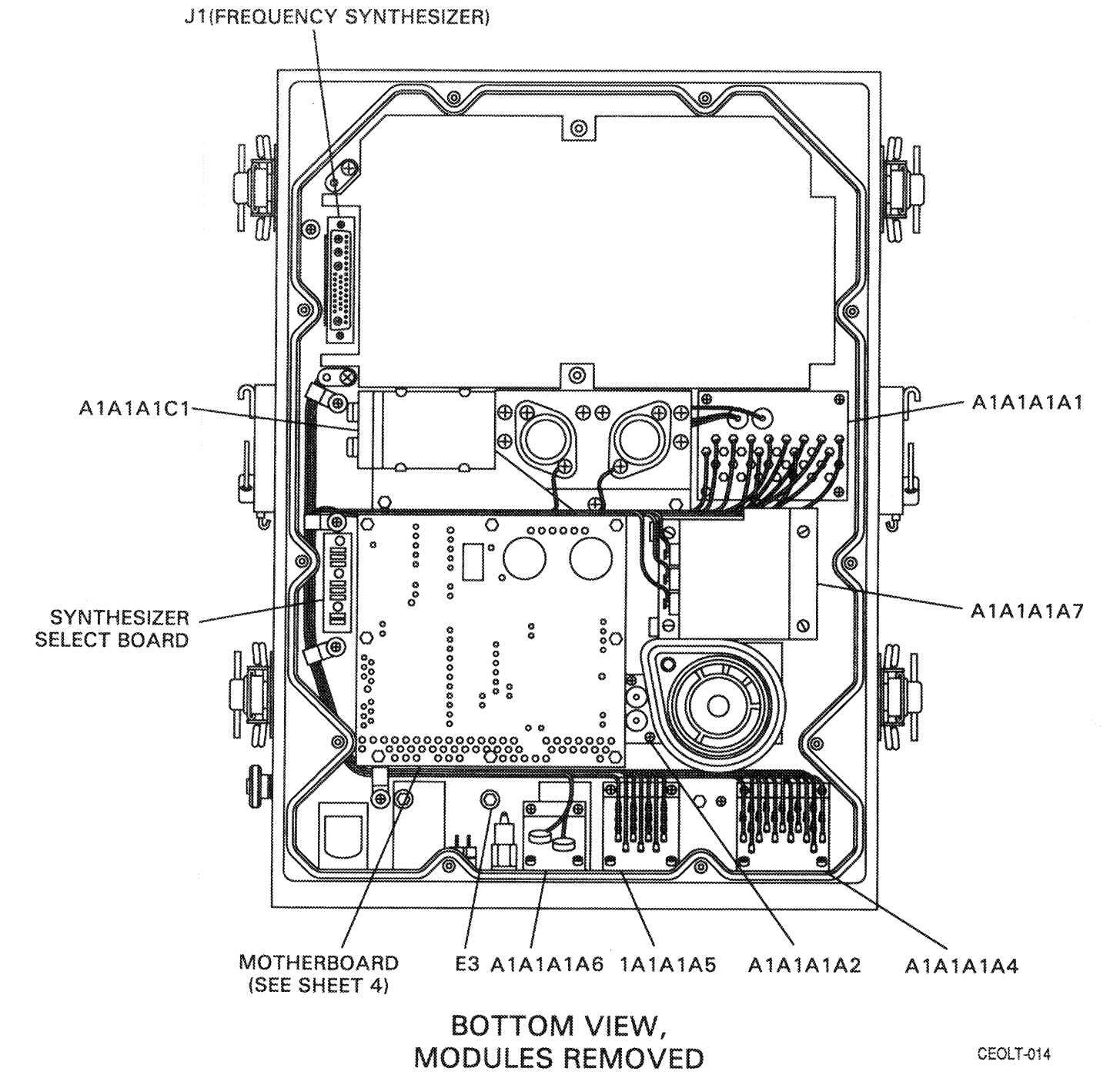
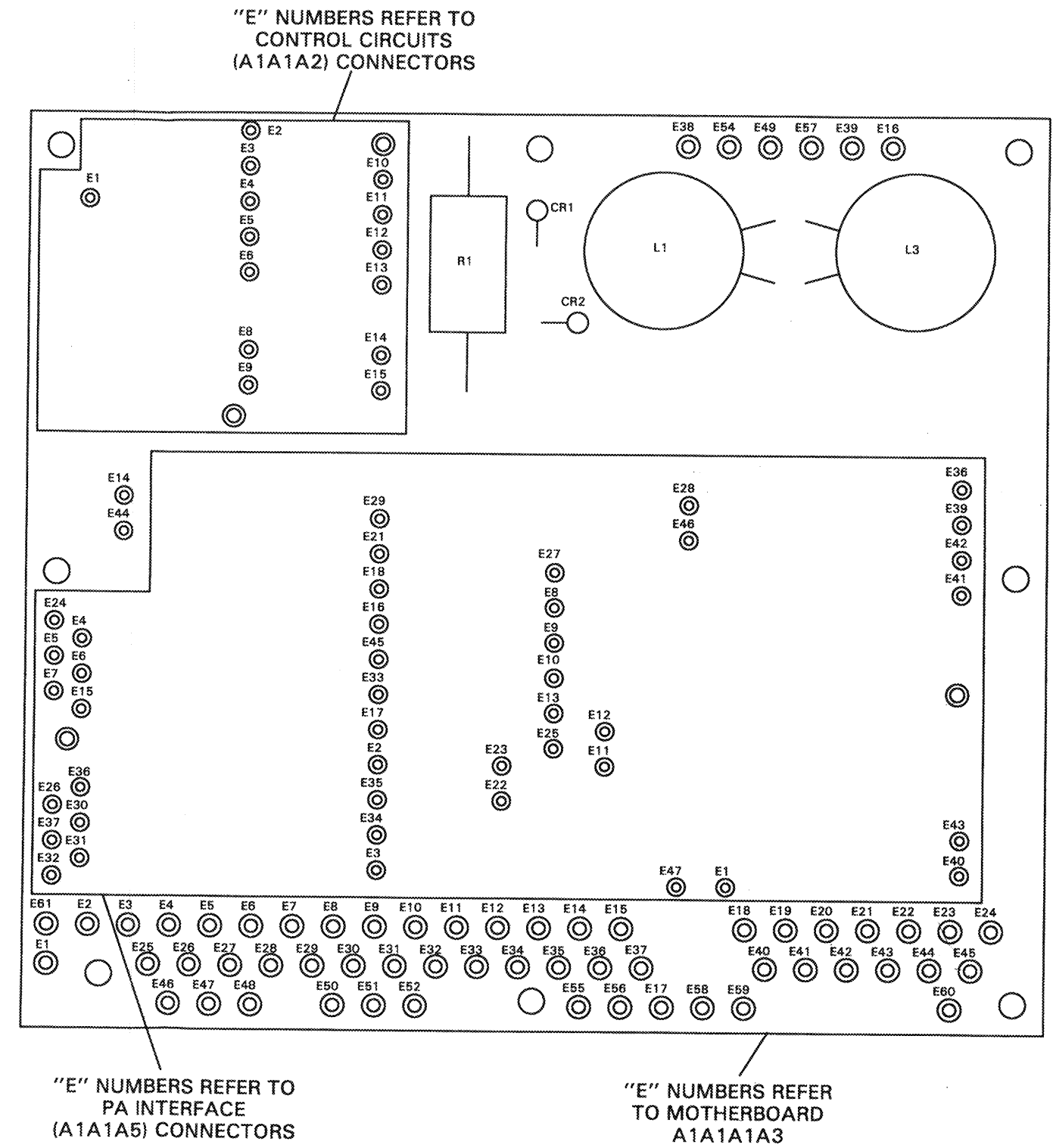
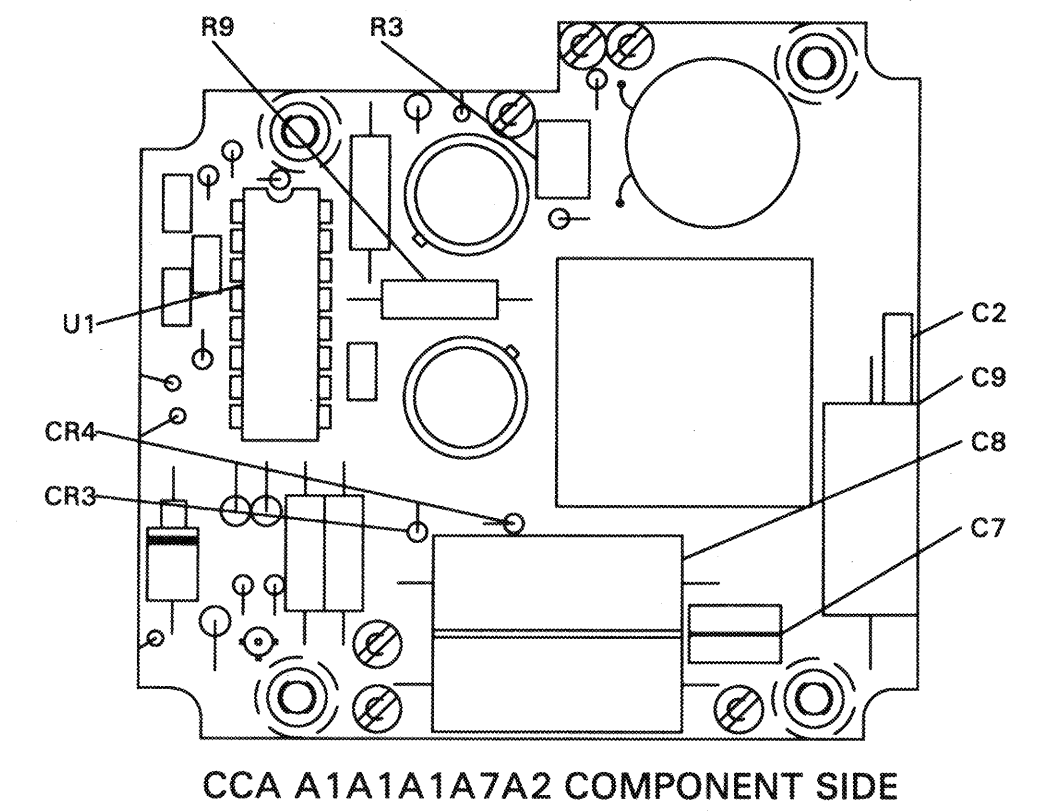
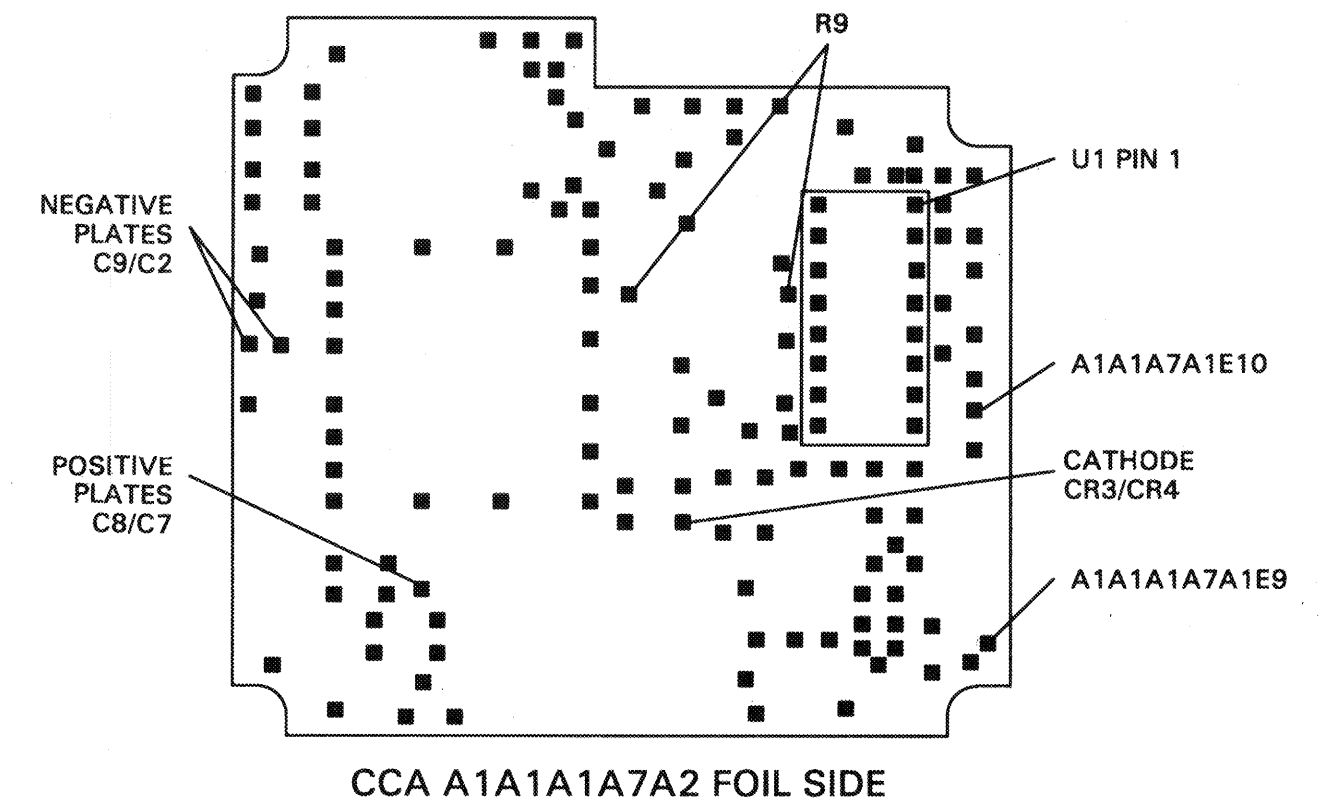


Figure FO-4. Vehicular Adapter
Test Point Locations
(Sheet 3 of 5)



CEOLT-015

Figure FO-4. Vehicular Adapter
Test Point Locations
(Sheet 4 of 5)



CEOLT-016

Figure FO-4. Vehicular Adapter
Test Point Locations
(Sheet 5 of 5)