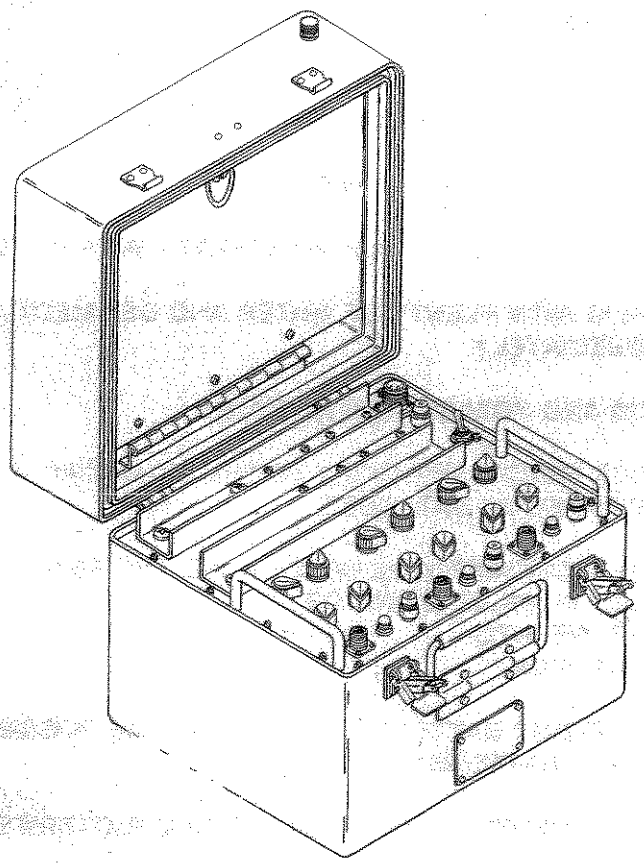
TM 11-6130-351-14

TECHNICAL MANUAL

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



BATTERY CHARGER PP-6241/U

(NSN 6130-00-106-6445)

HEADQUARTERS, DEPARTMENT OF THE ARMY

SEPTEMBER 1982

WARNING

HIGH VOLTAGE IS USED IN THE OPERATION OF THIS EQUIPMENT.

DEATH ON CONTACT

MAY RESULT IF PERSONNEL FAIL TO OBSERVE SAFETY PRECAUTIONS.

DANGEROUS VOLTAGES ARE EXPOSED WITH THE CASE BOTTOM REMOVED. USE CAUTION TO AVOID INJURY.

BE SURE THAT THE EQUIPMENT IS PROPERLY GROUNDED.

DO NOT TAKE CHANCES!

DANGEROUS CHEMICALS ARE USED IN SILVER-ZINC BATTERIES.

USE RUBBER GLOVES AND APRON TO AVOID SEVERE BURNS.

IF CHEMICALS GET ON YOUR SKIN, CLOTHES, OR EQUIPMENT, WASH IMMEDIATELY WITH WATER.

IF CHEMICALS GET IN YOUR EYES, WASH THEM WITH PLENTY OF WATER AND GET MEDICAL HELP IMMEDIATELY.

DO NOT MIX SULPHURIC ACID AND POTASSIUM HYDROXIDE.

ELECTROLYTE USED IN SILVER-ZINC BATTERIES REACTS VIOLENTLY TO THE SULPHURIC ACID USED IN LEAD ACID TYPES OF BATTERIES.

MIXING OF SULPHURIC ACID AND POTASSIUM HYDROXIDE WILL CAUSE A VIOLENT REACTION WHICH COULD RESULT IN SPLATTERING OF THE MIXTURE INTO EYES OR SKIN.

EVERY EFFORT MUST BE MADE TO KEEP SILVER-ZINC BATTERIES AS FAR AWAY AS POSSIBLE FROM LEAD-ACID BATTERIES.

ANY TRACE OF ACID OR ACID FUMES WILL PERMANENTLY DAMAGE SILVER-ZINC BATTERIES ON CONTACT.

CARE SHOULD BE TAKEN NOT TO MIX TOOLS, HYDROMETERS, ETC.

GAS FROM TRICHLOROTRIFLUOROETHANE IS POISONOUS.

USE IN A VENTILATED AREA. DO NOT USE IT NEAR OPEN FLAMES OR A HOT SURFACE. DO NOT GET IT ON YOUR SKIN.

CHARGING LEAD ACID BATTERY PRODUCES HYDROGEN GAS.

HYDROGEN GAS IS EXTREMELY FLAMMABLE AND EXPLOSIVE. DO NOT USE NEAR OPEN FLAMES OR EQUIPMENT WHICH PRODUCES SPARKS.

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 WOODEN POLE OR A 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

TECHNICAL MANUAL
NO. 11-6130-351-14

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, 24 September 1982

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

BATTERY CHARGER PP-6241/U (NSN 6130-00-106-6445)

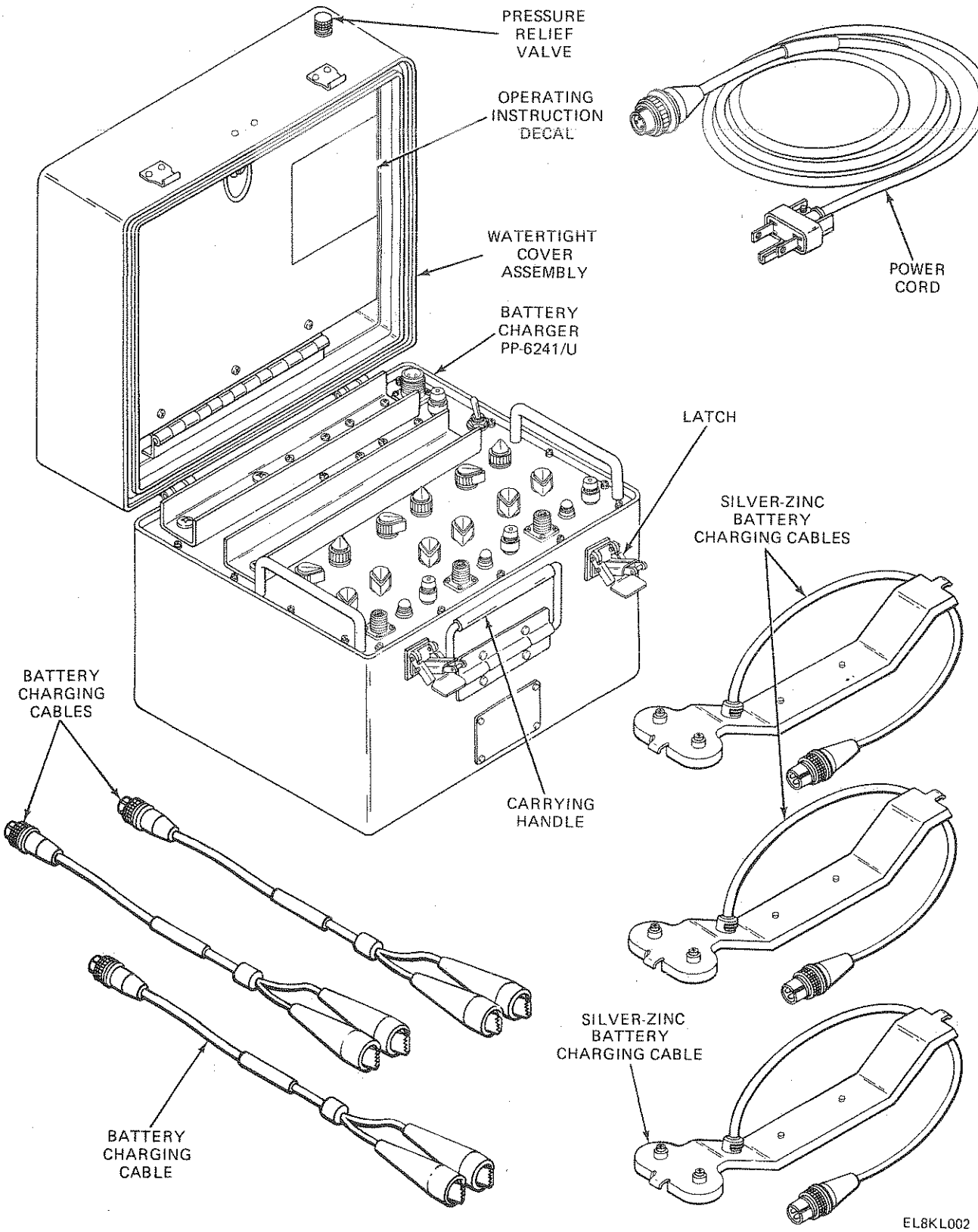
REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

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 the back of this manual direct to: Commander, US Army Communications-Electronics Command and Fort Monmouth. ATTN: DRSEL-ME-MP, Fort Monmouth, New Jersey 07703. A reply will be furnished to you.

HOW TO USE THIS MANUAL

In this manual paragraphs are numbered in order and by chapter. To find the paragraph you need, first locate your subject in the table of contents. Turn to the page shown and read the paragraph headings until you see what you're looking for. Special tools and parts are shown in the rear of this manual as appendixes. If you find a word or term you don't understand, refer to the glossary.

BATTERY CHARGER PP-6241/U



CHAPTER 1

INTRODUCTION

OVERVIEW

This chapter contains general information, equipment description and principles of operation for the battery charger.

Section I GENERAL INFORMATION

1-1. SCOPE.

Type of Manual: Operator's, Organizational, Direct Support, and General Support Maintenance Manual.

Equipment Name and Model Number: Battery Charger PP-6241/U

Purpose of Equipment: The battery charger is used for charging silver-zinc batteries, lead acid, and silver cadium batteries.

1-2. MAINTENANCE FORMS, RECORDS, AND REPORTS.

REPORTS OF MAINTENANCE AND UNSATISFACTORY EQUIPMENT.

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750, The Army Maintenance Management System (TAMMS).

REPORT OF PACKAGING AND HANDLING DEFICIENCIES.

Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/DLAR 4140.55.

1-2. MAINTENANCE FORMS, RECORDS, AND REPORTS (CONT)

DISCREPANCY IN SHIPMENT REPORT (DISREP) (SF 361).

Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38.

1-3. DESTRUCTION OF ARMY ELECTRONICS MATERIEL.

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2.

1-4. ADMINISTRATIVE STORAGE

Administrative storage of equipment issued to and used by Army activities will have preventive maintenance performed in accordance with the PMCS charts before storing. When removing the equipment from administrative storage, the PMCS should be performed to assure operational readiness. Disassembly and repacking of equipment for shipment of limited storage are covered in paragraph 2-10.

1-5. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR).

If your battery charger 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 (Quality Deficiency Report). Mail it to: Commander, US Army Communications-Electronics Command and Fort Monmouth. ATTN: DRSEL-ME-MP, Fort Monmouth, New Jersey 07703. A reply will be sent to you.

1-6. NOMENCLATURE CROSS-REFERENCE LIST.

This list contains the common names used throughout this manual in place of official nomenclature.

Common Name	Official Nomenclature
Battery charger	Battery Charger PP-6241/U
Battery charging cable	Cable Assembly Power, Electrical CX-11792/U
Silver-zinc battery charging cable	Cable Assembly Power, Electrical CX-11964/U
Power cord	Cable Assembly Power, Electrical CX-11971/U

1-7. LIST OF ABBREVIATIONS.

This list contains all abbreviations used in this manual.

Abbreviation	Word or Term
ac	alternating current
dc	direct current
ma	milliampere
pwr	power
vac	volts alternating current

1-8. GLOSSARY.

The following terms and special words are used in this manual.

Word or Term	Definition
Alternating current (ac)	Electric current that continually changes in magnitude and direction.
Ampere	Unit of electrical current measurement.
Current	The movement of electrons through a conductor.
Direct current (dc)	Electric current that flows in only one direction and remains constant in magnitude.
Fuse	A device that opens a circuit when too much current flows.
Voltage	Electromotive force, or pressure which causes current to flow.

Section II EQUIPMENT DESCRIPTION AND DATA

1-9. EQUIPMENT CHARACTERISTICS.

The battery charger is a portable three-channel charger that contains solid-state electronic controls. The battery charger is used for charging silver-zinc batteries. The equipment has digitally dialable cutoff voltage controlled from the front panel. Dialable cutoff voltage extends the capabilities of the battery charger so that it may also charge silver cadmium and lead-acid batteries.

1-10. CAPABILITIES AND FEATURES.

MAJOR SYSTEM COMPONENTS

Battery Charger PP-6241/U
Battery charging cables
Silver-zinc charging cables
Power cord
Spare lamps
Spare fuses

ALL WEATHER OPERATIONAL.

PORTABLE.

CAN BE USED TO CHARGE THREE BATTERIES AT THE SAME TIME.

1-11. EQUIPMENT DATA.

WEIGHTS AND DIMENSIONS

Weight	38 pounds
Depth	12.3 inches
Width	13.8 inches
Height	11 inches

PERFORMANCE

Number of channels	Three independent channels
Output current	
Range	1.0 or 2.25 amperes
Accuracy	±5% independent of battery voltage
Output cutoff voltage	
Silver-zinc range	8, 15, or 32 volts
Accuracy	±2% of value dialed from 1.0 to 36.0 volts

1-11. EQUIPMENT DATA (CONT)

PERFORMANCE (CONT)

Input voltage	105 to 132 vac 50 to 400 Hertz
Input current	5 amperes maximum
Accuracy	Accuracies are over temperatures ranging from 15 deg. C (59 deg. F), 35 deg. C (95 deg. F)

1-12. SAFETY, CARE, AND HANDLING.

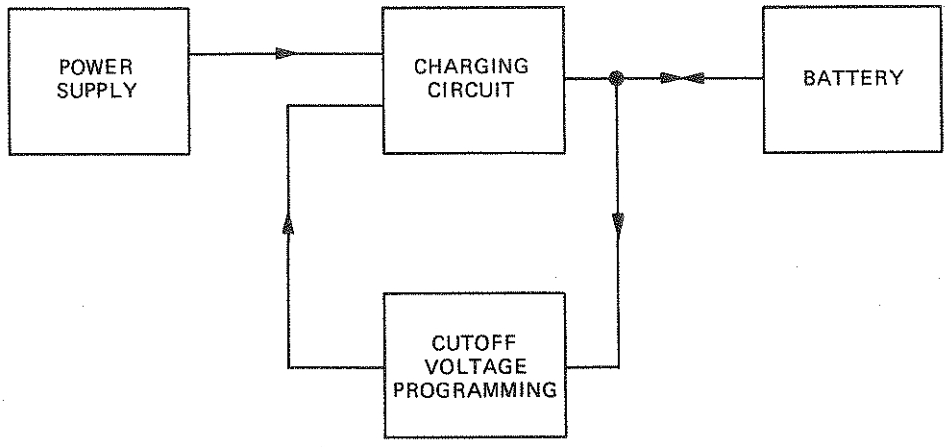
This equipment can be dangerous if operated without following all WARNINGS and CAUTIONS. Dangerous voltages are exposed when the case bottom is removed. Caution must be used to avoid injury. Be sure that the equipment is properly grounded.

Section III PRINCIPLES OF OPERATION

1-13. BLOCK DIAGRAMS OF MAJOR COMPONENTS.

SINGLE CHARGING CHANNEL.

The battery charger is a three-channel, current regulated equipment with programmable cutoff voltages. The battery charger automatically stops the flow of charging current when the battery terminal voltage reaches the cutoff voltage.



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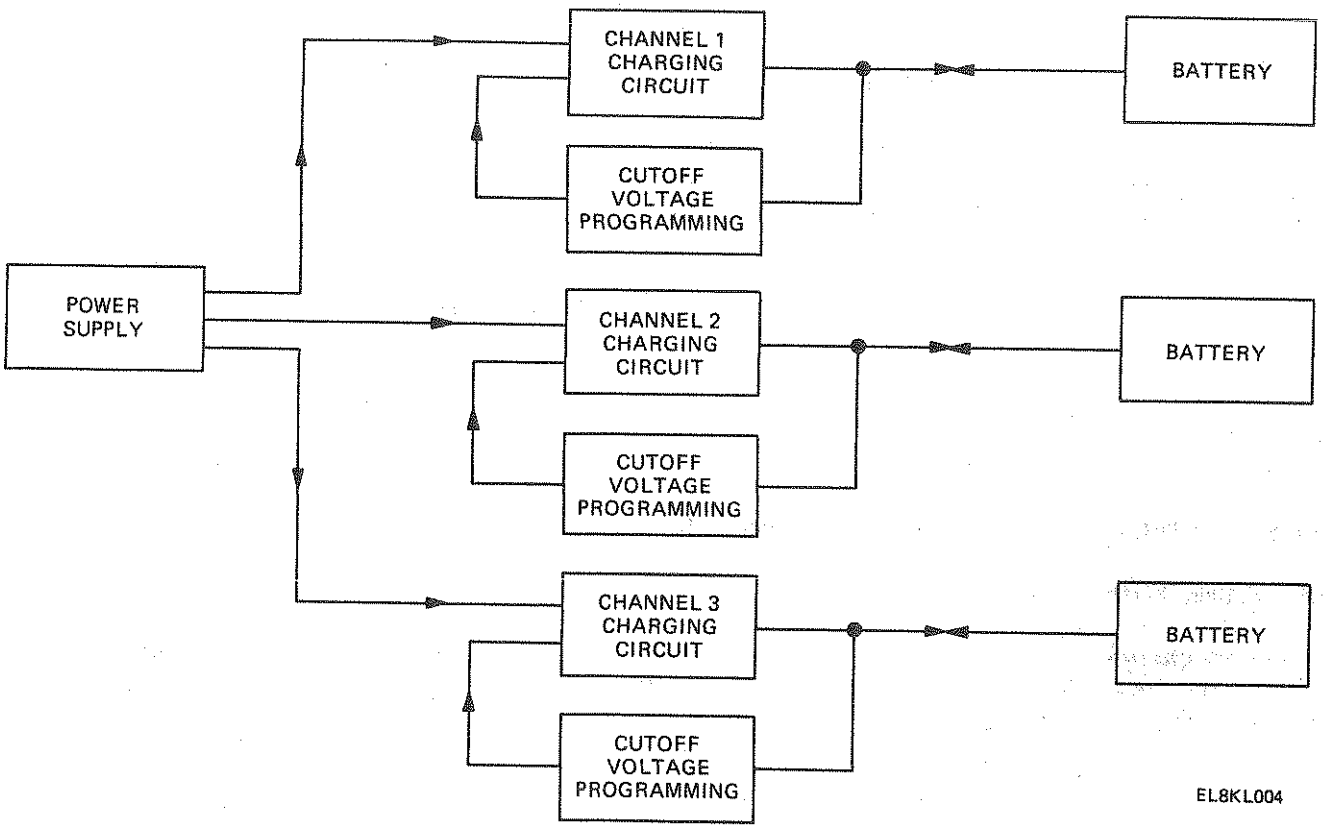
1-13. BLOCK DIAGRAMS OF MAJOR COMPONENTS (CONT)

COMBINED CHANNELS.

The combined channels of the battery charger allow charging of three batteries at the same time. Each channel will automatically stop the flow of charging current when the battery terminal voltage reaches the cutoff voltage.



1-14. DESCRIPTION OF MAJOR COMPONENTS.

POWER SUPPLY BOARD.

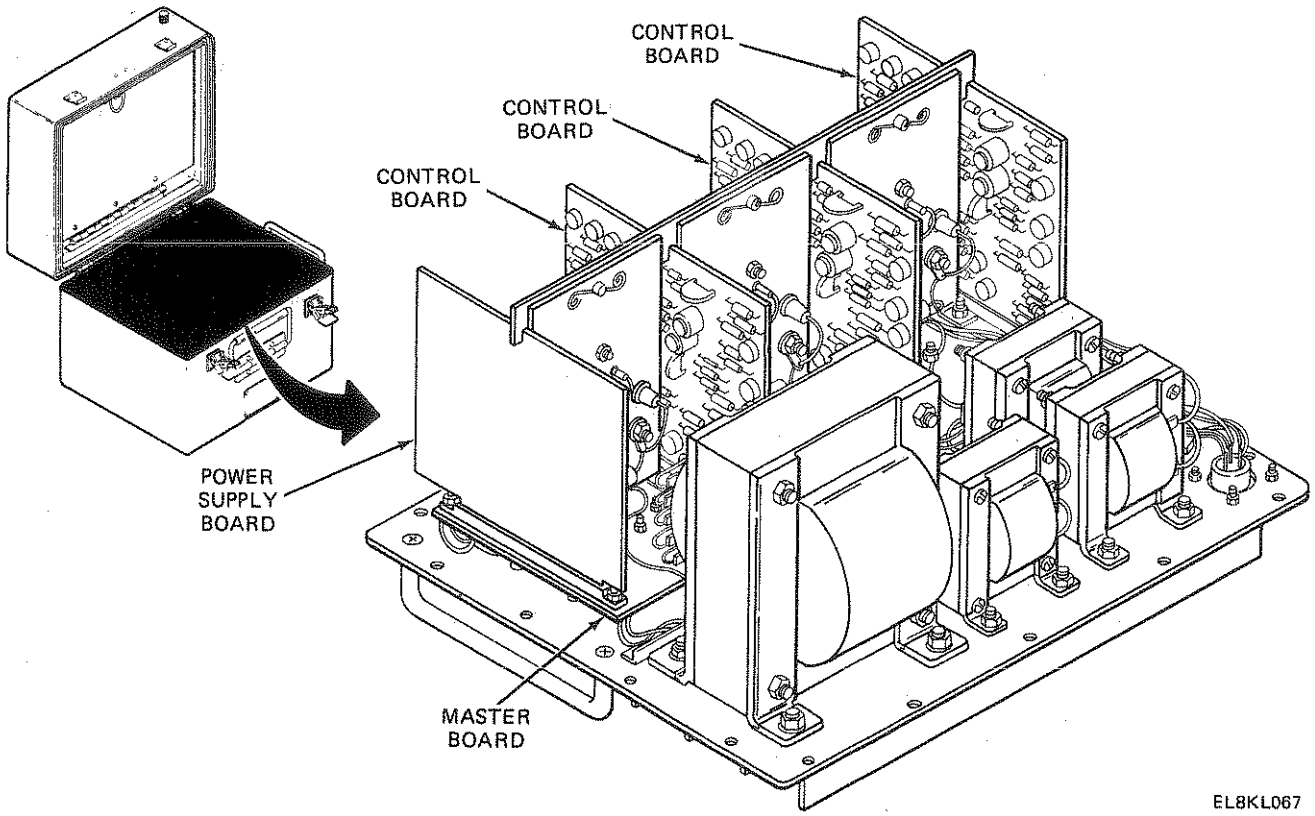
The power supply board provides operating voltages for the charge control circuitry. The output current is selectable from 1 volt to 36 volts at 1.0 or 2.25 amperes.

CONTROL BOARD.

The control board consists of two main parts. The first part senses the current flowing to the battery and also provides a steady current output to the battery. The second part of the control board continuously monitors the battery's terminal voltage and when the battery terminal voltage reaches the preset cutoff voltage, the charger automatically stops the flow of current.

MASTER BOARD.

The master board contains switches and programming which establish desired voltage and current limits for charging. The master board allows current to be selected from 1 to 36 volts at 1 amp or 2.25 amp.



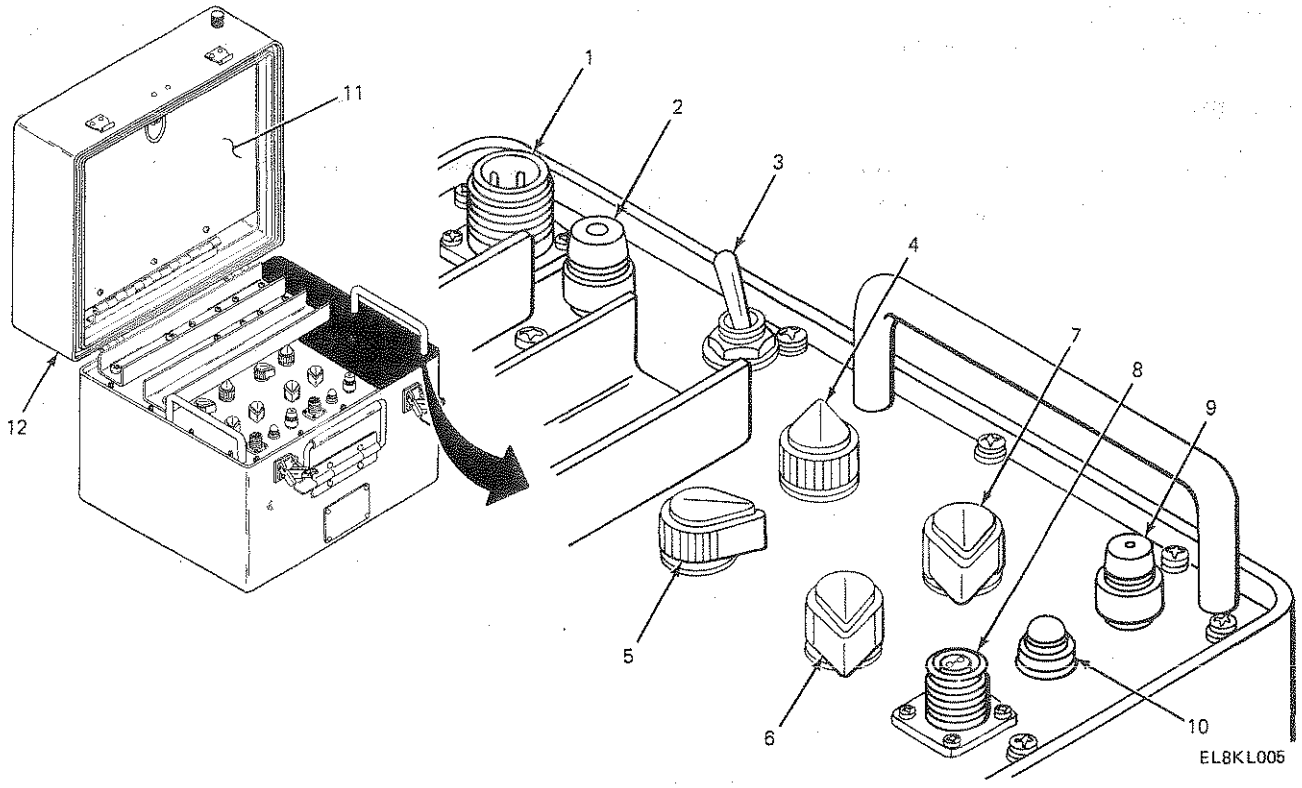
CHAPTER 2

OPERATING INSTRUCTIONS

OVERVIEW

This chapter contains a description of controls and indicators, operator maintenance, preventive maintenance, and operating procedures for the battery charger.

Section I DESCRIPTION AND USE OF OPERATOR'S CONTROLS AND INDICATORS



2-1. DESCRIPTION OF CONTROLS AND INDICATORS.

1	Power cord connector	Provides power to the battery charger.
2	Input fuse	Protects battery charger from too much current that can damage the charger.
3	POWER-ON switch	Applies input power to the power supply board.

2-1. DESCRIPTION OF CONTROLS AND INDICATORS (CONT)

4	CHARGE CURRENT switch	Selects charge current (1.0 or 2.25 amperes) supplied by each channel. When set to START, the CHARGING LAMP lights. When released from START, charging begins at selected rate.
5	RANGE switch	Selects either a preset charge cutoff voltage for silver-zinc batteries (8, 16, or 32 volts) on SILVER-ZINC range, or an adjustable cutoff voltage setting on ADJUSTABLE range.
6	UNIT VOLTS switch	Selects cutoff voltage in unit increments when RANGE switch is in ADJUSTABLE range.
7	TENTH VOLTS switch	Selects cutoff voltage in tenths of one unit increments when RANGE switch is in ADJUSTABLE range.
8	Charging cable connector	Connects battery charger to battery terminals on the battery being charged.
9	Output fuse	Protects battery from being charged with too much current that can damage the charging circuit.
10	CHARGING LAMP	When lighted, indicates that charge current is flowing into the battery.
11	Operating instruction decal	On the cover assembly, brief operating instructions are given for the battery charger.
12	Cover assembly	The detachable cover provides storage space for spare lamps, fuses, and cables.

Section II OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES

2-2. OVERVIEW.

Operator Preventive Maintenance Checks and Services (PMCS) are required before operation of your equipment to keep it in good operating condition.

Before operation, do the before (B) PMCS listed on the PMCS table to be sure that your equipment is ready for operation.

If the equipment fails to operate, refer to the operator's troublehooting procedures (para 3-2) in this manual. Use TM 38-750 as a guide for reporting problems and using forms.

If the equipment must be kept in service continuously, check and service only the things that can be checked and serviced without disturbing operation. Make complete checks and services when equipment can be shut down.

The column titled Equipmment is not Ready/Available If tells you why your equipment cannot be used if the Item to be Inspected does not meet Procedure needs.

Routine checks like equipment inventory, cleaning, checking for frayed cables, storing items not in use, and checking for loose hardware, nuts, bolts, and screws are not listed in the PMCS table. You should do these things any time that you see that they need to be done. If you find a routine check listed in the PMCS table, it is because other operators reported problems with this item.

The Item Number column in the PCMS table is to be used as a source of item numbers for the TM Number column on DA Form 2404, Equipment Inspection and Maintenance Worksheet, for recording PMCS results.

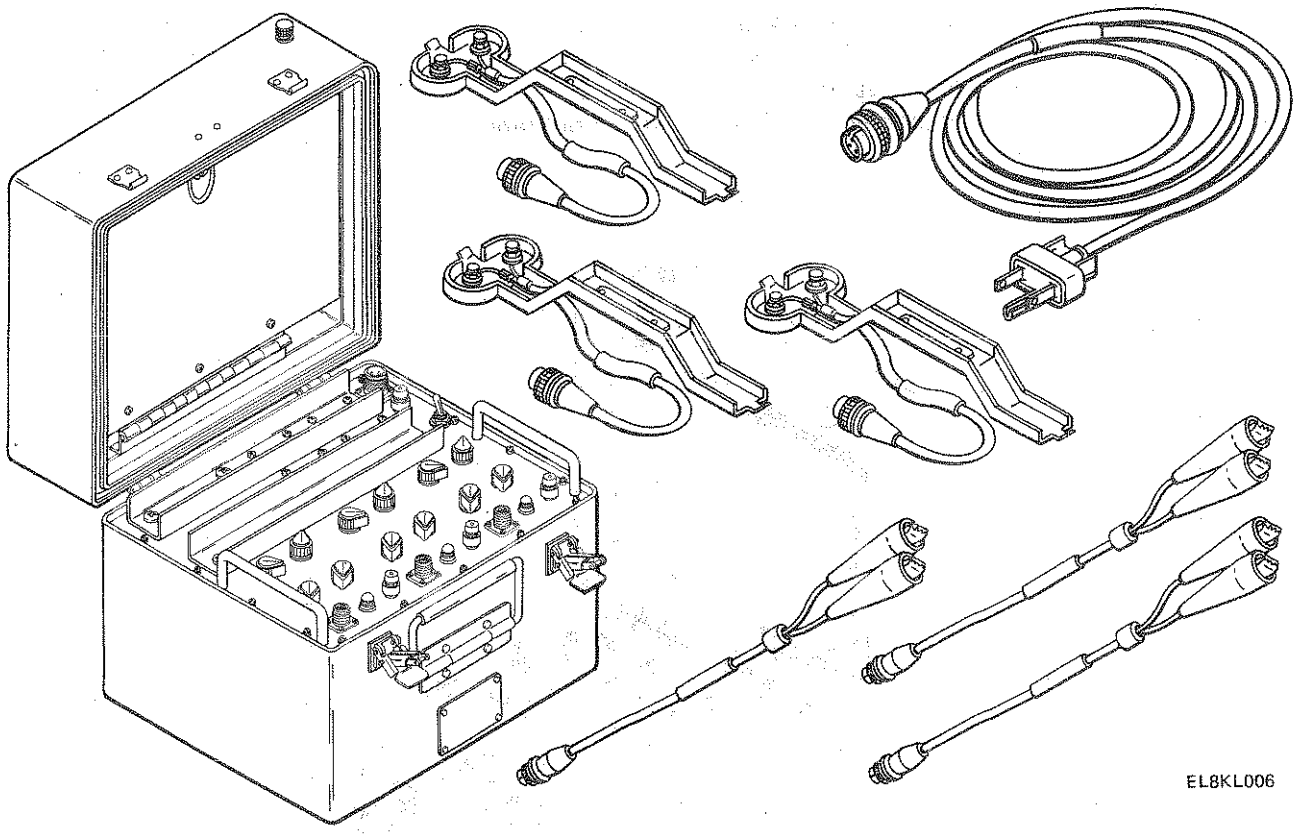
NOTE

Always keep in mind the CAUTIONS and WARNINGS.

OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES.

B – BEFORE OPERATION

ITEM NO.	INTERVAL B	ITEM TO BE INSPECTED PROCEDURE	EQUIPMENT IS NOT READY/AVAILABLE IF:
1	•	BATTERY CHARGER Check that equipment is complete and cables are not cracked or frayed.	Equipment is not complete.



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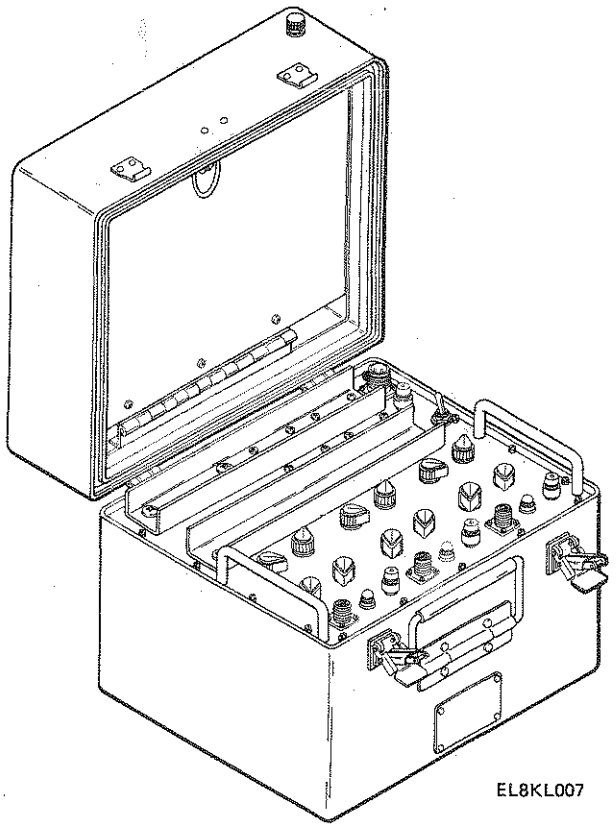
OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES (CONT)

B - BEFORE OPERATION

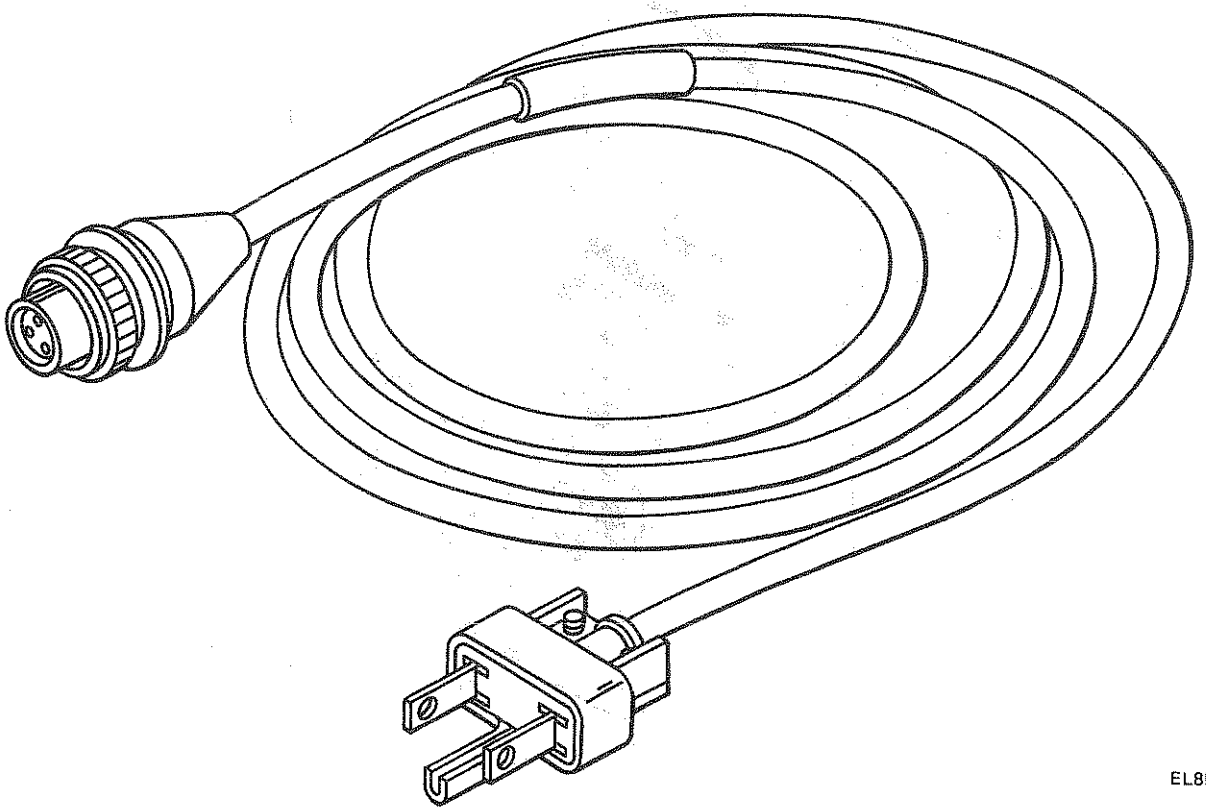
ITEM NO.	INTERVAL B	ITEM TO BE INSPECTED PROCEDURE	EQUIPMENT IS NOT READY/AVAILABLE IF:
		WARNING	
		Adequate ventilation should be provided while using trichlorotrifluoroethane. Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or open flame; the products of decomposition are toxic and irritating. Since trichlorotrifluoroethane dissolves natural oils, prolonged contact with skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.	
2	•	EXTERIOR SURFACE Clean exterior surfaces, including control panel with lint-free cloth dampened with trichlorotrifluoroethane.	



OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES (CONT)

B - BEFORE OPERATION

ITEM NO.	INTERVAL B	ITEM TO BE INSPECTED PROCEDURE	EQUIPMENT IS NOT READY/AVAILABLE IF:
		WARNING Failure to properly ground battery charger can result in electrical shock injury to operator.	
3	•	GROUNDING SYSTEM Check that power cord is plugged into a properly grounded receptacle.	Power receptacle is not properly grounded.



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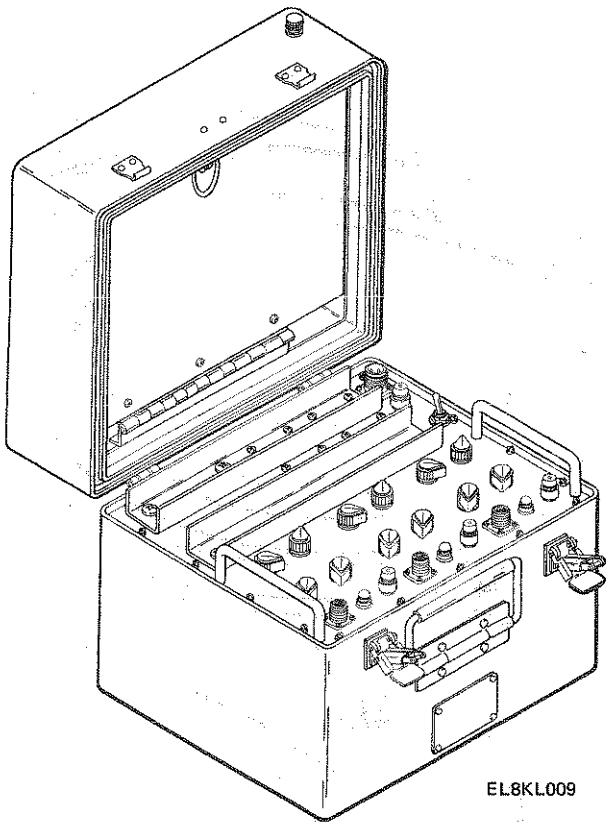
OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES (CONT)

B - BEFORE OPERATION

ITEM NO.	INTERVAL B	ITEM TO BE INSPECTED PROCEDURE	EQUIPMENT IS NOT READY/AVAILABLE IF:
4	•	EXTERIOR METAL SURFACES Check that exterior metal surfaces are free of rust and corrosion. If rust or corrosion is found refer to paragraph 3-6 for painting instructions.	



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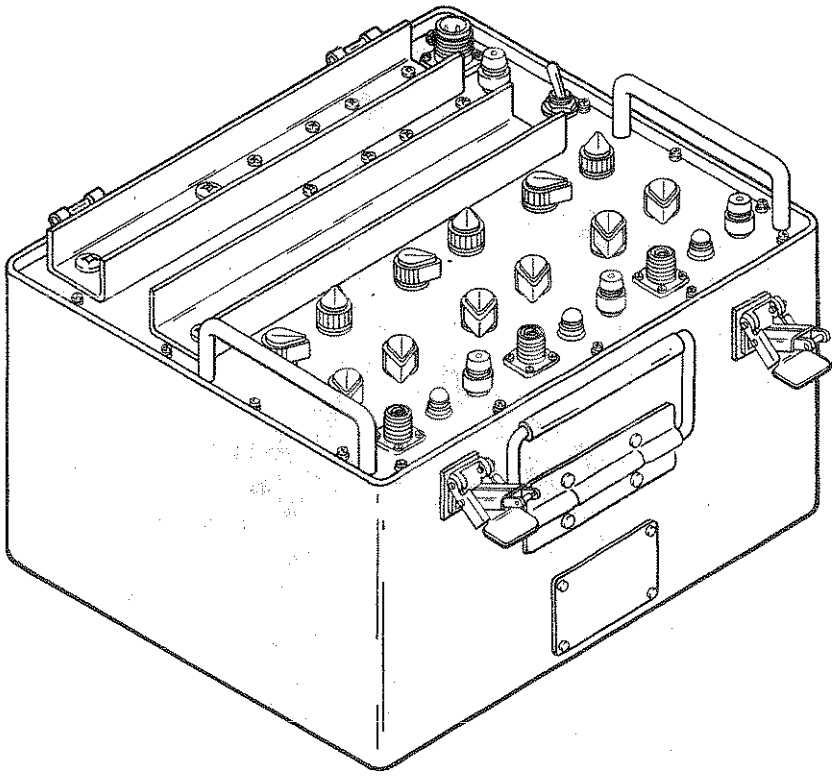
OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES (CONT)

B – BEFORE OPERATION

ITEM NO.	INTERVAL B	ITEM TO BE INSPECTED PROCEDURE	EQUIPMENT IS NOT READY/AVAILABLE IF:
5	•	CONTROLS AND INDICATORS Check POWER-ON switch for binding and looseness. Check control knobs, receptacles, fuseholders, and lamps for binding and looseness. If a problem or malfunction is found, refer to a higher level of maintenance.	Controls are loose or bind.



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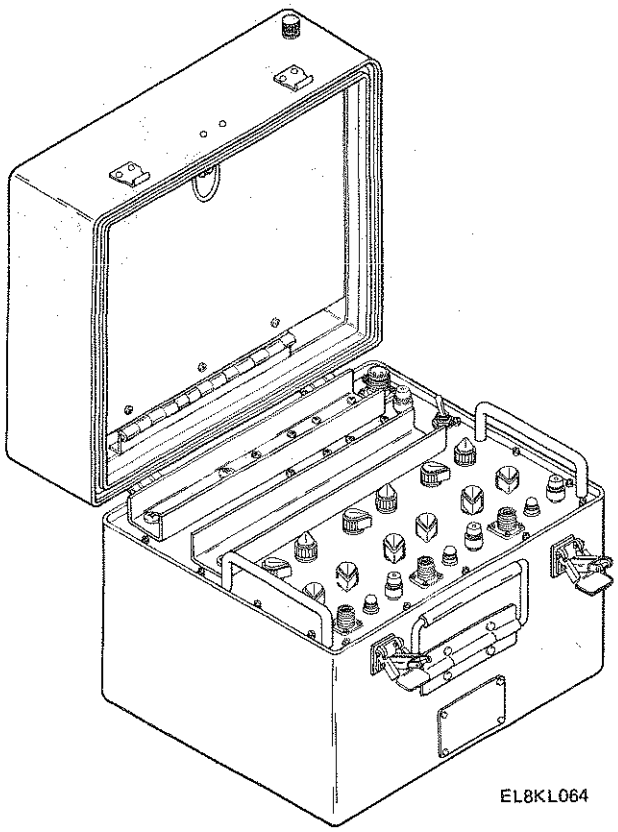
OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES (CONT)

B - BEFORE OPERATION

ITEM NO.	INTERVAL B	ITEM TO BE INSPECTED PROCEDURE	EQUIPMENT IS NOT READY/AVAILABLE IF:
6	•	OPERATION Check for any problems during operation. See paragraph 3-2 for troubleshooting.	Does not operate trouble-free.



Section III OPERATION UNDER UNUSUAL CONDITIONS

2-3. ASSEMBLY AND PREPARATION FOR USE.

This task covers:

Unpacking

INITIAL SETUP

Tools

Knife, folding

Materials/Parts

None

Personnel Required

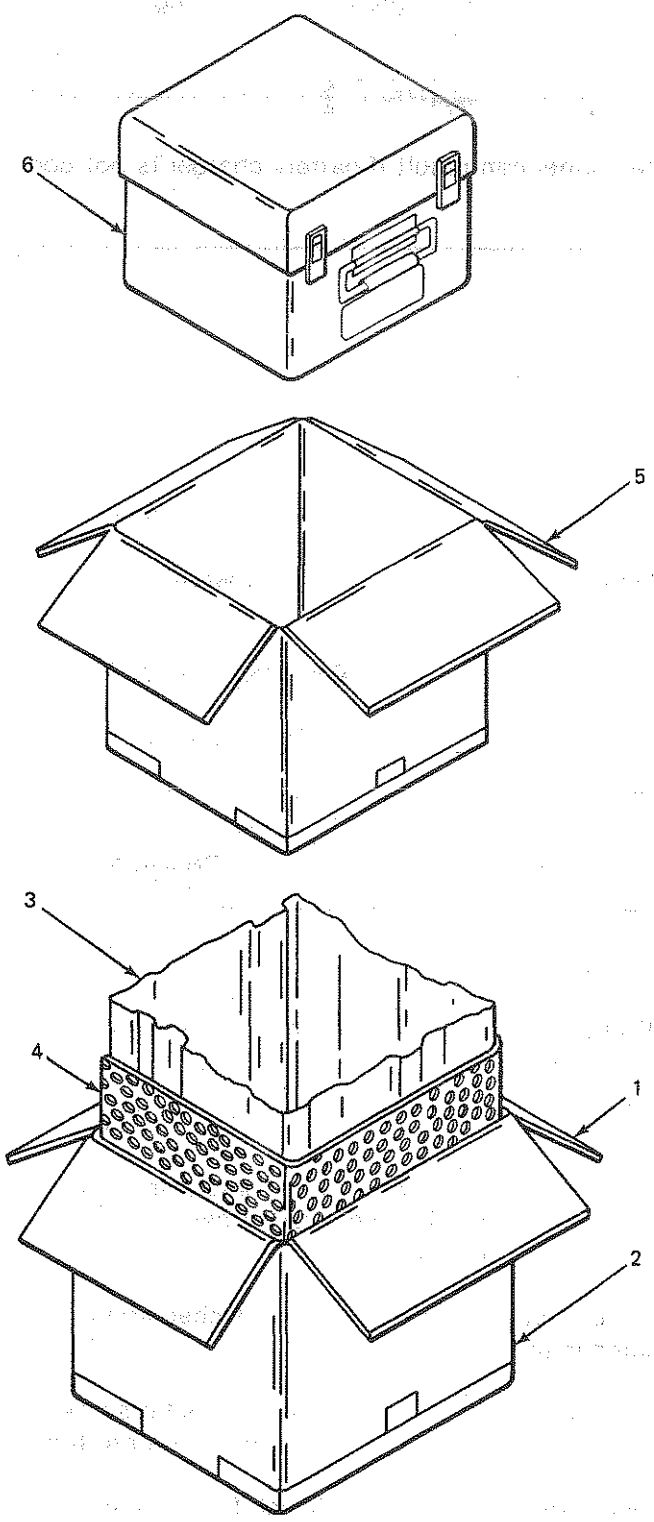
One operator

Equipment Condition

Packing container on workbench

	LOCATION	ITEM	ACTION REMARKS
1.	Outer carton	Carton flaps (1) and carton (2)	Using knife, open. Fold back cover flaps.
2.		Moisture-proof barrier (3) and bubble pack (4)	Using knife, cut along heat seal. Remove bubble pack.
3.		Inner carton (5)	Remove.
4.	Inner carton	Battery charger (6)	Remove.

2-3. ASSEMBLY AND PREPARATION FOR USE (CONT)



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2-4. INITIAL ADJUSTMENTS AND CHECKS.

The battery charger requires no permanent installation site. A location that is level and convenient to a source of 105 to 132 vac, 50 to 400 Hertz is acceptable. Be sure that receptacle will accept the power plug of the battery charger, which is a three-prong grounding type plug.

WARNING

Electrical shock injury to personnel can result if battery charger is not connected to a properly grounded receptacle.

This task covers:

Adjustments and checks

INITIAL SETUP

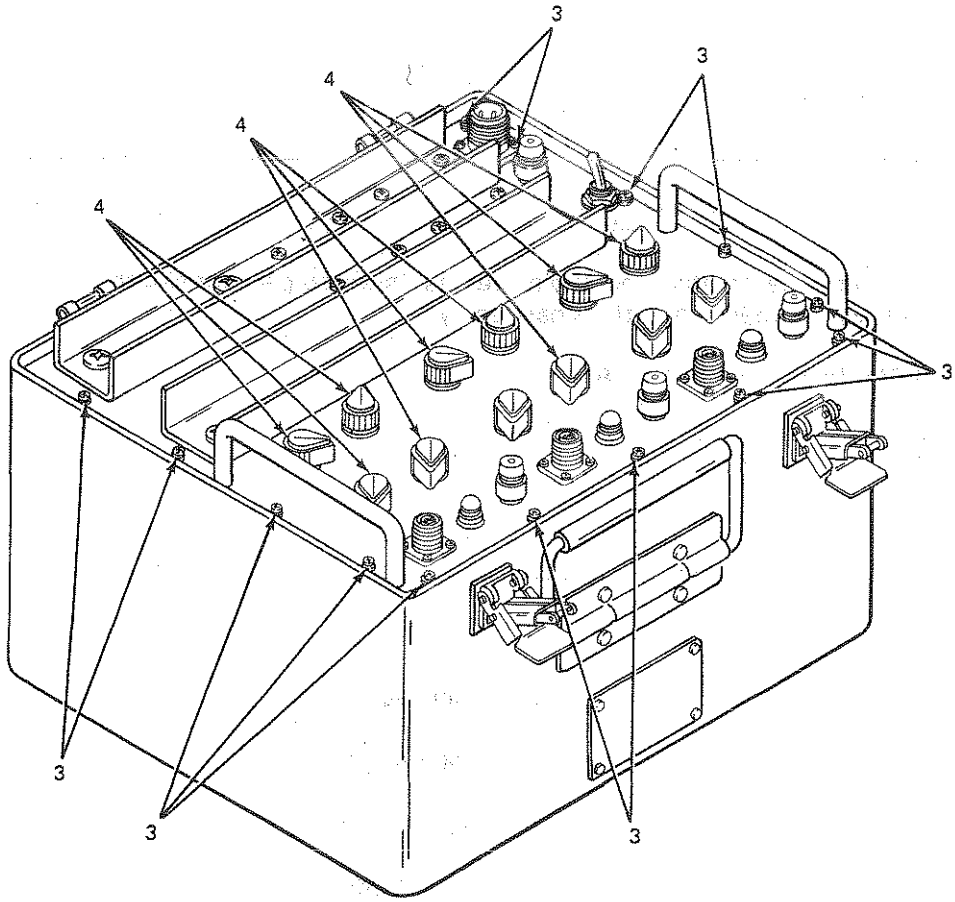
Tools	Personnel Required
Tool Kit, Electronic Equipment TK-100/G	One operator
Materials/Parts	**Equipment Condition**
None	Equipment off

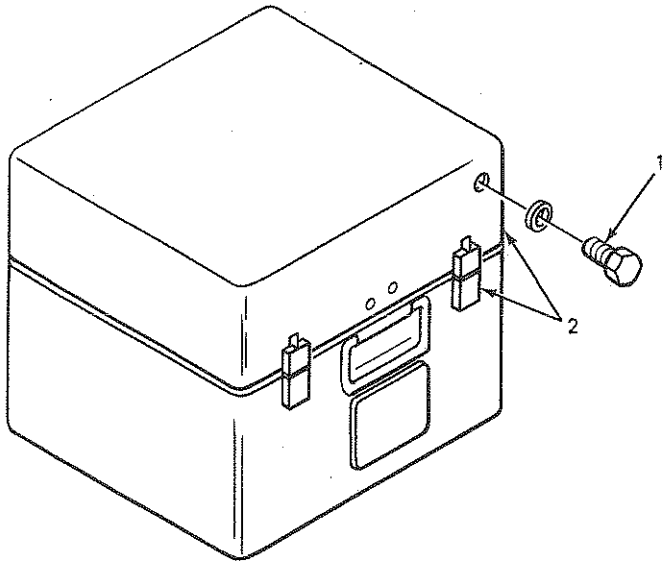
LOCATION	ITEM	ACTION / REMARKS

ADJUSTMENTS AND CHECKS

1.	Battery charger	Pressure relief valve (1)	Turn counterclockwise.
			NOTE
			If battery charger was shipped by air, it will be difficult to open because of partial vacuum caused by altitude changes.
2.		Cover and latches (2)	Open latches and lift cover.
3.		Screws (3)	Using cross-tip screwdriver, check that screws, nuts and bolts are tight.
4.		Operating controls (4)	Check for binding.

2-4. INITIAL ADJUSTMENT AND DAILY CHECKS (CONT)





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2-5. OPERATING PROCEDURES.

The operating procedures covered in the following paragraphs are:

Silver-zinc battery charging procedure
Silver-zinc battery special charging procedure
General charging procedure

WARNING

A charging battery produces a flammable and explosive gas. Injury to personnel can result from handling battery charger and battery carelessly.

2-6. SILVER-ZINC BATTERY CHARGING PROCEDURE.

This task covers:

Charging

INITIAL SETUP

Tools	Personnel Required
None	Two operators
Materials/Parts	**Equipment Condition**
None	Equipment off

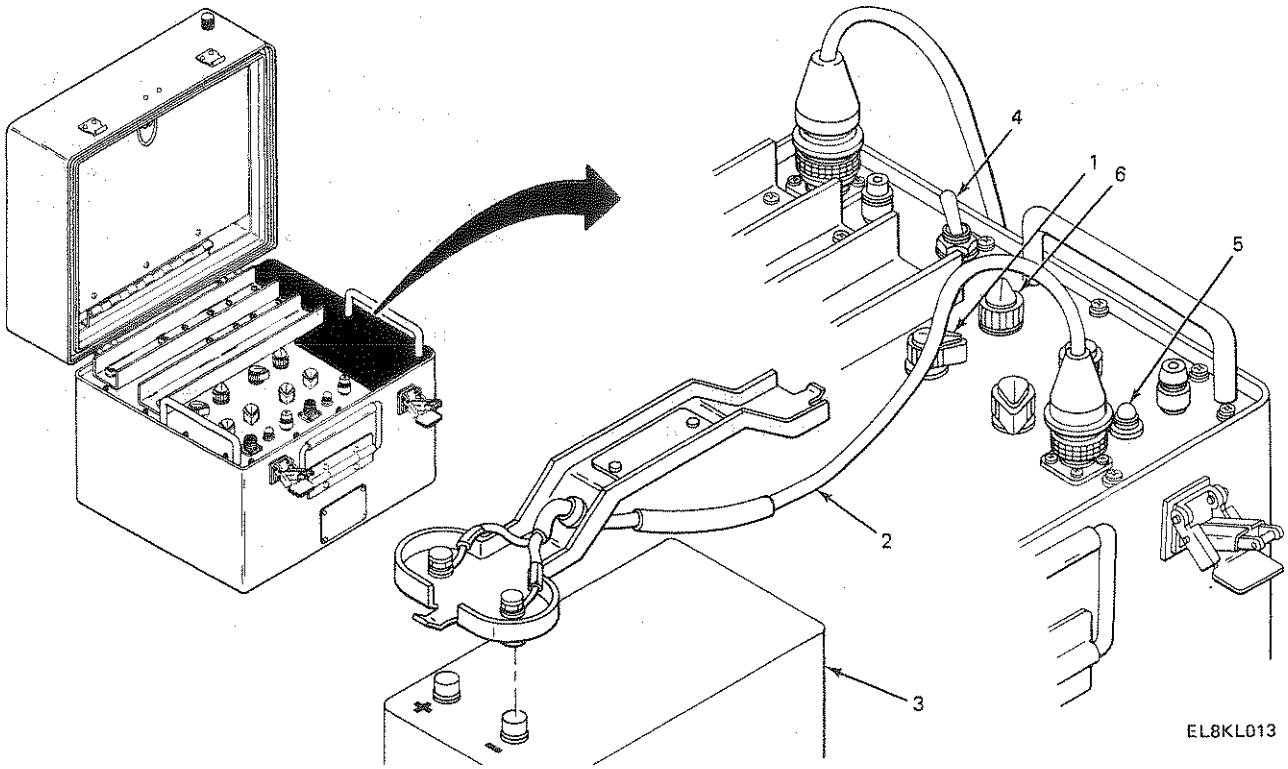
LOCATION	ITEM	ACTION REMARKS
CHARGING		
1. Battery charger	RANGE switch (1)	Select channel, set to desired silver-zinc cutoff voltage (8, 16, or 32 volts) for 6, 12, or 24-volt silver-zinc battery.

6. SILVER-ZINC BATTERY CHARGING PROCEDURE (CONT)

LOCATION	ITEM	ACTION / REMARKS
CHARGING (CONT)		
2.	Silver-zinc charging cable (2) and Battery (3)	Connect charging cable from selected channel to battery. **Observe correct polarity.**
	POWER ON switch (4)	Set to ON.
3.	CHARGING LAMP (5) and CHARGE CURRENT selector switch (6)	Start channel at desired charging current. Observe CHARGING LAMP lights when the CHARGE CURRENT selector switch is set to START.
	CHARGING LAMP (5)	**Upon reaching full charge cutoff voltage, the channel will stop charging and CHARGING LAMP will go out.**

NOTE

Silver-zinc batteries may require special charging procedures. See paragraph 2-7 for charging procedures.



2-7. SILVER-ZINC BATTERY SPECIAL CHARGING PROCEDURE.

This task covers:

Charging

INITIAL SETUP

Test Equipment	Personnel Required
Voltmeter, Meter ME-30(*)/U	Two operators
Materials/Parts	**Equipment Condition**
None	Equipment on

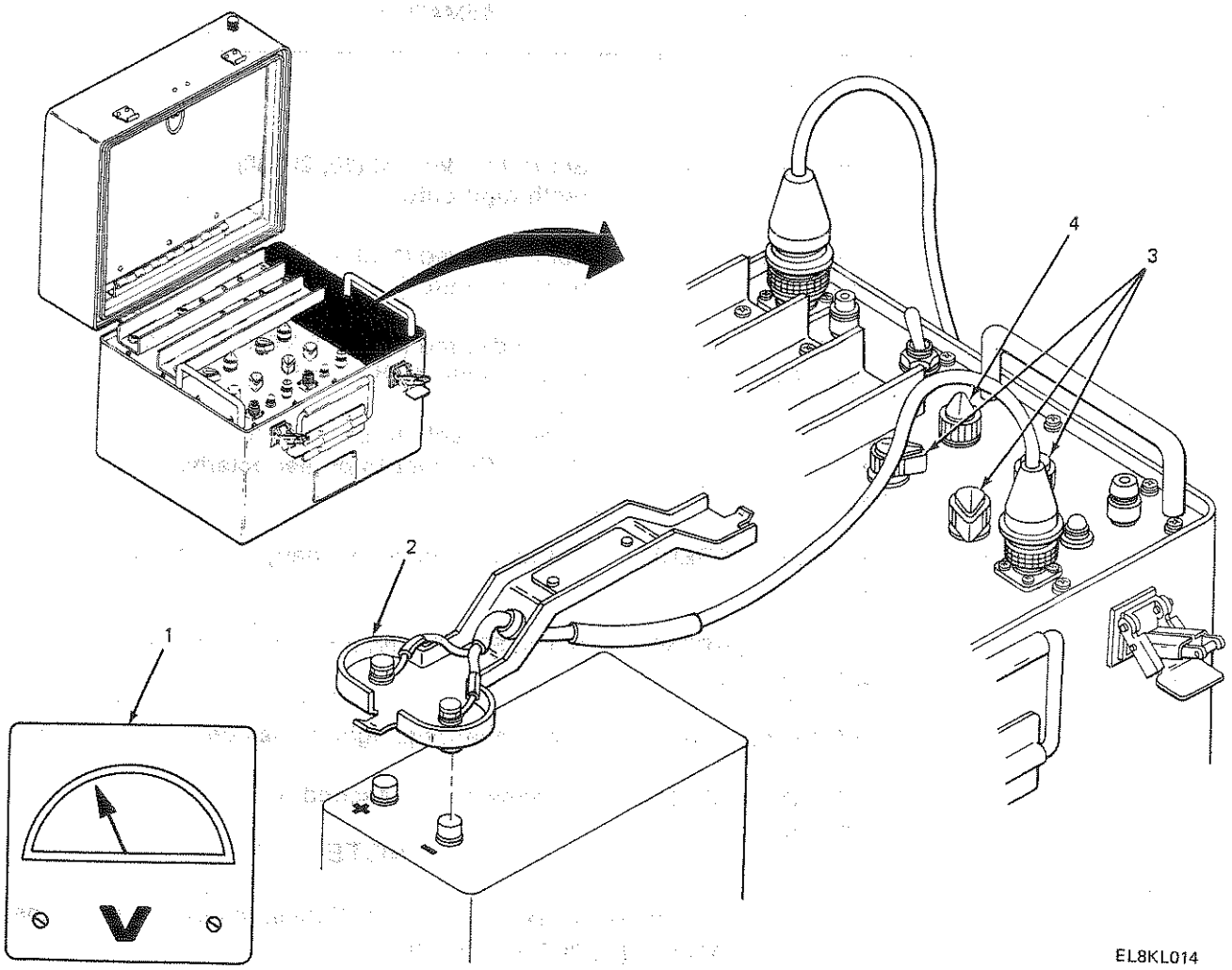
LOCATION	ITEM	ACTION / REMARKS
CHARGING		
1. Silver-zinc battery terminal	Voltmeter (1), Silver-zinc charging cable (2)	Connect voltmeter to charging cable. **Connect voltmeter with proper polarity.**
2. Battery charger	CHARGE CUTOFF VOLTAGE switch (3)	Select 36.0 volt cutoff on charging channel.
3. Silver-zinc battery terminals	Voltmeter (1)	Check battery voltage. If the battery voltage rises to, or above, the proper cutoff voltage (8, 16, or 32 volts) for 6, 12, or 24-volt silver-zinc batteries and remains at that level for more than 2 minutes, the battery is fully charged, or there is excessive resistance in cell interconnections.

NOTE

If CHARGING LAMP does not remain lit, excessive resistance may be present and battery maintenance is needed.

2-7. SILVER-ZINC BATTERY SPECIAL CHARGING PROCEDURE. (CONT)

LOCATION	ITEM	ACTION / REMARKS
CHARGING (CONT)		
4.	Voltmeter (1)	Check battery voltage. If it rises and stays at a voltage near 7.80, 15.60 or 31.20 volts for 6, 12, and 24-volt silver-zinc battery for 2 minutes proceed to step 5.
5. Battery charger	CHARGE CURRENT switch (4)	Set to OFF.
6. Silver-zinc Battery Terminals	Voltmeter (1)	If battery voltage does not rise to 6, 12, or 24 volts within 2 minutes, the battery may require maintenance.



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2-8. GENERAL CHARGING PROCEDURE.

This task covers:

Charging

INITIAL SETUP

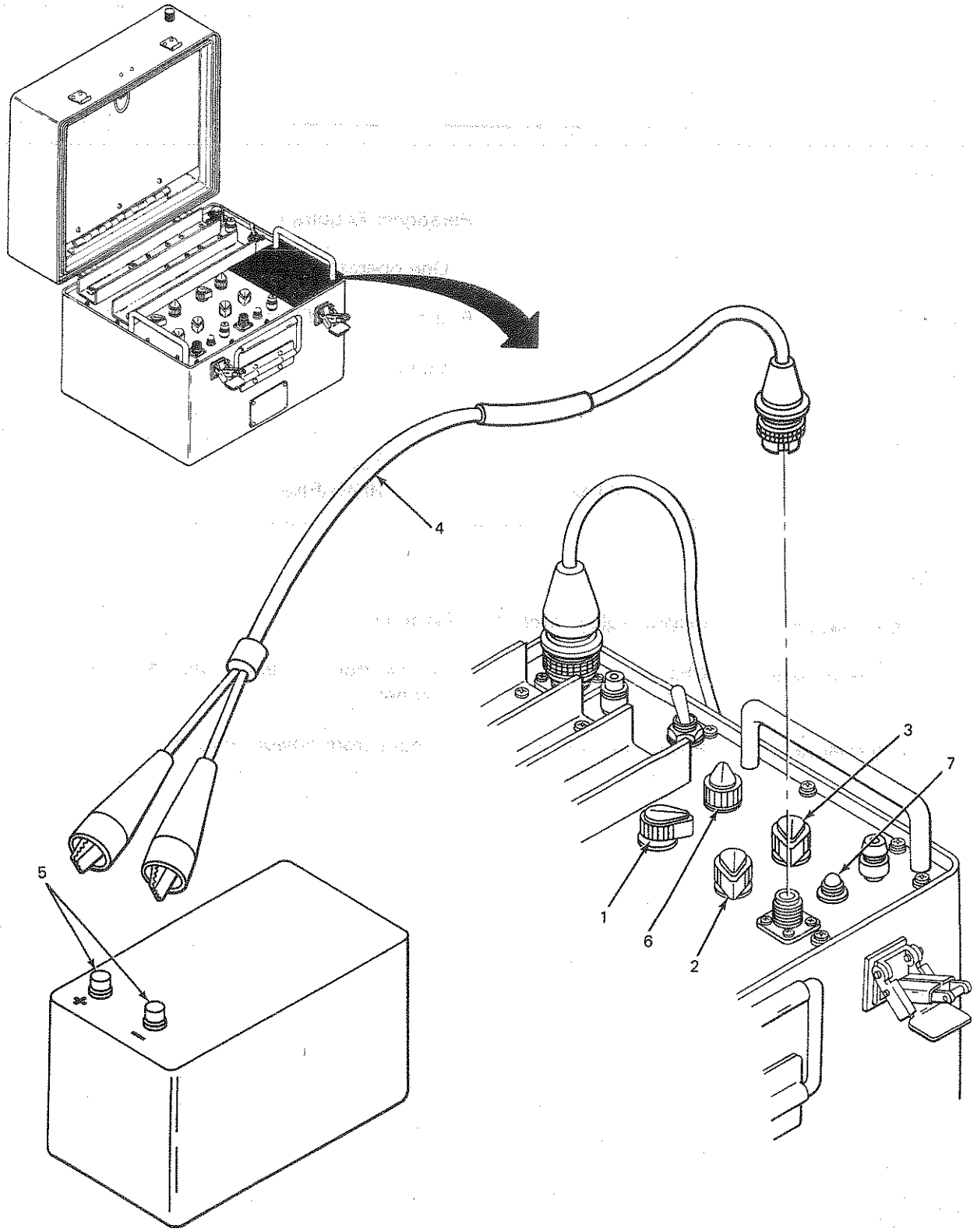
Tools	Personnel Required
None	Two operators
Materials/Parts	**Equipment Condition**
None	Equipment off

LOCATION	ITEM	ACTION / REMARKS
CHARGING		
1. Battery charger	RANGE switch (1)	Set to the desired (10, 20, 30) tenth digit cutoff
2.	UNIT VOLTS switch (2)	Set to desired (1,2,3,4,5,6,7,8,9) unit digit cutoff.
3.	TENTH VOLTS switch (3)	Set to desired (0.1,0.2,0.3,0.4,0.5,0.6,0.7, 0.8,0.9) tenth digit cutoff.
4.	Battery charging cable (4), terminals (5)	Connect cable to battery terminals. **Connect to proper polarity.**
5.	CHARGE CURRENT switch (6)	Set to 1.0 amp slow charge or 2.25 fast charge.
6.	CHARGE CURRENT switch (6)	Set to START and hold for 1 second.
7.	CHARGING LAMP (7)	When charging, light comes on.
8.	CHARGE CURRENT switch (6)	Release after 1 second.

NOTE

For unsealed lead acid type batteries, remove battery caps after charging has started.

2-8. GENERAL CHARGING PROCEDURE (CONT)



2-9. SHUTDOWN PROCEDURE.

This task covers:

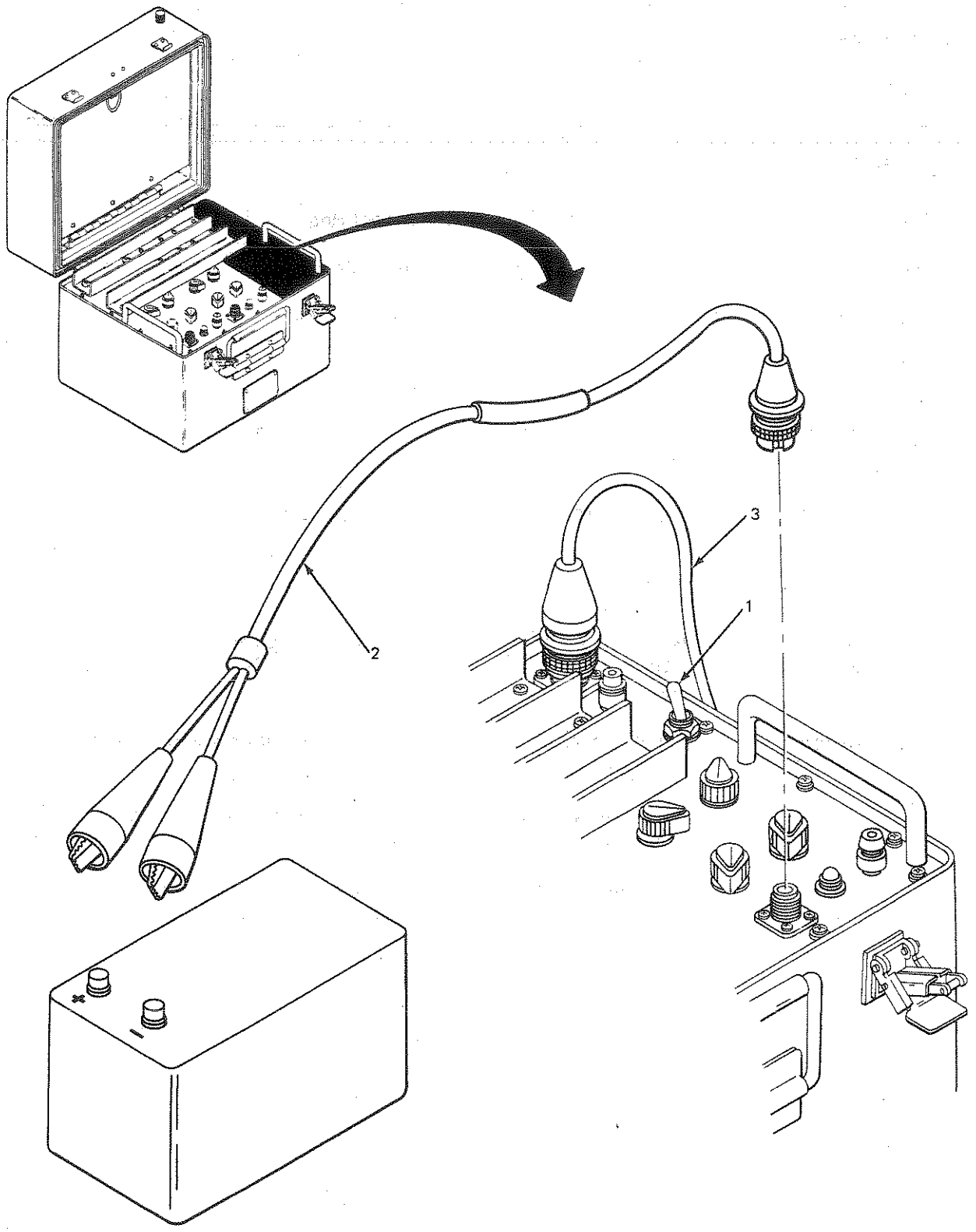
Shutdown

INITIAL SETUP

Tools	Personnel Required
None	One operator
Materials/Parts	**Equipment Condition**
None	Equipment on

LOCATION	ITEM	ACTION / REMARKS
SHUTDOWN		
1. Battery charger	POWER-ON switch (1)	Set to OFF.
2. Battery terminals	Charging cable (2)	Remove from battery terminals and selected channel.
3. Battery charger	Power cord (3)	Remove from power receptacle.

2-9. SHUTDOWN PROCEDURE (CONT)



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2-10. PREPARATION FOR MOVEMENT.

This task covers:

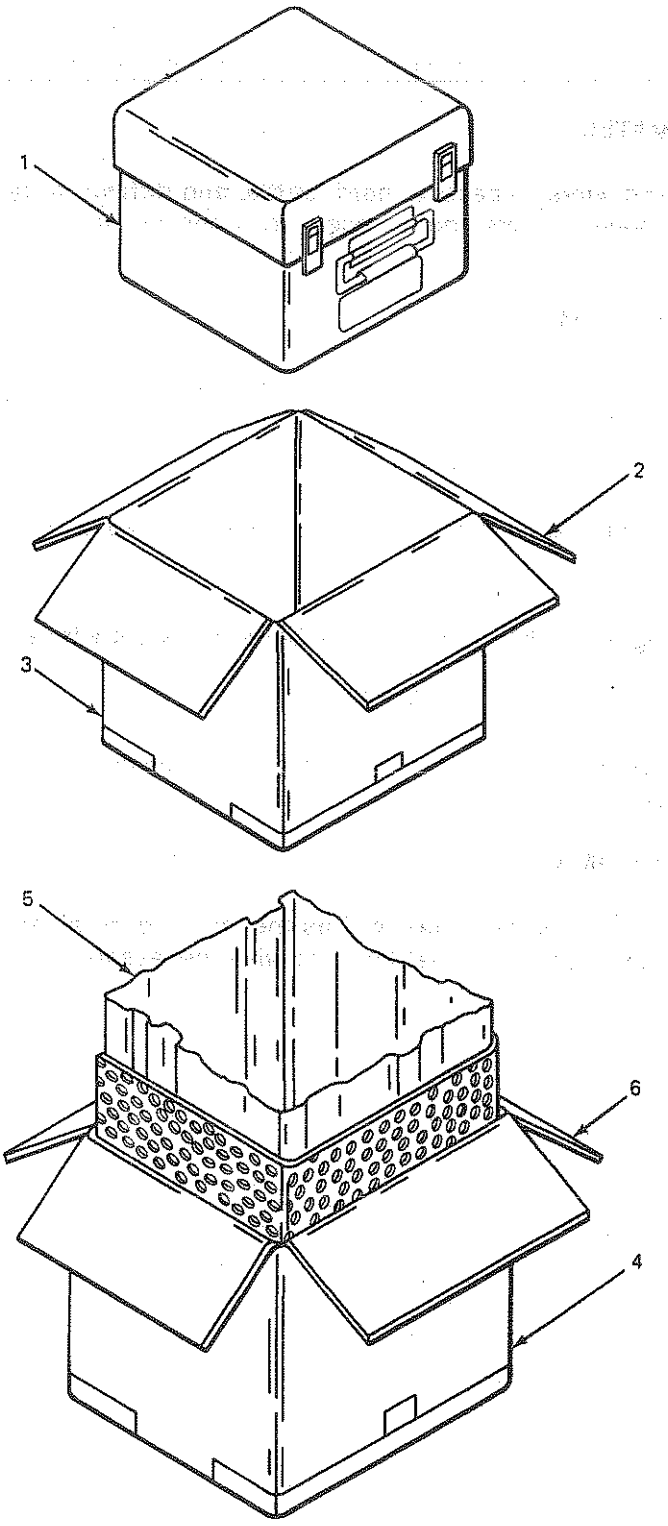
Packing

INITIAL SETUP

Tools	Personnel Required
None	One operator
Materials/Parts	**Equipment Condition**
Tape Carton	Equipment off

LOCATION	ITEM	ACTION REMARKS
PACKING		
1. Inner carton	Battery charger (1), flaps (2) and carton (3)	Put charger in carton and seal flaps with tape.
2. Outer carton	Inner carton (3) and outer carton (4)	Put inner carton into outer carton.
3.	Moisture-vapor proof barrier (5)	Close barrier with tape or other sealing device.
4.	Flaps (6)	Close outer carton flaps and seal with moisture-proof tape.

2-10. PREPARATION FOR MOVEMENT (CONT)



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Section IV OPERATION UNDER UNUSUAL CONDITIONS

2-11. EXTREMELY COLD CLIMATES.

Extreme cold causes cables and wires to become hard, brittle, and difficult to handle. Be careful when handling cable assemblies to prevent kinks and unnecessary loops which might result in permanent damage.

2-12. OPERATION IN TROPICAL CLIMATES.

In tropical climates, equipment is subject to damage from moisture and fungi. Do not leave moisture-proof case cover open for extended period of time.

After initial unpacking and opening of the unit, be sure that the case pressure relief valve is in the closed position (fully right).

Always wipe moisture and fungi from the exterior of the battery charger with a clean, dry cloth.

NOTE

Cleaning must be done when necessary. When storage is necessary, a controlled storage environment must be used.

2-13. OPERATION IN DESERT CLIMATES.

In desert climates, connector and receptacles (as well as the unit in general) are subject to damage from dust, dirt, and sand. Cleaning must be done when necessary.

CHAPTER 3

OPERATOR MAINTENANCE

OVERVIEW

This chapter contains operator troubleshooting and maintenance procedures for the battery charger.

Section I LUBRICATION INSTRUCTIONS

3-1. OVERVIEW.

Lubrication is not needed for the battery charger.

Section II TROUBLESHOOTING

3-2. OVERVIEW.

The troubleshooting table lists problems which you may find when operating the equipment or when doing the operator's PMCS.

The troubleshooting table does not list all of the problems which you may find. If your problem is not listed, report it to a higher level of maintenance.

When working on any problem be sure to report your work on the forms shown in TM 38-750.

To use this troubleshooting table, first find your problem in the symptom index. The symptom index is organized by component and problems for each component. The symptom index will give you a page number on which you will find your problem and possible corrective actions. Turn to that page, find your problem, and follow the procedures shown to correct it.

SYMPTOM INDEX

TROUBLESHOOTING

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

1. Channels do not charge.

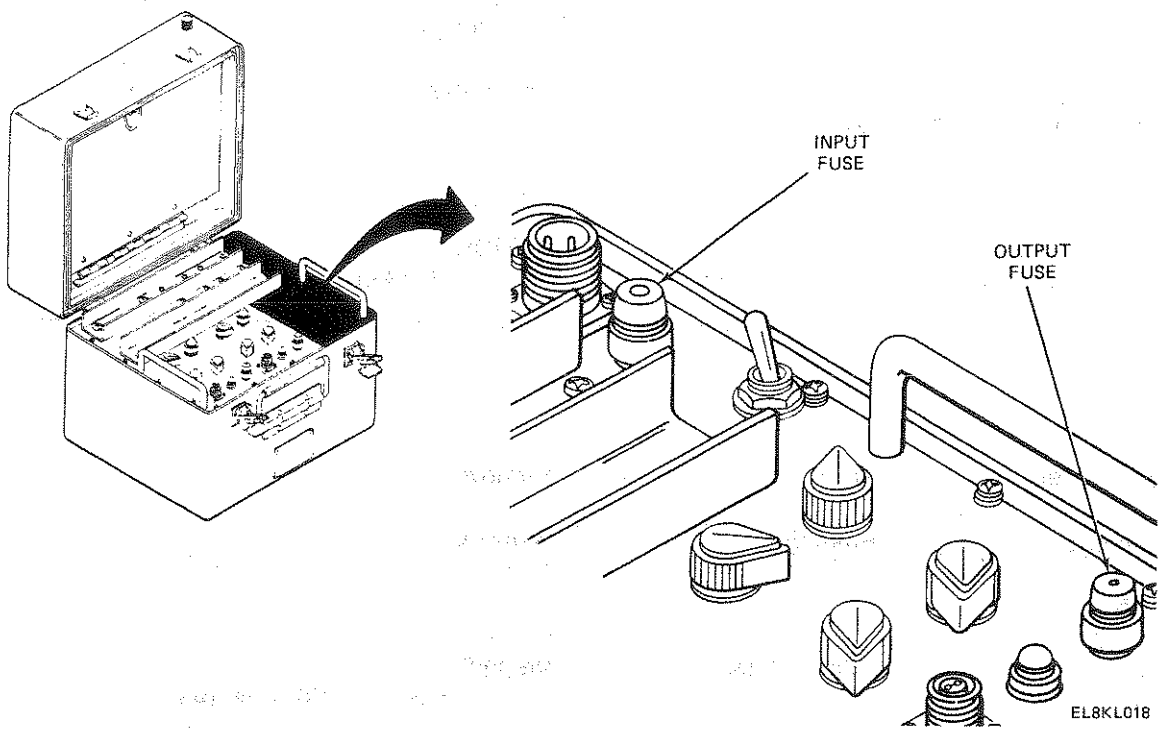
Step 1. Check for blown input fuse.
Replace fuse. See paragraph 3-4.
Step 2. Check for proper connection of power cord into receptacle.
Refer to a higher level of maintenance.

2. Channel does not charge.

Check for blown output fuse.
Replace fuse. See paragraph 3-4.

3. Charging lamp does not stay on.

Step 1. Check for blown output fuse.
Replace fuse. See paragraph 3-4.
Step 2. Check for charged battery.
Use voltmeter to test battery terminals.
Step 3. Check for discharged or shorted battery.
Use voltmeter to test battery terminals. If bad, refer battery to a higher level of maintenance.



Section III MAINTENANCE PROCEDURE

3-3. OVERVIEW.

Maintenance procedures authorized at operator maintenance level are cleaning, touchup painting and fuse maintenance.

3-4. MAINTENANCE OF FUSE.

This task covers:

1. Removal
2. Inspection
3. Installation

INITIAL SETUP

Tools	Personnel Required
None	One operator
Materials/Parts	**Equipment Condition**
Fuse (4 amp), NSN 5920-00-557-2647 Fuse (5 amp), NSN 5920-00-284-6787	Equipment off

LOCATION	ITEM	ACTION **REMARKS**
REMOVAL		
1. Fuseholder	Fuse cap (1)	Remove.
2. Fuse cap	Fuse (2)	Remove.
INSPECTION		
Fuse	Filament (3)	Inspect. **If bad, install new fuse.**

3-4. MAINTENANCE OF FUSE (CONT)

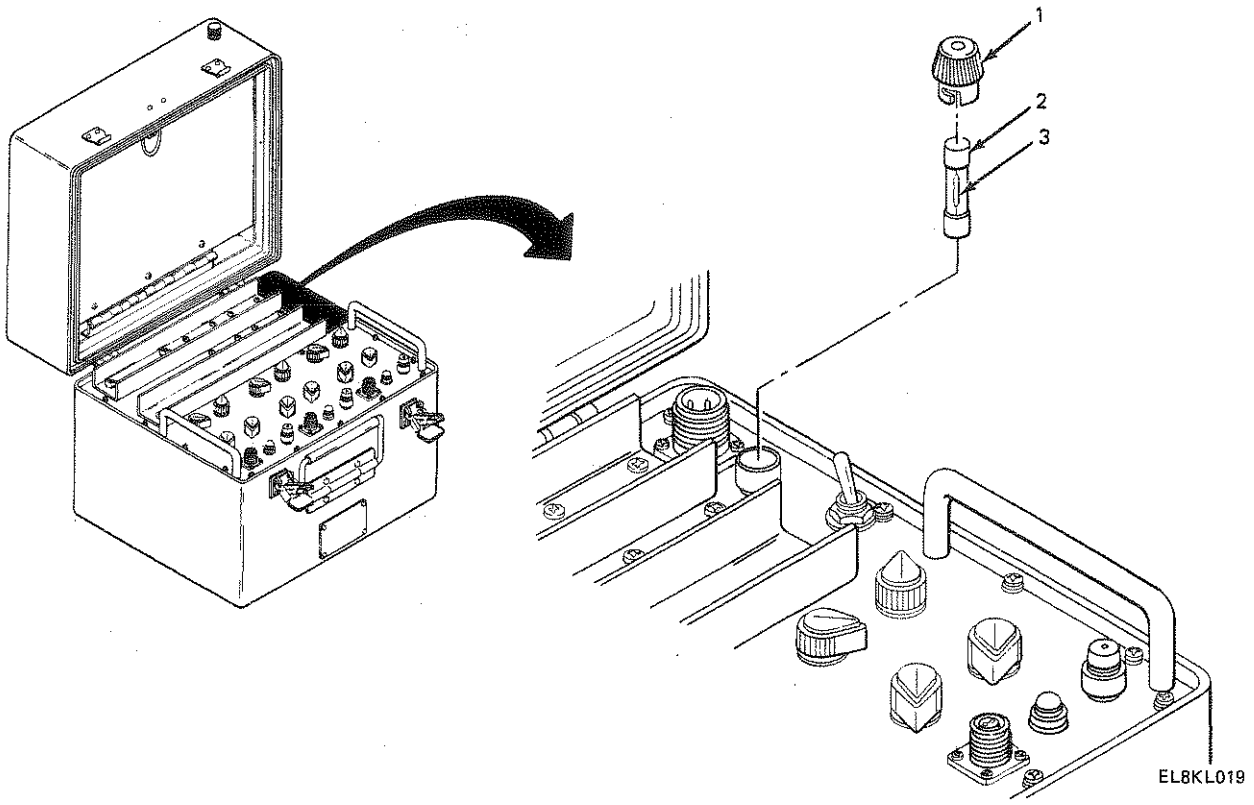
LOCATION	ITEM	ACTION REMARKS

INSTALLATION

NOTE

Install the same amp fuse that was removed. If a 4-amp fuse was removed, install a 4-amp fuse. If a 5-amp fuse was removed, install a 5-amp fuse.

1.	Fuse cap	Fuse (2)	Install.
2.	Fuseholder	Fuse cap (1)	Install.



3-5. CLEANING.

Inspect the exterior of the equipment; exterior surfaces should be free of dust, dirt, grease and fungus. Remove dust and loose dirt with a clean, soft cloth.

WARNING

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

Remove grease, fungus, and ground-in dirt from the case. Use a cloth dampened (not wet) with Trichlorotrifluoroethane.

Remove dust or dirt from cable assembly connectors with a brush as needed. Clean control panel with a clean, soft cloth.

3-6. TOUCHUP PAINTING.

Remove rust and corrosion from the metal surfaces by lightly sanding them with fine sandpaper. Brush two thin coats of paint on the bare metal. See TB 43-0118 for cleaning and refinishing procedures.

CHAPTER 4

ORGANIZATIONAL MAINTENANCE

OVERVIEW

This chapter contains organizational servicing, troubleshooting, and maintenance procedures for the battery charger.

Section I REPAIR PARTS, SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

4-1. COMMON TOOLS AND EQUIPMENT.

The common tools and equipment needed for maintenance are given in the Maintenance Allocation Chart, Appendix B.

4-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT.

There are no special tools or equipment needed to maintain the battery charger at the organizational level.

4-3. REPAIR PARTS.

The repair parts for maintenance are listed and shown in the Repair Parts and Special Tools List TM 11-6130-351-24P.

Section II SERVICE UPON RECEIPT

4-4. SITING.

The battery charger requires no permanent installation site. The location should be level and near a power source of 105 to 132 vac, 50 to 400 Hertz, single phase. Be sure that the power source receptacles will accept the power plug of the battery charger, which is a three-prong grounding type.

WARNING

Electrical shock injury to personnel can result if battery charger is not connected to a properly grounded receptacle.

4-5. SERVICE UPON RECEIPT OF MATERIEL.

See paragraph 2-4 for service upon receipt of materiel.

4-6. UNPACKING.

See paragraph 2-3 for unpacking procedure.

4-7. CHECKING UNPACKED MATERIEL.

See paragraph 2-4 for checking unpacked materiel.

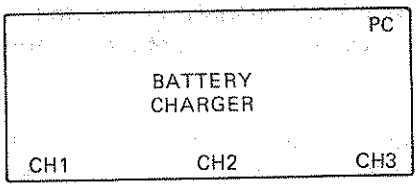
4-8. INSTALLATION INSTRUCTIONS.

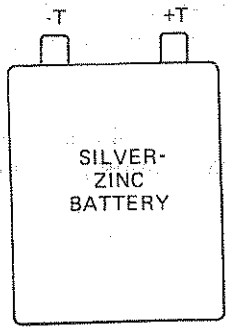
See paragraph 2-4 for installation instructions.

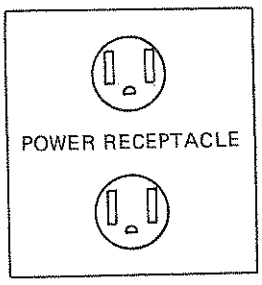
4-9. CABLE DIAGRAM.

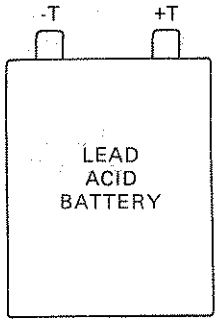
Below is a diagram illustrating cable connections of the battery charger.

CABLE	ASSEMBLY	FROM CHANNEL CONNECTOR	CABLE PLUG	ASSEMBLY	TO BATTERY TERMINAL
1W1	Battery Charger	CH1	+	Silver-zinc Battery	T+
1W1	Battery Charger	CH1	–	Silver-zinc Battery	T–
1W2	Battery Charger	CH2	+	Silver-zinc Battery	T+
1W2	Battery Charger	CH2	–	Silver-zinc Battery	T–
1W3	Battery Charger	CH3	+	Silver-zinc Battery	T+
1W3	Battery Charger	CH3	–	Silver-zinc Battery	T–
1W4	Battery Charger	CH1	Red	Lead-acid Battery	T+
1W4	Battery Charger	CH1	Black	Lead-acid Battery	T–
1W5	Battery Charger	CH2	Red	Lead-acid Battery	T+
1W5	Battery Charger	CH2	Black	Lead-acid Battery	T–
1W6	Battery Charger	CH3	Red	Lead-acid Battery	T+
1W6	Battery Charger	CH3	Black	Lead-acid Battery	T–
1W7	Battery Charger	PC	Cable end	Power cord	Receptacle









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4-10. PRELIMINARY SERVICING AND ADJUSTMENT OF EQUIPMENT.

See paragraph 2-4 for preliminary servicing and adjustment.

Section III EQUIPMENT CHECK PROCEDURES

4-11. OPERATIONAL CHECKS.

To be sure that the battery charger operates properly, see paragraphs 2-5 through 2-8. If problems are discovered, refer to organizational troubleshooting section of this manual. If the problems cannot be corrected, refer to a higher level of maintenance.

Section IV PREVENTIVE MAINTENANCE CHECKS AND SERVICES

4-12. OVERVIEW.

Preventive Maintenance Checks and Services (PMCS) are the quarterly requirements to keep your equipment in good operating condition.

Quarterly (Q) PMCS are to be performed every 90 days and are listed on the PMCS table. If the equipment is operated continuously, see TM 38-750.

If the equipment fails to operate, refer to organizational troubleshooting procedure (para 3-2) in this manual. Use TM 38-750 as a guide for reporting problems and using forms.

If the equipment must be kept in service continuously, check and service only the things that can be checked and serviced without disturbing operation. Make complete checks and services when the equipment can be shut down.

Routine checks like equipment inventory, cleaning, checking for frayed cables, storing items not in use, and checking for loose hardware, nuts, bolts, and screws are not listed in the PMCS table. You should do these things any time that you see that they need to be done. If you find a routine check listed in the PMCS table, it is because other persons reported problems with this item.

The ITEM NUMBER column in the PMCS table is to be used as a source of item numbers for the TM Number column on DA FORM 2404, Equipment Inspection and Maintenance Worksheet, for recording PMCS results.

NOTE

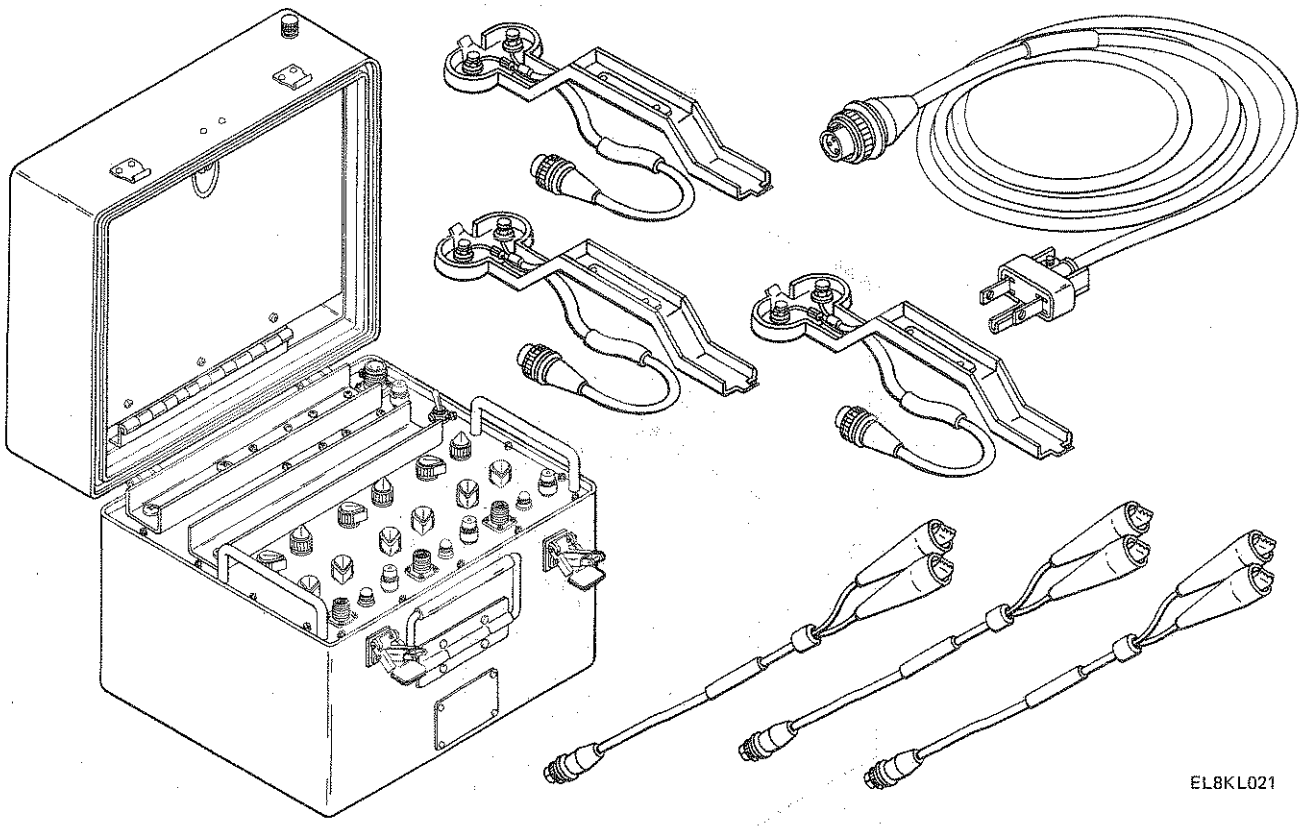
ALWAYS KEEP IN MIND THE CAUTIONS AND WARNINGS.

For test equipment needed, see the Maintenance Allocation Chart (MAC) in Appendix B.

ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES

Q - QUARTERLY

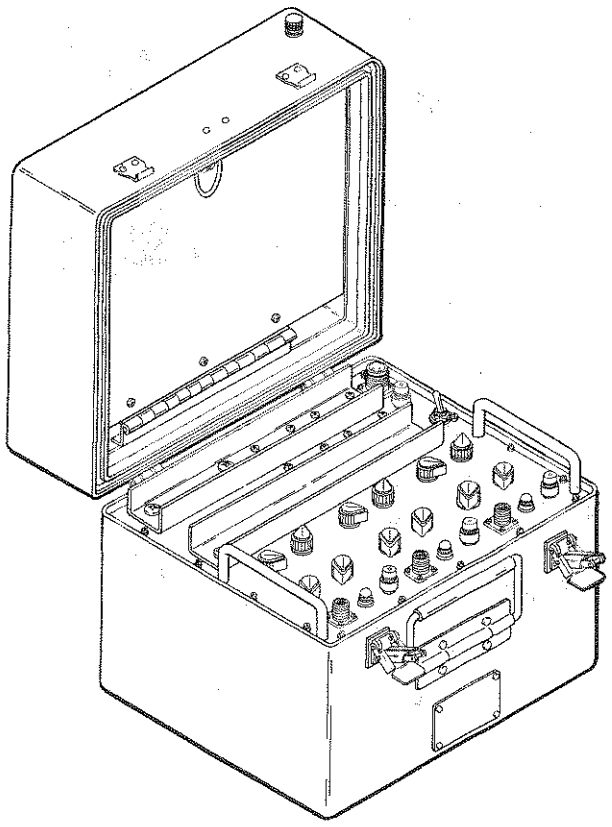
ITEM NO.	INTERVAL Q	ITEM TO BE INSPECTED	PROCEDURES
1	*	BATTERY CHARGER	Check battery charger against packing slip or illustration for completeness.



ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (CONT)

Q - QUARTERLY

ITEM NO.	INTERVAL Q	ITEM TO BE INSPECTED	PROCEDURES
			WARNING
			Adequate ventilation should be provided while using trichlorotrifluoroethane. Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or open flame; the products of decomposition are toxic and irritating. Since trichlorotrifluoroethane dissolves natural oils, prolonged contact with skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.
2	•	BATTERY CHARGER	Clean exterior surfaces including control panel, with soft, clean cloth dampened with trichlorotrifluoroethane.



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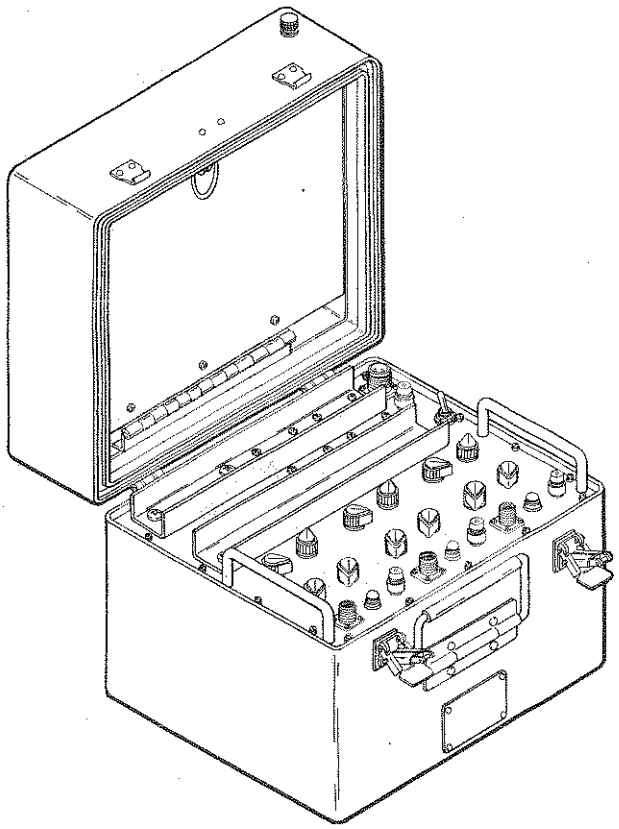
ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (CONT)

Q - QUARTERLY

ITEM NO.	INTERVAL Q	ITEM TO BE INSPECTED	PROCEDURES
3	•	EXTERIOR METAL SURFACES	Check that metal surfaces are free of rust and corrosion. See paragraph 3-6 for touchup painting instructions.



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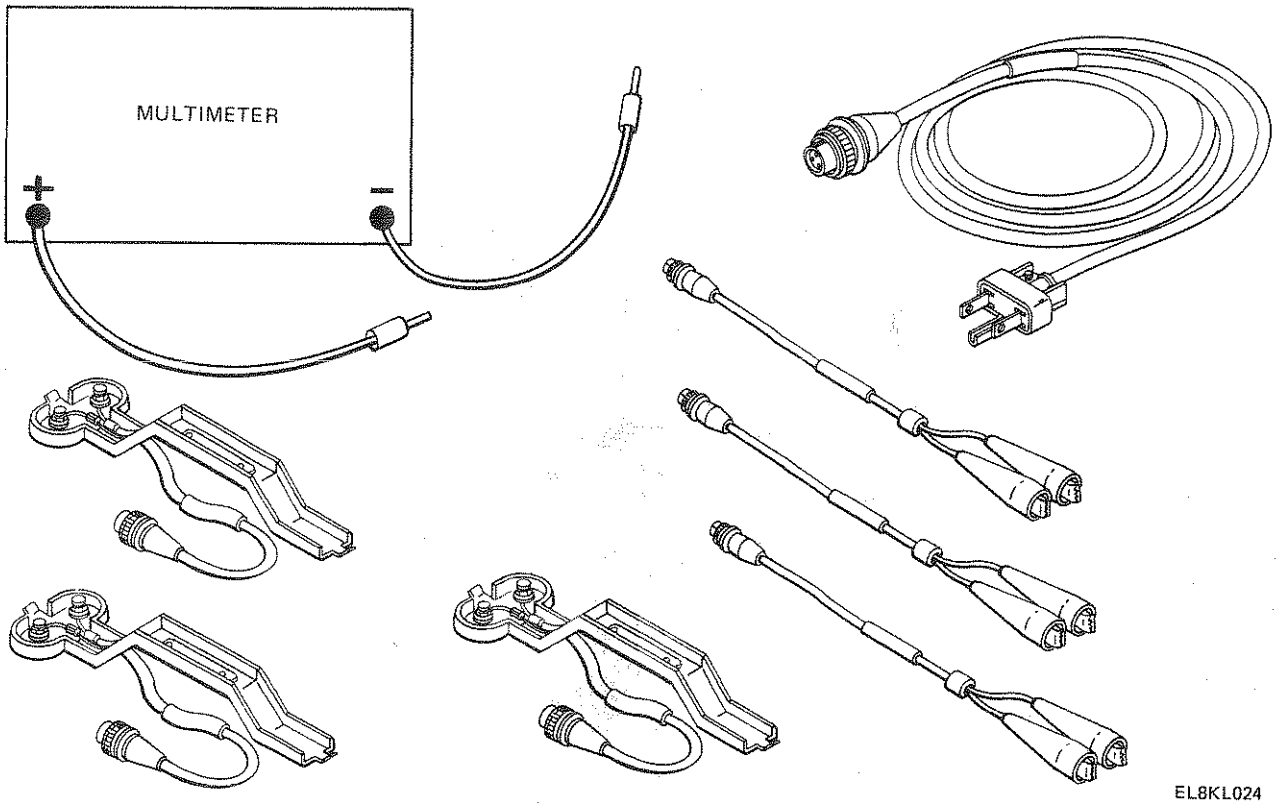
ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (CONT)

Q - QUARTERLY

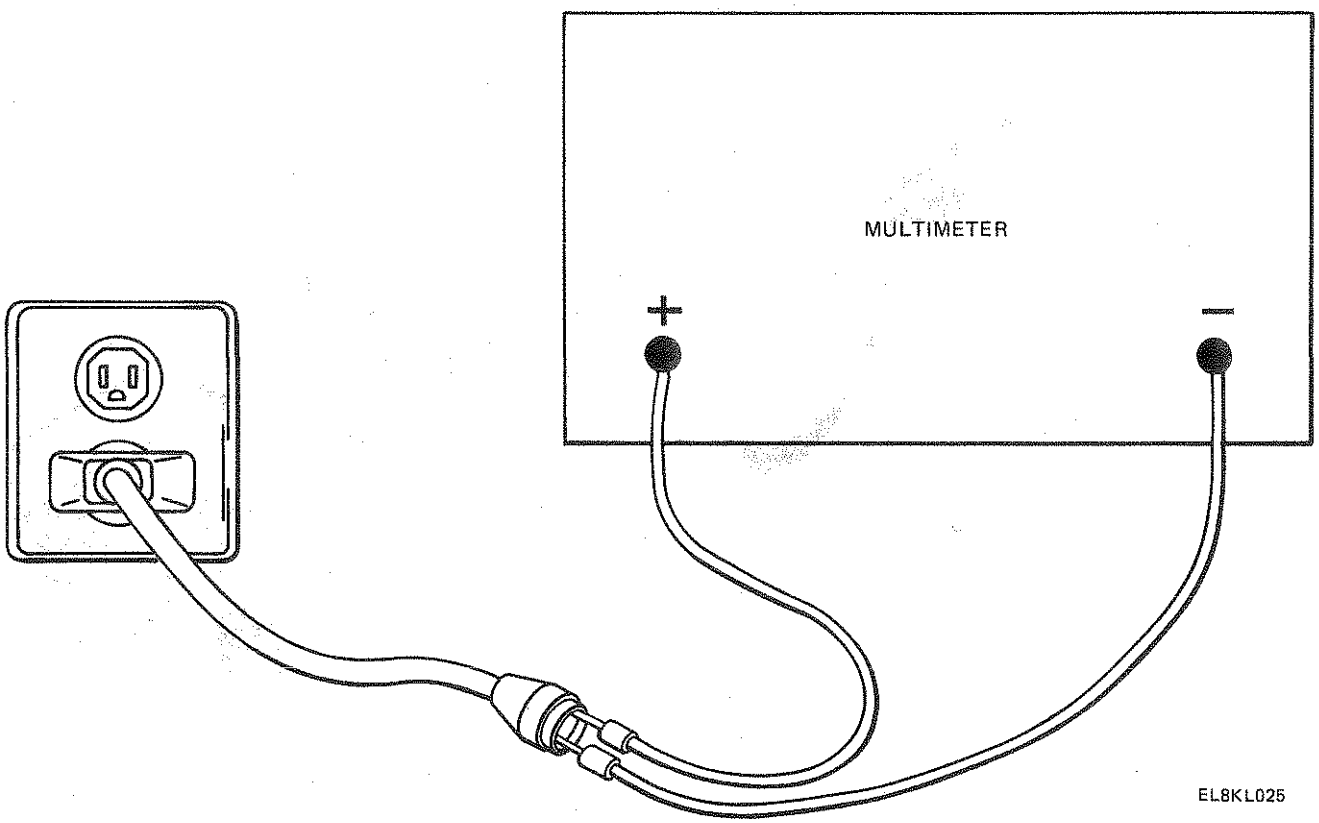
ITEM NO.	INTERVAL Q	ITEM TO BE INSPECTED	PROCEDURES
4	•	CABLE ASSEMBLIES	Check all cables for continuity and shorts with a multimeter. See paragraph 4-18.



ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (CONT)

Q - QUARTERLY

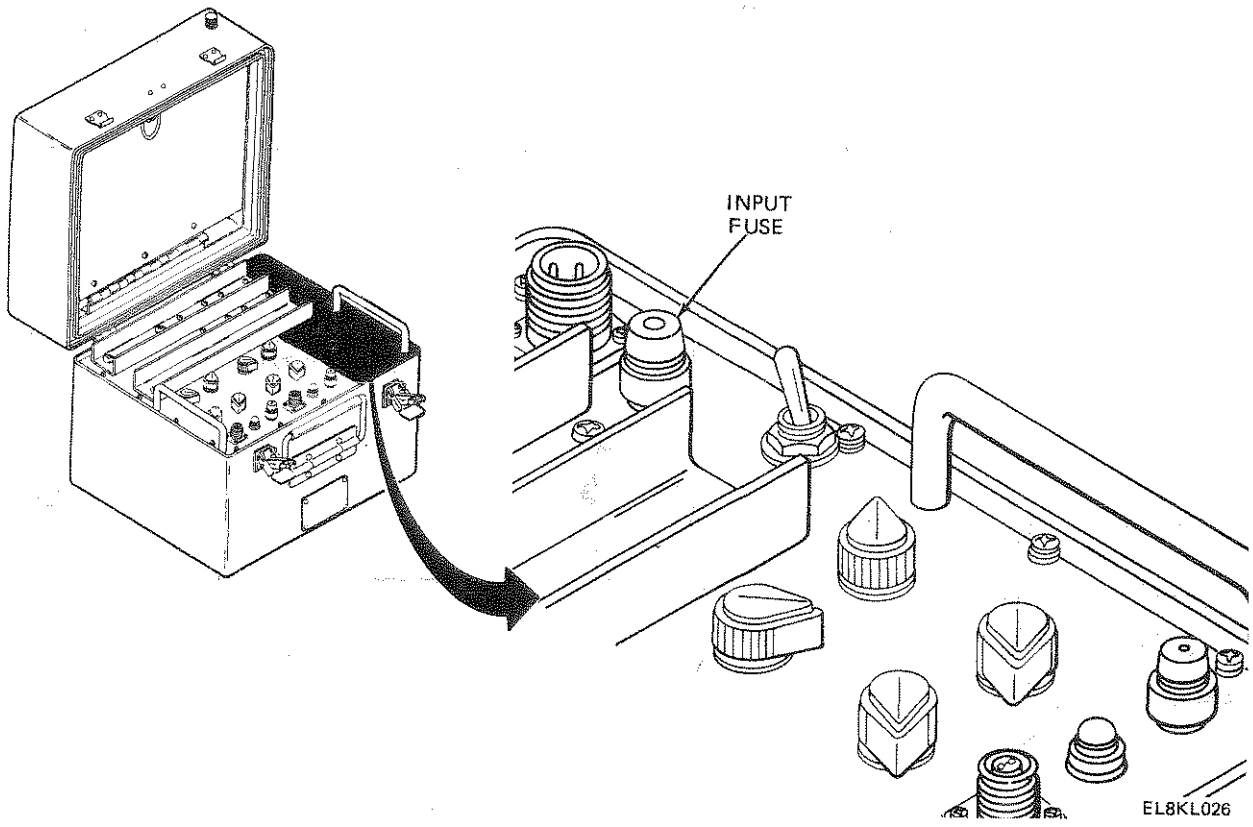
ITEM NO.	INTERVAL Q	ITEM TO BE INSPECTED	PROCEDURES
5	•	INPUT VOLTAGE through power cord with multimeter.	Check input voltage from power source. **NOTE** Be sure to set multimeter to AC voltage range.



ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (CONT)

Q - QUARTERLY

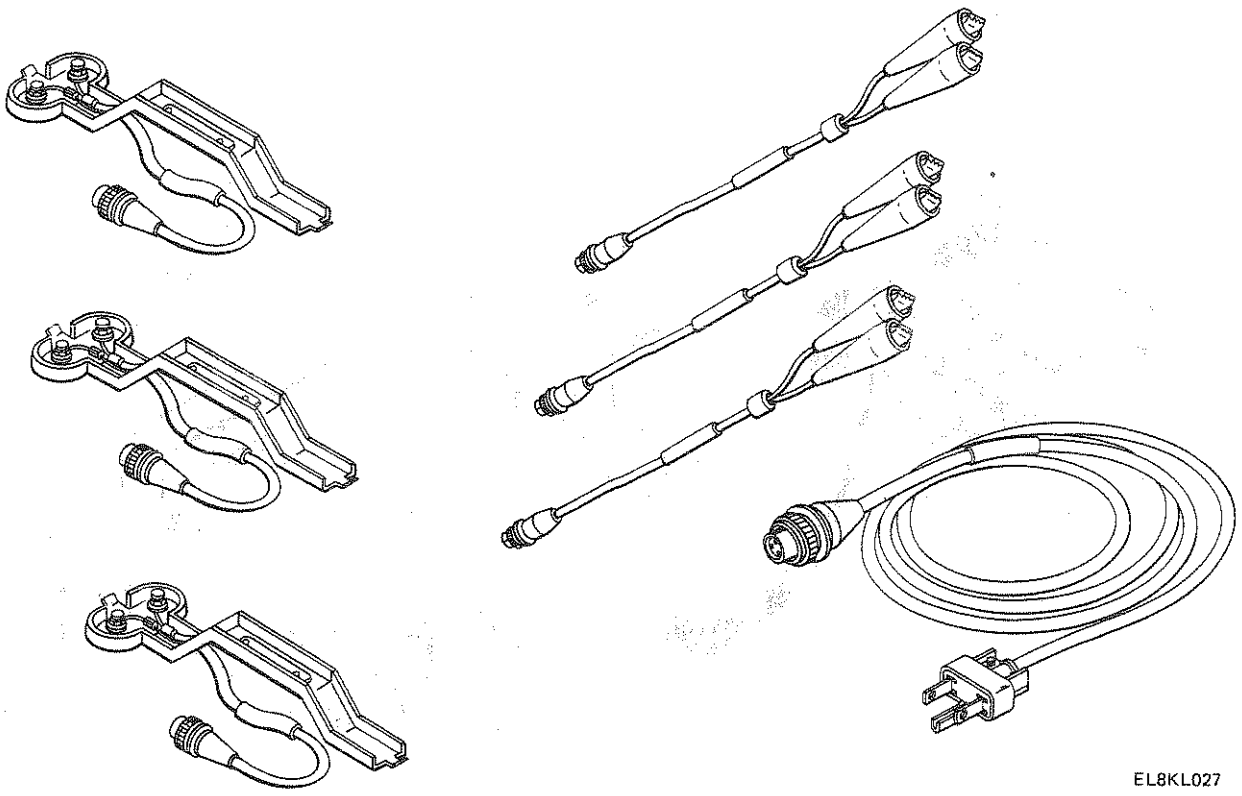
ITEM NO.	INTERVAL Q	ITEM TO BE INSPECTED	PROCEDURES
6	•	INPUT FUSE	Check fuse for proper size and type (5 amp). If fuse is bad, replace fuse. See paragraph 4-15.



ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (CONT)

Q - QUARTERLY

ITEM NO.	INTERVAL Q	ITEM TO BE INSPECTED	PROCEDURES
7	•	POWER AND CHARGING CABLES	Check cables for cracks or frayed insulation. If found, refer cable to a higher level of maintenance.



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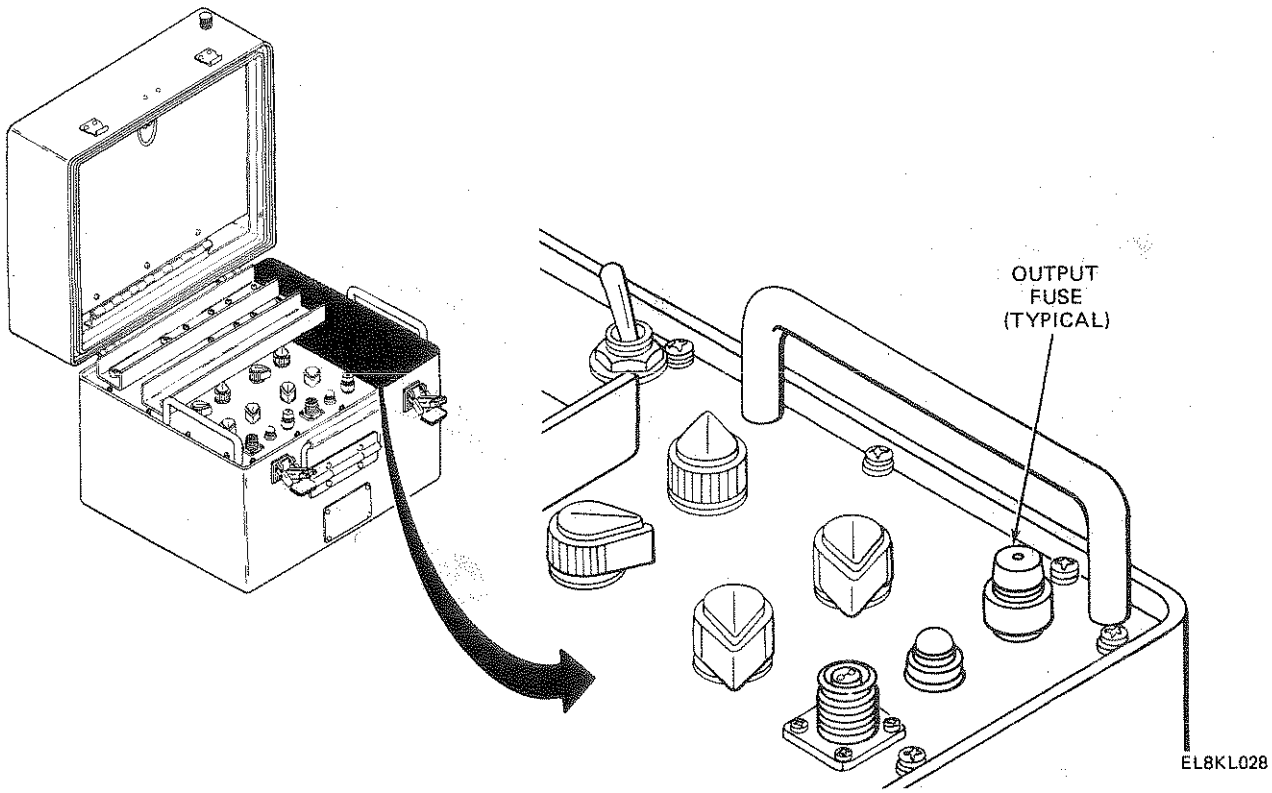
ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (CONT)

Q - QUARTERLY

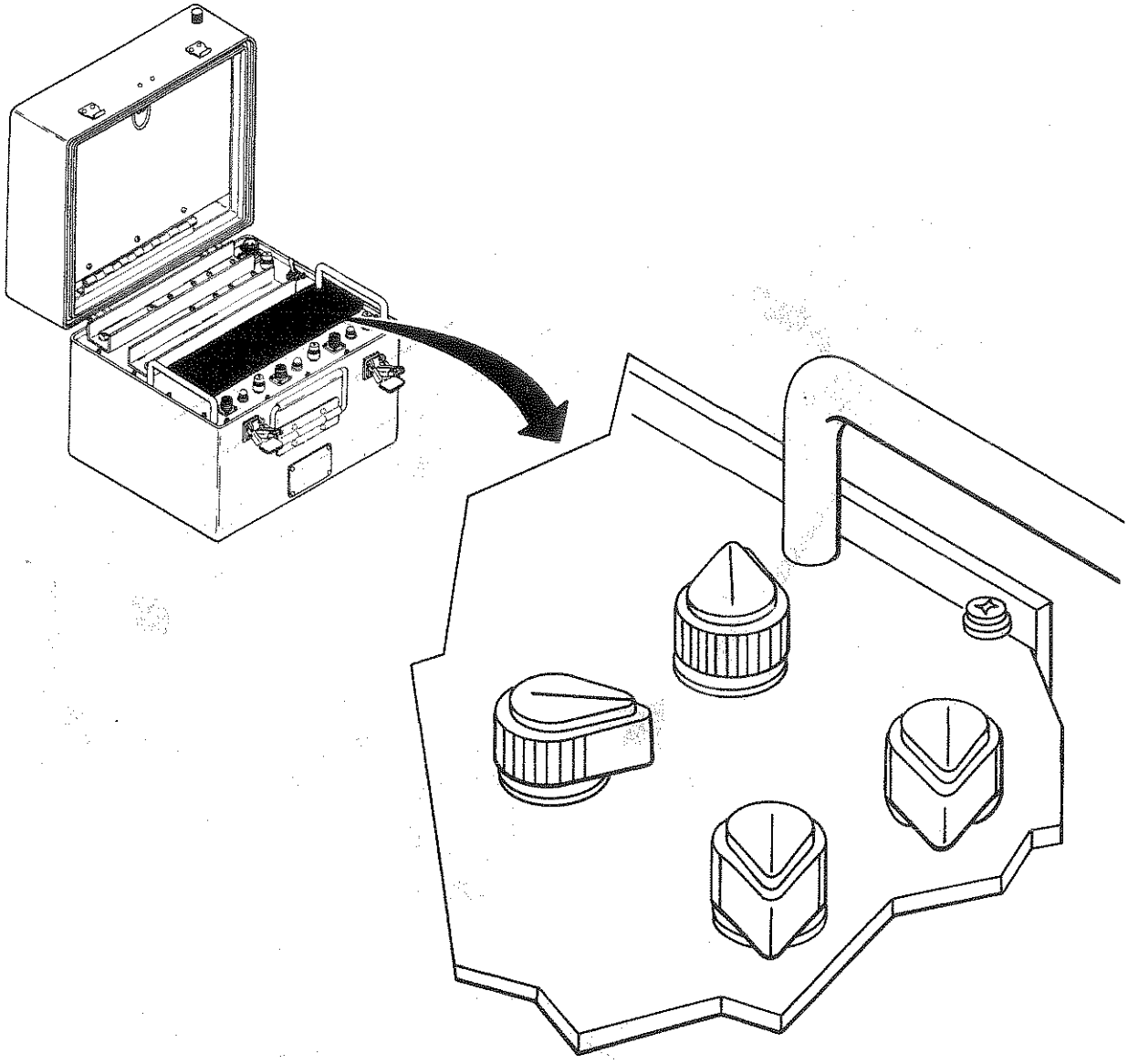
ITEM NO.	INTERVAL Q	ITEM TO BE INSPECTED	PROCEDURES
8	•	OUTPUT FUSES	Check fuses for proper size and type (4 amp). If fuse is bad, replace fuse. See paragraph 4-15.



ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (CONT)

Q - QUARTERLY

ITEM NO.	INTERVAL Q	ITEM TO BE INSPECTED	PROCEDURES
9	•	KNOBS AND SWITCHES	Check all knobs and switches for binding. Be sure that POWER-ON switch works properly.



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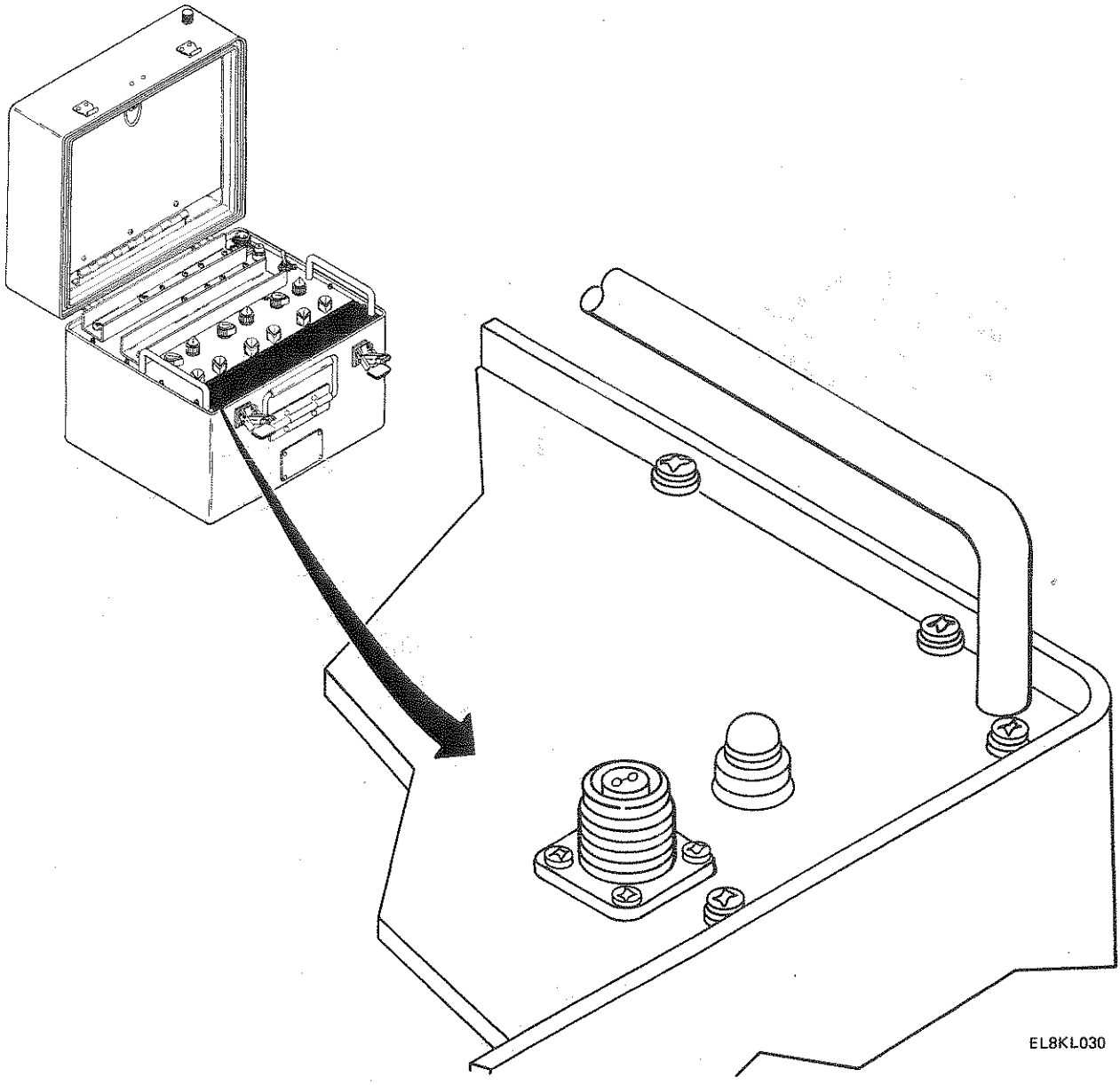
ORGANIZATIONAL PREVENTIVE MAINTENANCE CHECKS AND SERVICES (CONT)

Q - QUARTERLY

ITEM NO.	INTERVAL Q	ITEM TO BE INSPECTED	PROCEDURES
10	•	LAMPS, LAMP LENSES AND CONNECTORS	Check all lamps. Check all connectors for good electrical contact.



Section V ORGANIZATIONAL TROUBLESHOOTING

4-13. OVERVIEW.

The troubleshooting table lists problems which you may find when operating the equipment or when doing Organizational PMCS.

The troubleshooting table does not list all of the problems which you may find. If your problem is not listed, report it to a higher level of maintenance.

When working on any problem, be sure to report your work on the forms shown in TM 38-750.

To use this troubleshooting table, first find your problem in the symptom index. The symptom index will give you a page number on which you will find your problem and the possible corrections. Turn to that page, find your problem, and follow the procedures shown to correct it.

SYMPTOM INDEX

TROUBLESHOOTING

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

1. No CHARGING LAMPS light when CHARGE CURRENT switch set ON.

Step 1. Check if POWER-ON switch is OFF.

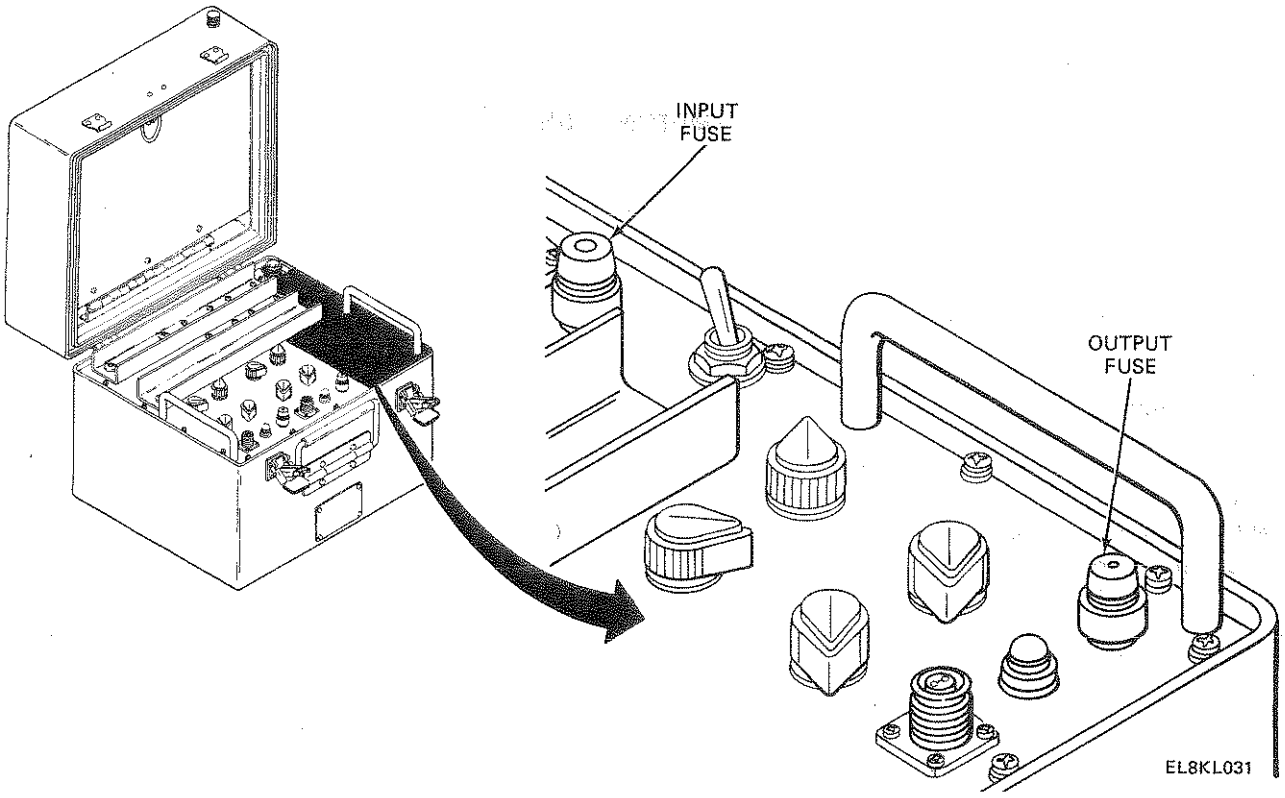
Set POWER-ON switch ON.

Step 2. Check input fuse.

If bad, replace. See paragraph 4-15.

Step 3. Check output fuse.

If bad, replace. See paragraph 4-15.



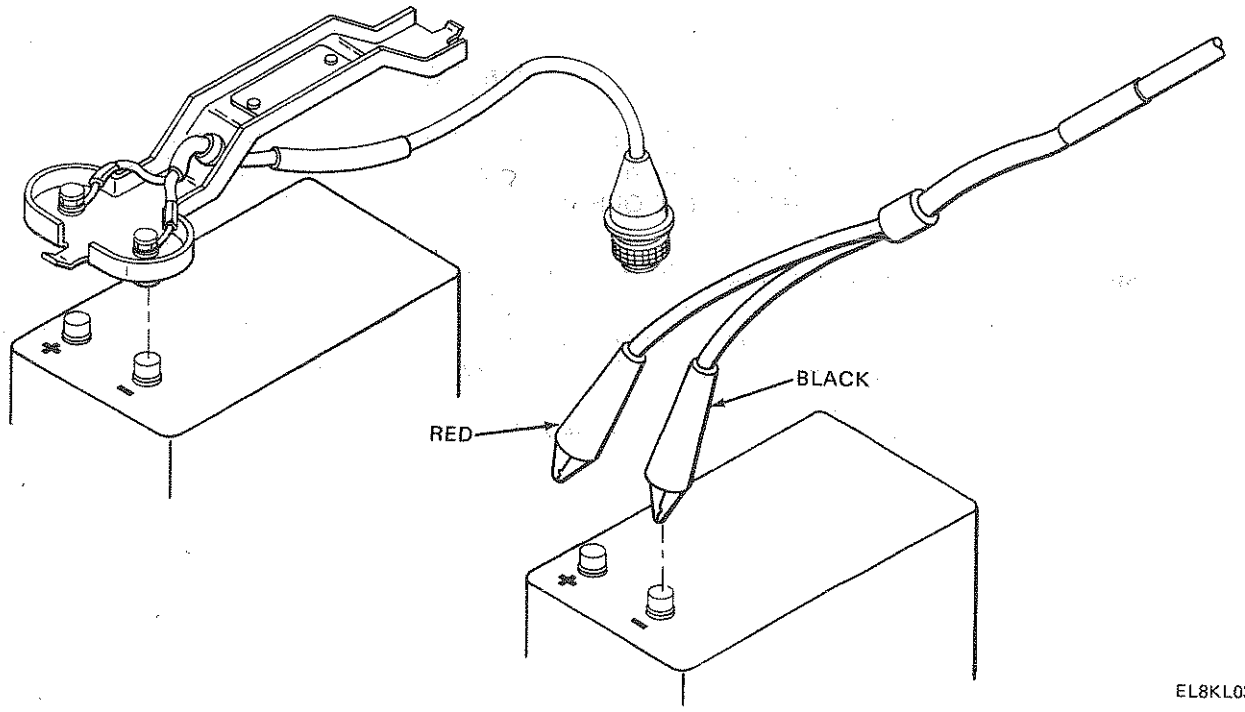
TROUBLESHOOTING (CONT)

MALFUNCTION TEST OR INSPECTION CORRECTIVE ACTION	

2. Channel fuse repeatedly fails.

Check battery connections for correct polarity.

a. Connect properly. Connect positive cable lead to positive battery terminal and negative cable lead to negative battery terminal.
b. Refer to a higher level of maintenance.



TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

3. One channel will not start.

Step 1. Check channel output fuse.

If bad, replace. See paragraph 4-15.

Step 2. Check CHARGING LAMP to see if it is burnt out.

Replace channel CHARGING LAMP if bad. See paragraph 4-16.

Step 3. Check battery voltage to see if past cutoff voltage.

No action required, battery is already charged.

NOTE

If on SILVER-ZINC range, battery voltage is too low, set voltage to the desired cutoff voltage in the ADJUSTABLE CHARGE CUTOFF VOLTAGE range and start.

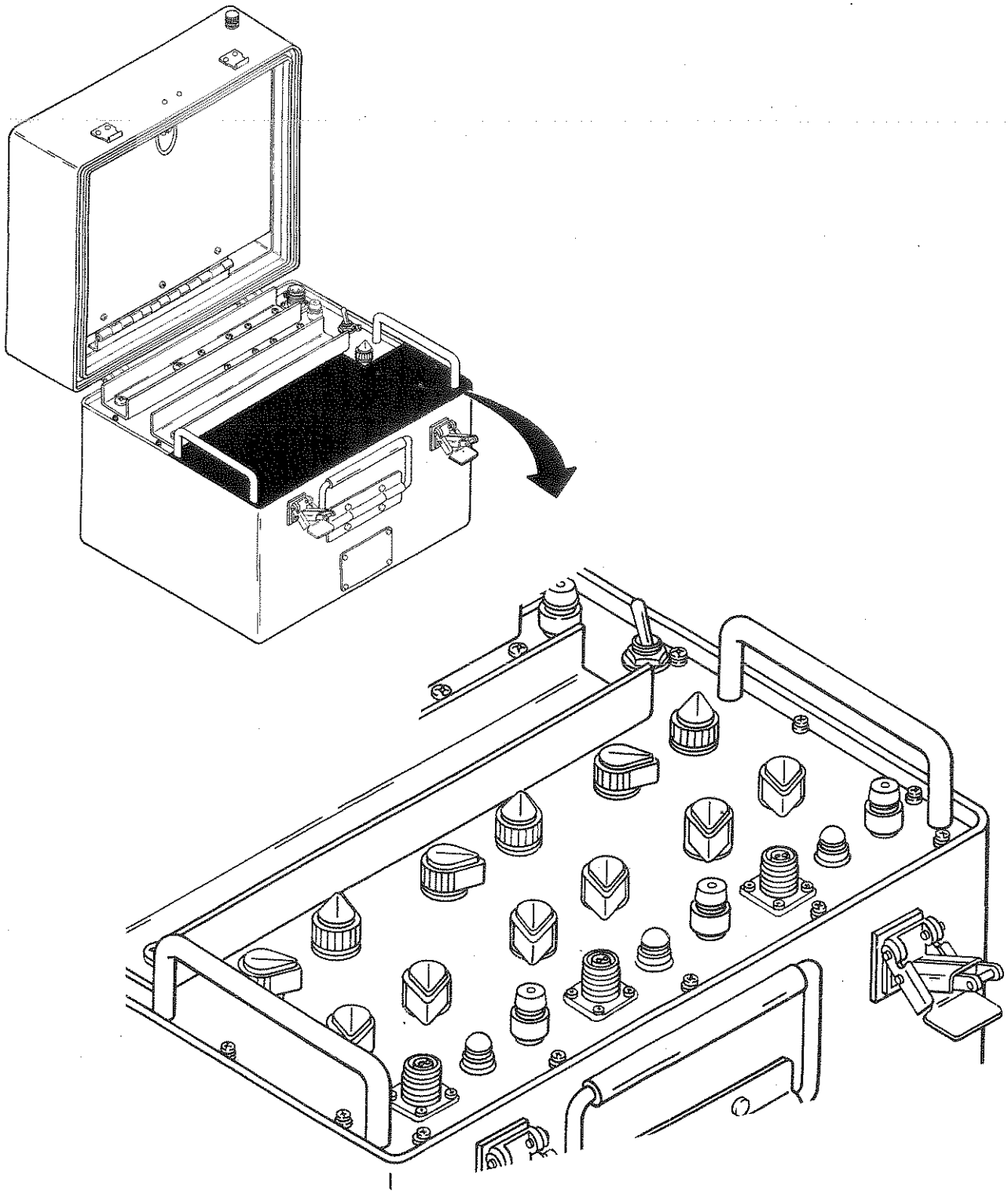
Step 4. Check that charging cable is properly connected.

Connect properly. Connect positive cable lead to positive battery terminal and negative cable lead to negative battery terminal.

Step 5. Check that charging cable is not defective, see paragraph 4-18.

Replace cable.

/ROUBLESHOOTING (CONT)



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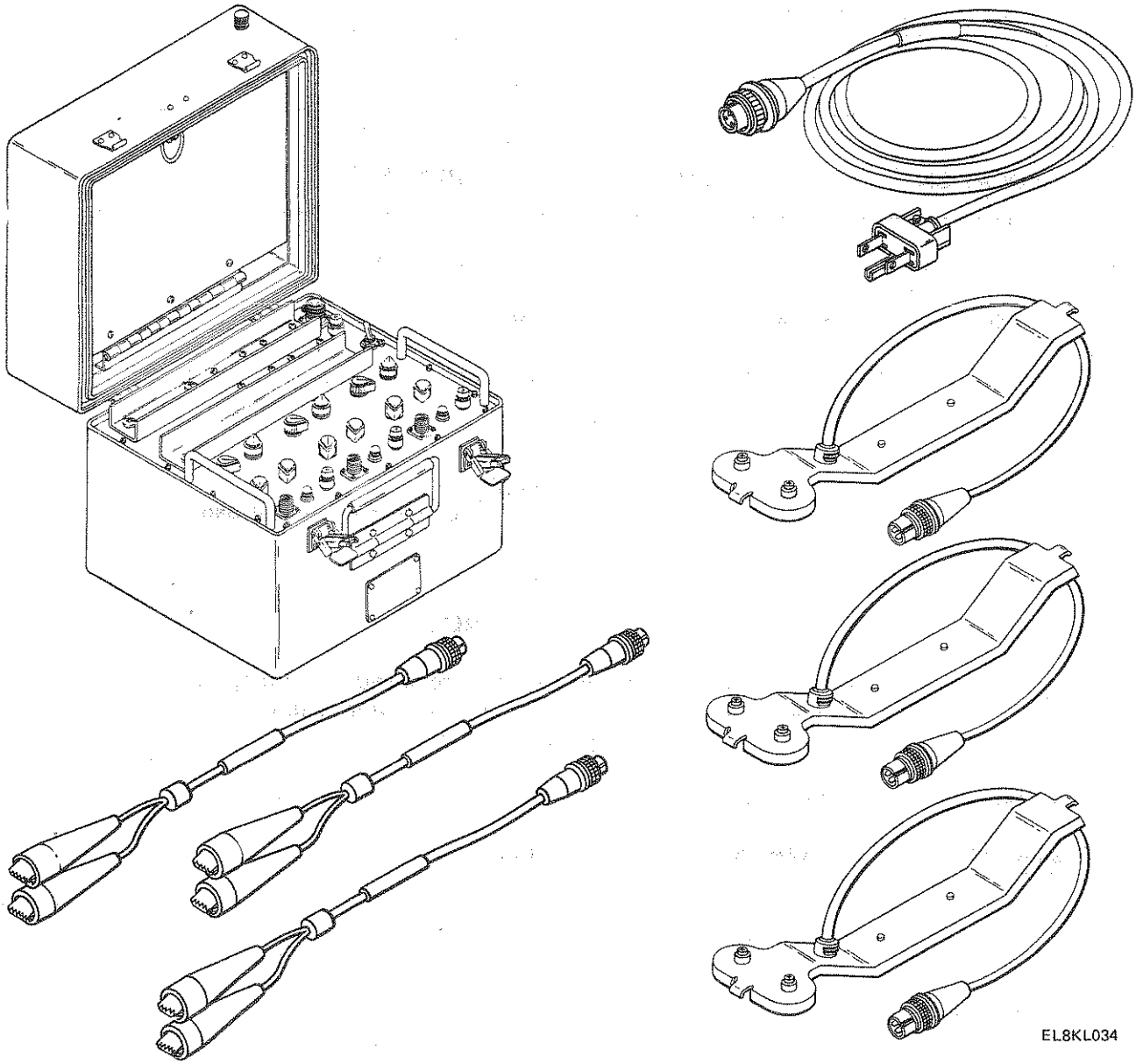
Section VI MAINTENANCE PROCEDURES

4-14. OVERVIEW.

Organizational maintenance must perform certain maintenance functions before the use of battery charger to ensure that it is in good operating condition. Maintenance which must be done included replacing knobs, lamps, lamp lenses, fuses and cable assemblies.



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4-15. MAINTENANCE OF FUSE.

This task covers:

1. Removal
2. Inspection
3. Installation

INITIAL SETUP

Tools

None

Materials/Parts

Fuse (4 amp), NSN 5920-00-557-2647
Fuse (5 amp), NSN 5920-00-284-6787

Personnel Required

One technician

Equipment Condition

Equipment off

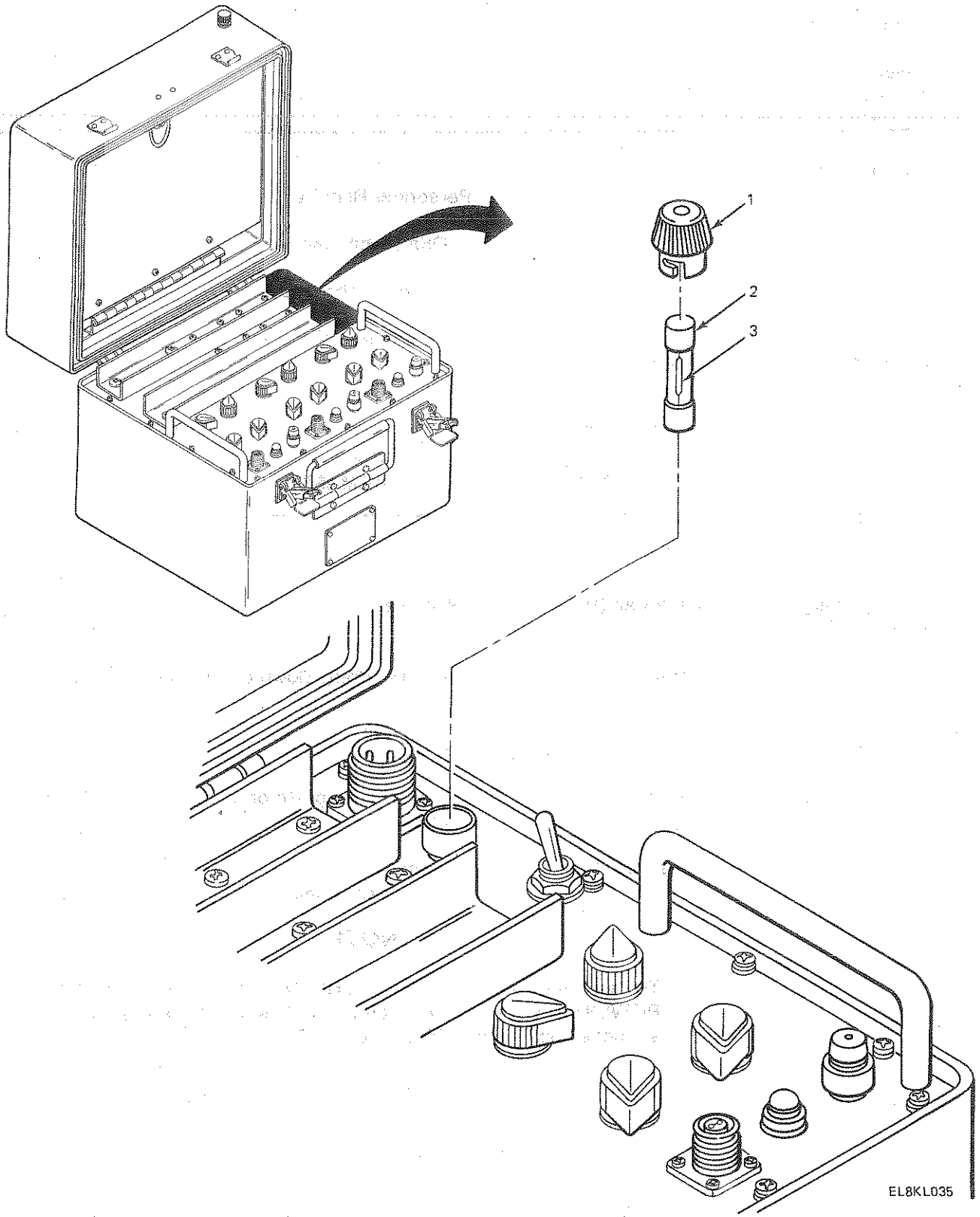
LOCATION	ITEM	ACTION / REMARKS
REMOVAL		
1. Fuseholder	Fuse cap (1)	Remove.
2. Fuse cap	Fuse (2)	Remove.
INSPECTION		
Fuse	Filament (3)	Inspect. **Install new fuse, if bad.**
INSTALLATION		

NOTE

Install the same amp fuse that was removed. If a 4 amp fuse was removed, install a 4 amp fuse. If a 5 amp fuse was removed, install a 5 amp fuse.

1. Fuse cap	Fuse (2)	Install.
2. Fuseholder	Fuse cap (1)	Install.

4-15. MAINTENANCE OF FUSE (CONT)



4-16. REPLACEMENT OF LAMPS.

This task covers:

1. Removal
2. Installation

INITIAL SETUP

Tools

None

Materials/Parts

Lamp, incandescent, NSN 6240-00-155-8706

Personnel Required

One technician

Equipment Condition

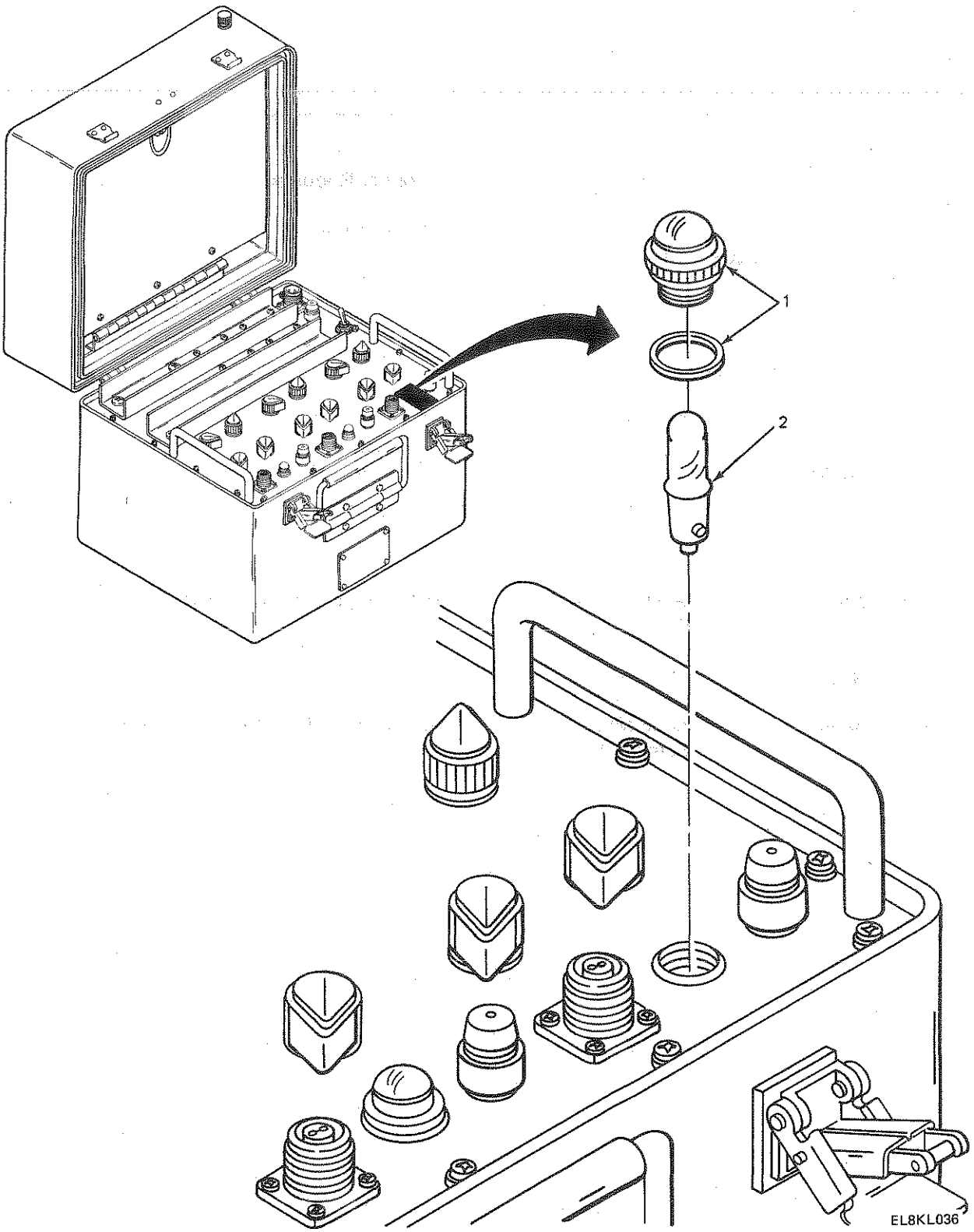
Equipment off

LOCATION	ITEM	ACTION / REMARKS
REMOVAL		
1. Battery charger front panel	Lens cap (1)	Remove.
2.	Lamp (2)	Remove. Press down on bulb and turn to the left.
INSTALLATION		
1. Battery charger front panel	Lamp (2)	Install. Press down on bulb and turn to the right.
2.	Lens cap (1)	Install. **Test lamp.**

NOTE

To test lamp, set CHARGING CURRENT switch to 1.0 amp. Set POWER ON switch to ON. Lamp should stay on not more than 5 seconds. Set POWER ON switch to OFF.

4-16. REPLACEMENT OF LAMPS (CONT)



4-17. REPLACEMENT OF KNOBS.

This task covers:

1. Removal
2. Installation

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-100/G

Materials/Parts

Knob, NSN 5355-00-616-9604

Personnel Required

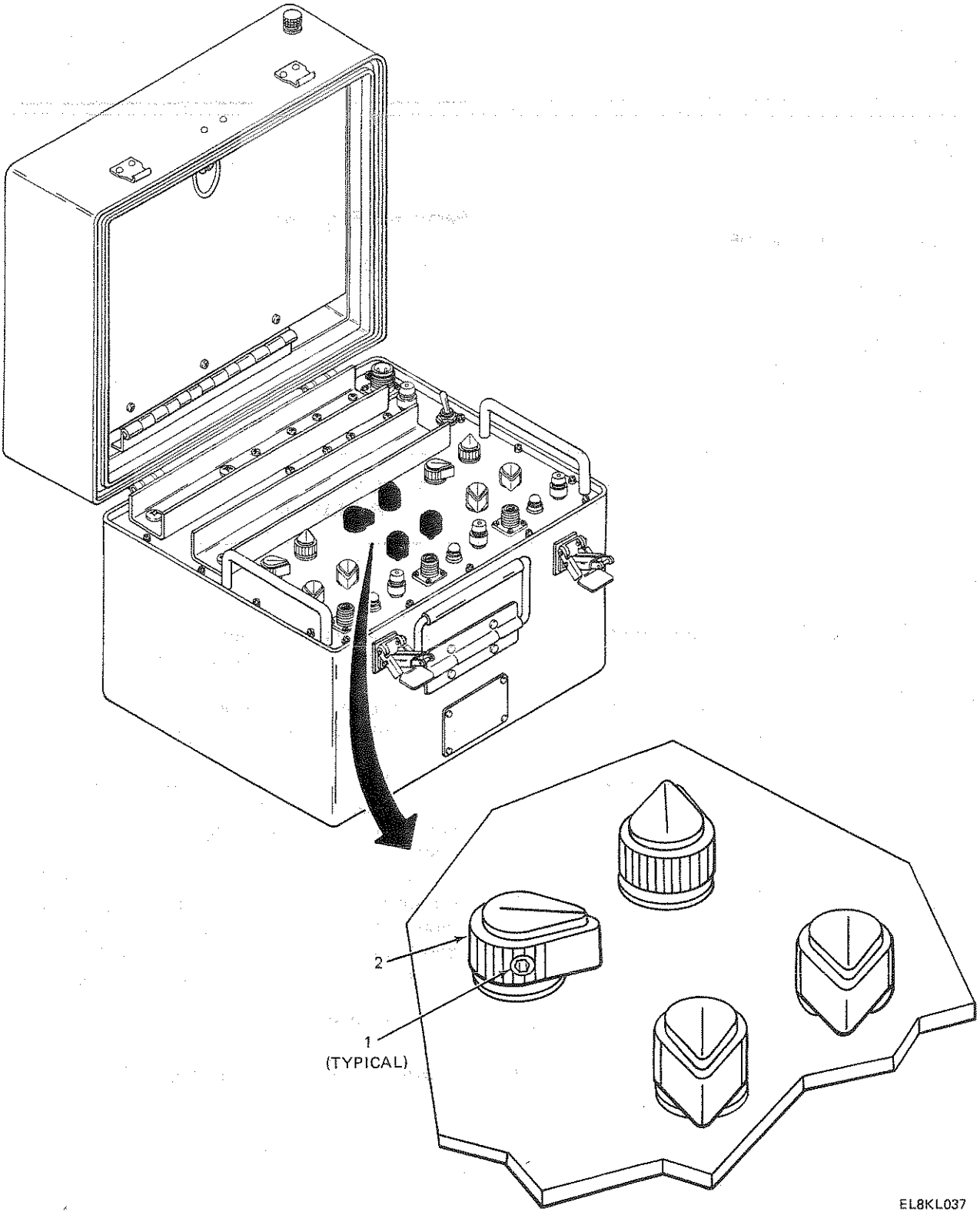
One technician

Equipment Condition

Equipment off

LOCATION	ITEM	ACTION REMARKS
REMOVAL		
Front panel	Screws (1) and Knob (2)	Using allen key, loosen screws. Remove knob.
INSTALLATION		
Front panel	Knob (2) and Screw (1)	Install knob. Using allen key, tighten screws.

4-17. REPLACEMENT OF KNOBS (CONT)



4-18. TESTING OF CABLES.

This task covers:

Continuity Test

INITIAL SETUP

Tools

Multimeter AN/URM-105

Materials/Parts

Cable Assemblies
NSN 6150-01-601-8765
NSN 6150-00-228-3089
NSN 6150-00-144-0070

Personnel Required

One technician

Equipment Condition

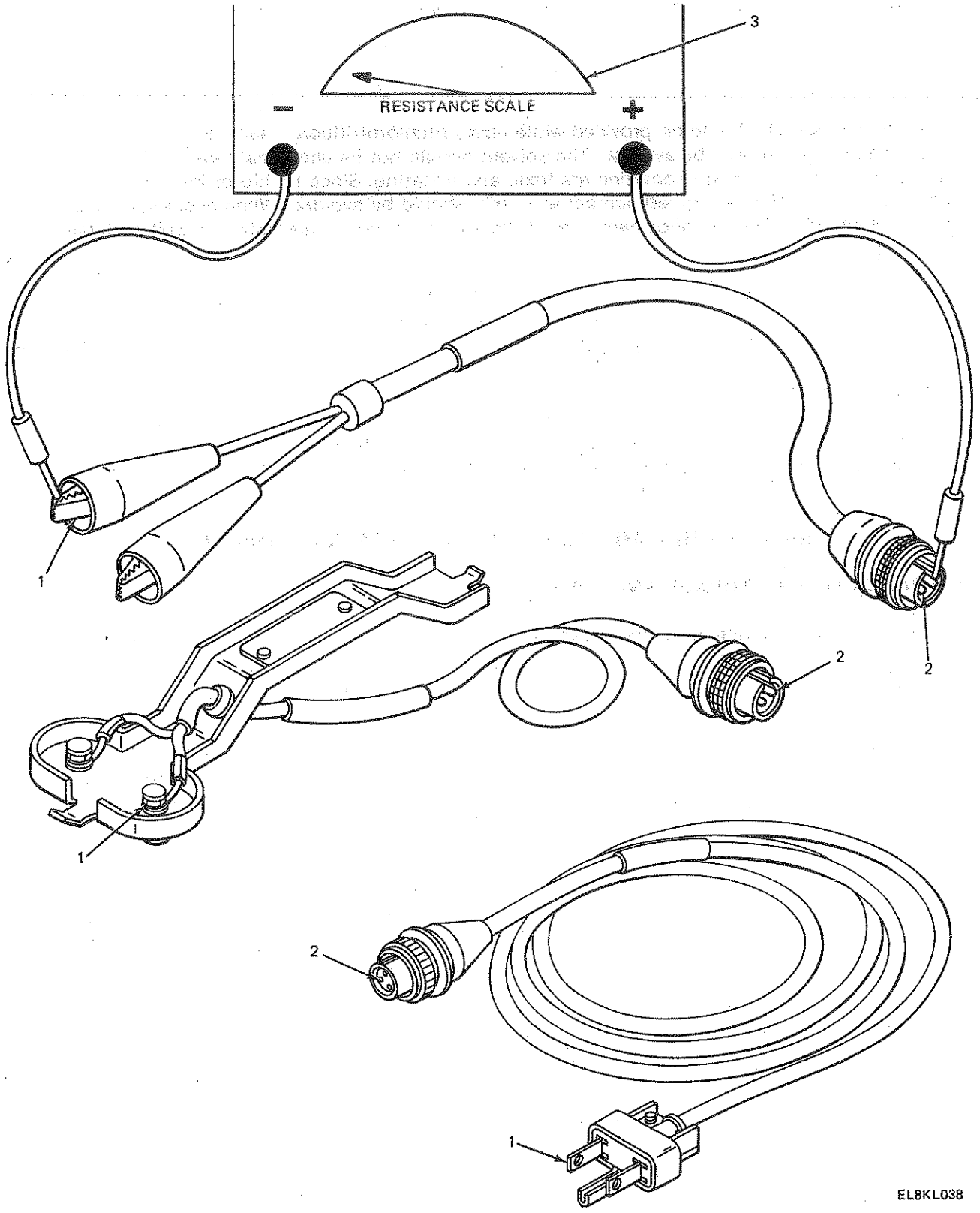
Equipment off

LOCATION	ITEM	ACTION / REMARKS
CONTINUITY TEST		
1. Battery charging cable	Clips end (1)	Place one lead from multimeter on either positive or negative clip end of cable.
2.	Prongs end (2)	Place the other lead from multimeter on each prong, first one, then the other.
3. Multimeter	Ohms scale (3)	When the prong is touched that corresponds to the clip, multimeter should read 0-ohm resistance. This means the cable is not open.
4. Battery charging cable	Prongs end (2)	If both prongs when touched with lead from multimeter show 0 ohm, then the cable is shorted and bad. Replace and refer cable to a higher level of maintenance for repair.

NOTE

This procedure applies to all cables.

4-18. TESTING OF CABLES - (CONT)



4-19. CLEANING.

Inspect the exterior of the equipment; exterior surfaces should be free of dust, dirt, grease and fungus. Remove dust and loose dirt with a clean, lint-free cloth.

WARNING

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

Remove grease, fungus, and ground-in dirt from the case with a cloth dampened (not wet) with Trichlorotrifluoroethane. Remove dust or dirt from cable assembly connectors with a brush as needed. Clean control panel with a clean, soft cloth.

4-20. TOUCHUP PAINTING.

Remove rust and corrosion from metal surfaces by lightly sanding them with fine sandpaper. Brush two thin coats of paint on the bare metal to protect it from further corrosion. Refer to cleaning and refinishing practices in TB 13-0118.

Section VII PREPARATION FOR STORAGE AND SHIPMENT

4-21. PREPARATION FOR STORAGE AND SHIPMENT.

For storage and shipping procedures see paragraph 2-10.

CHAPTER 5

DIRECT SUPPORT MAINTENANCE

OVERVIEW

This chapter contains direct support servicing, troubleshooting, and maintenance procedures for the battery charger.

Section I REPAIR PARTS, SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

5-1. COMMON TOOLS AND EQUIPMENT.

The common tools and equipment needed for maintenance are given in the Maintenance Allocation Chart, Appendix B.

5-2. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT.

The special tools and support equipment needed for maintenance are given in the Maintenance Allocation Chart, Appendix B.

5-3. REPAIR PARTS.

The repair parts for maintenance are listed and shown in the Repair Parts and Special Tools List TM 11-6130-351-24P.

Section II TROUBLESHOOTING

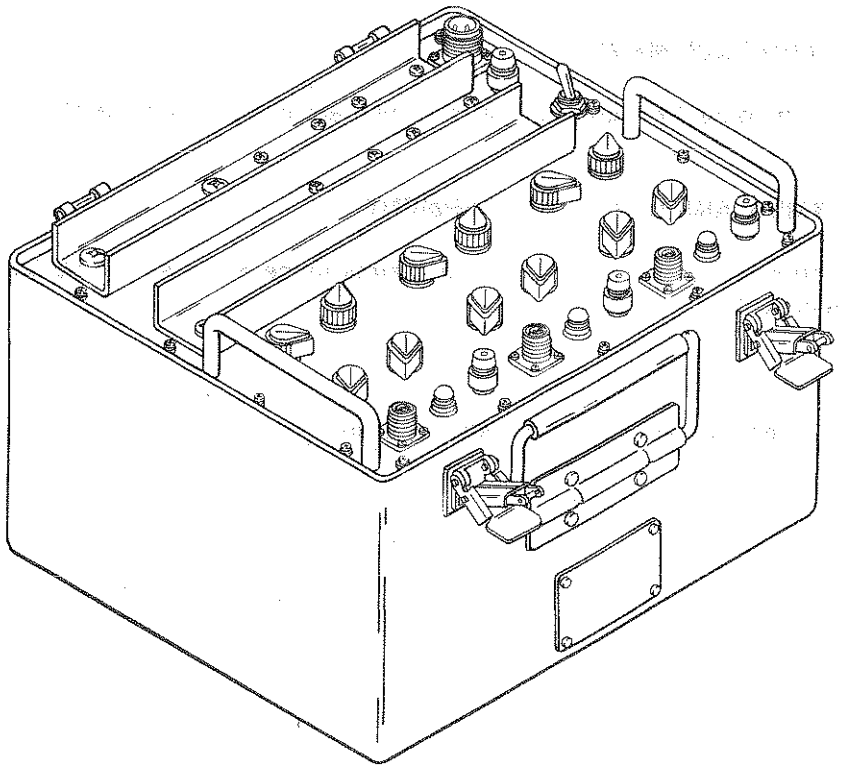
5-4. OVERVIEW.

The troubleshooting table lists problems which you may find when repairing the equipment.

The troubleshooting table does not list all of the problems which you may find. If your problem is not listed, report it to a higher level of maintenance.

When working on any problem, be sure to report your work on the forms shown in TM 38-750.

To use this troubleshooting table, first find your problem in the symptom index. The symptom index will give you a page number on which you will find your problem and the possible corrections. Turn to that page, find your problem, and follow the procedures shown to correct it.



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SYMPTOM INDEX

TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION

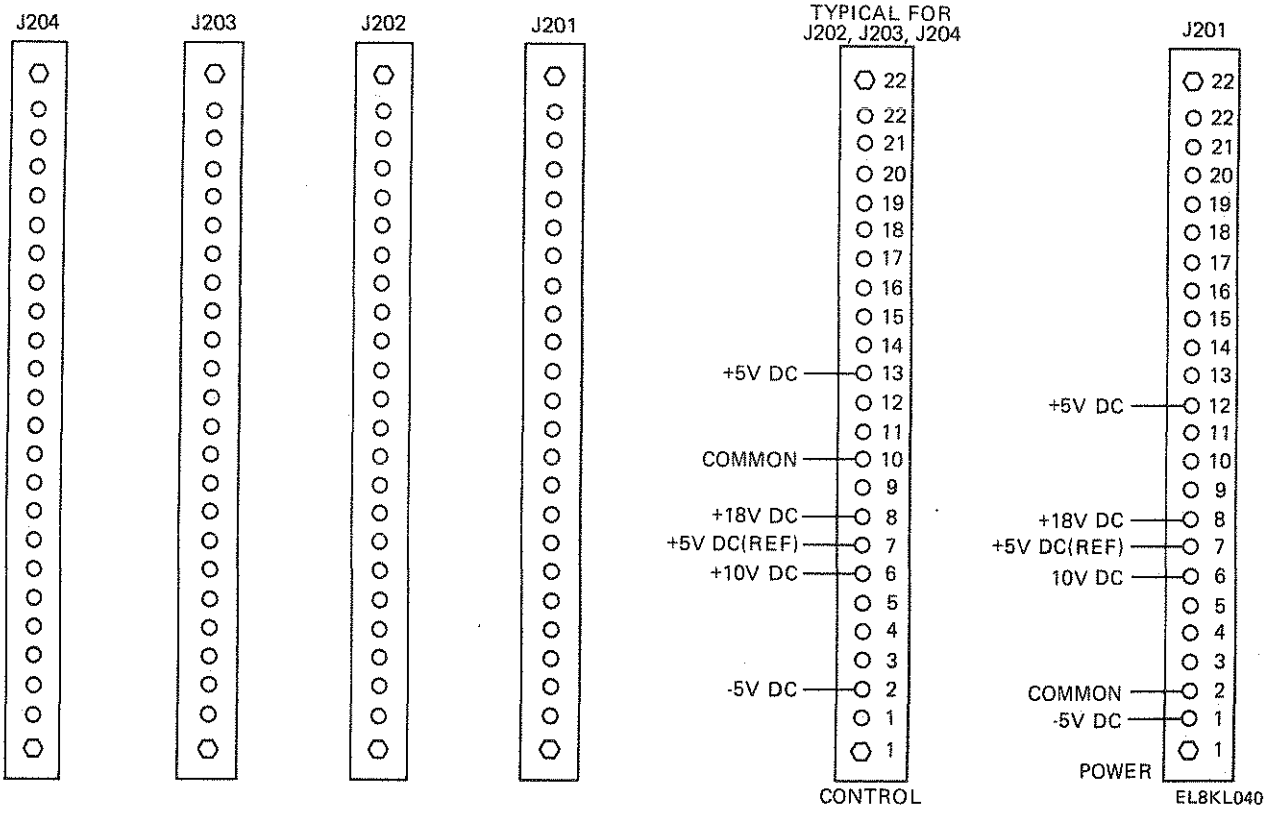
1. Channel or channels will not start.

Step 1. Check voltage test points of power supply circuit card connector. See paragraph 5-7.

If bad, refer battery charger to general support for replacement of master board. If test points check, see paragraph 5-8 for replacement of power supply circuit card.

Step 2. Check voltage test points of control circuit card connector. See paragraph 5-7.

If bad, refer battery charger to general support for replacement of master board. If test points check, see paragraph 5-8 for replacement of control circuit card.



TROUBLESHOOTING (CONT)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

2. Fuse fails repeatedly.

Step 1. Check channel circuit for short.

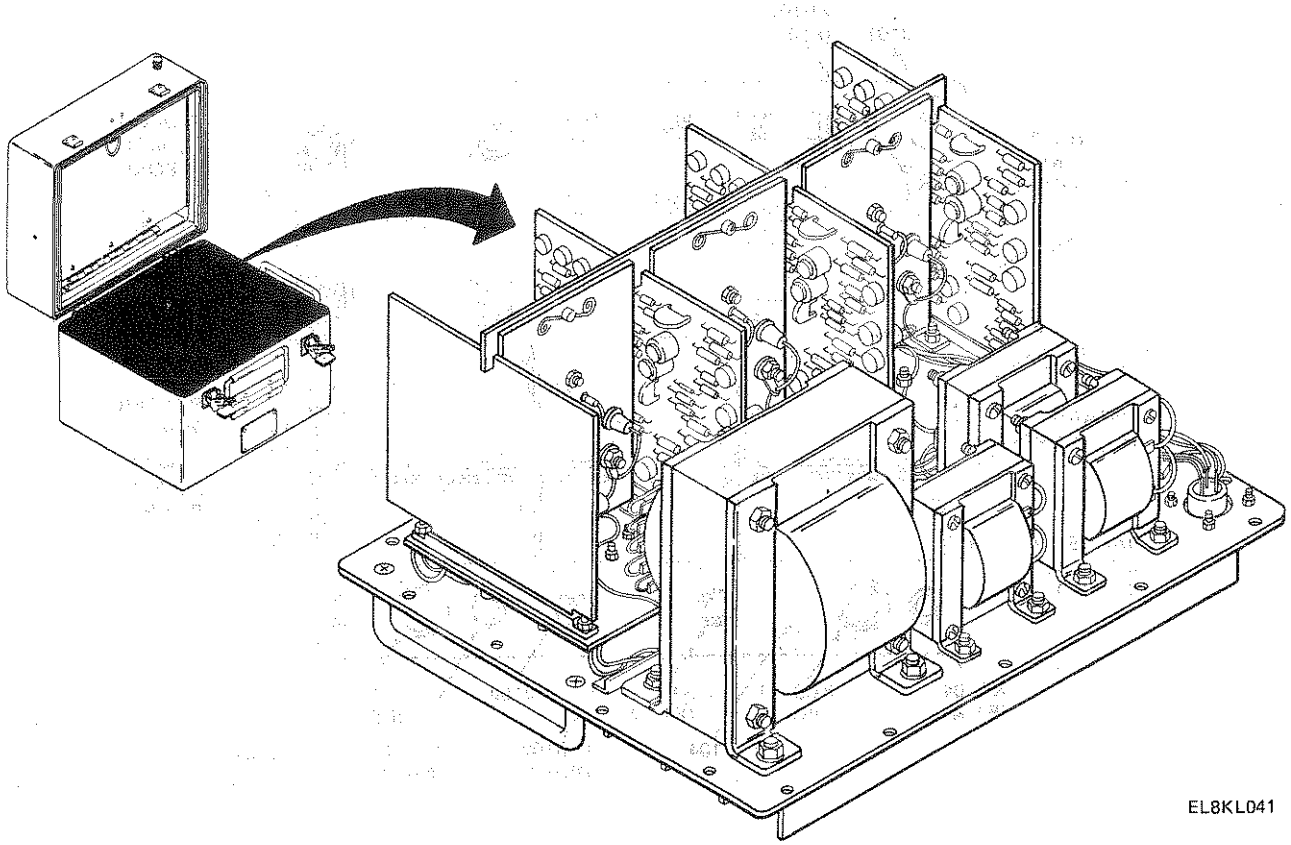
Step 2. Check voltage text points of power and control circuit card connectors. See paragraph 5-7.

Step 3. Inspect circuit cards for damaged components.

Replace circuit card. See paragraph 5-8.

Step 4. Check resistance and continuity of diodes and transistors. See paragraph 5-9.

Replace diodes or transistors, if bad. See paragraph 5-19 for replacement of diode or paragraph 5-20 for replacement of transistor.



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TROUBLESHOOTING (CONT)

MALFUNCTION	TEST OR INSPECTION	CORRECTIVE ACTION

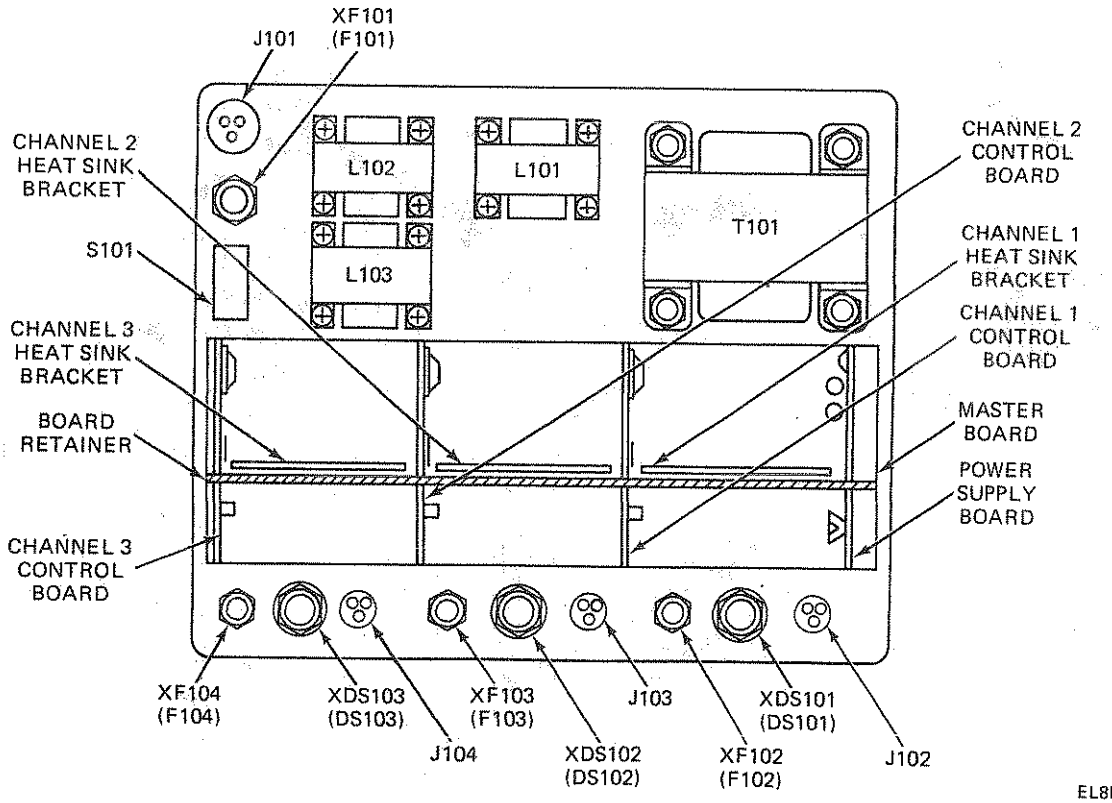
3. Charger cannot be calibrated for cutoff voltage, charge current, and zero cutoff voltage.

Step 1. Check voltage test points of power supply circuit card connector. See paragraph 5-7.

If bad, refer battery charger to general support for replacement of master board. If test points check, see paragraph 5-8 for replacement of power supply circuit card.

Step 2. Check voltage test point of control circuit card connector. See paragraph 5-7.

If bad, refer battery charger to general support for replacement of master board. If test points check, see paragraph 5-8 for replacement of control circuit card.



Section III MAINTENANCE PROCEDURES

5-5. OVERVIEW.

Direct support maintenance is expected to perform maintenance functions on the battery charger to ensure that it is in good operating condition. Maintenance which must be done includes isolation of a particular problem to a repairable or replaceable component and repair or replacement as necessary. In addition, voltage and resistance tests will be performed on supply, control, and power boards, and all accessible items will be repaired or replaced.

5-6. REPLACEMENT OF BATTERY CHARGER CHASSIS ASSEMBLY.

This task covers:

1. Removal
2. Installation

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-105/G

Materials/Parts

None

Personnel Required

One technician

Equipment Condition

Equipment off, cover open. See paragraph 2-4.

LOCATION	ITEM	ACTION / REMARKS

REMOVAL

WARNING

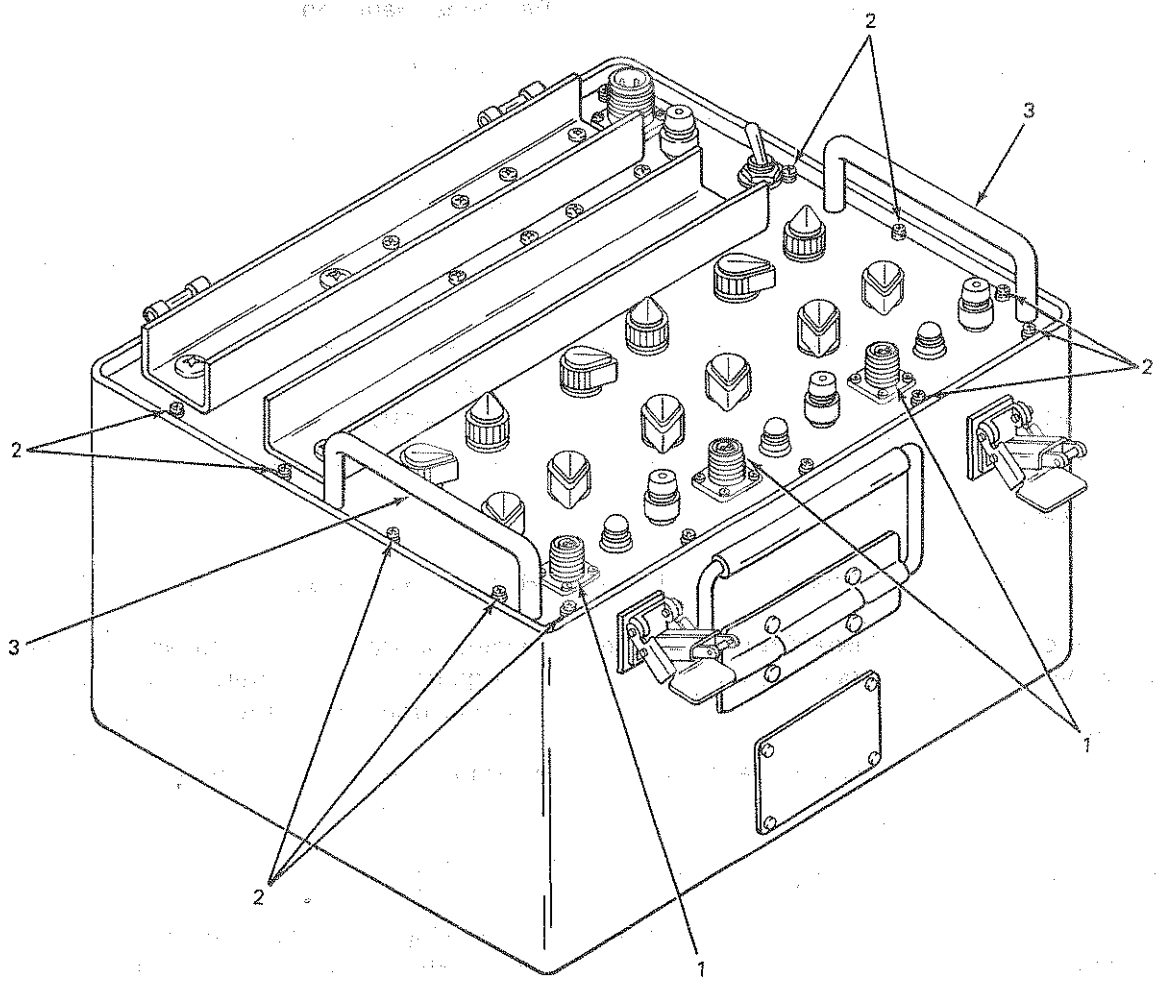
Dangerous voltages are exposed with the case bottom removed. Caution should be used to avoid injuries.

1.	Battery charger	Cable connectors (1)	Disconnect cables from connectors.
2.		Screws (2)	Using cross tip screwdriver, remove 18 outside screws.
3.	Battery charger control panel	Handles (3)	Using handles, lift front panel carefully and remove.

INSTALLATION

1.	Charger case	Handles (3)	Using handles, lift front panel carefully and install.
2.	Front panel assembly	Screws (2)	Using cross tip screwdriver, install 18 outside screws.

5-6. REPLACEMENT OF BATTERY CHARGER CHASSIS ASSEMBLY (CONT)



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5-7. TESTING OF CIRCUIT CARD INPUT VOLTAGES.

This task covers:

Voltage checks

INITIAL SETUP

Tools

Multimeter TS-352B/U
Tool Kit, Electronic Equipment TK-100/G

Materials/Parts

None

Personnel Required

One technician

Equipment Condition

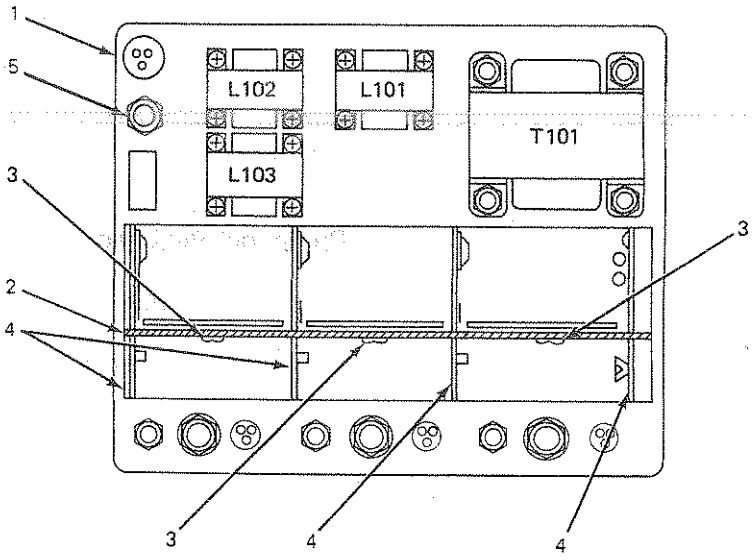
Equipment off

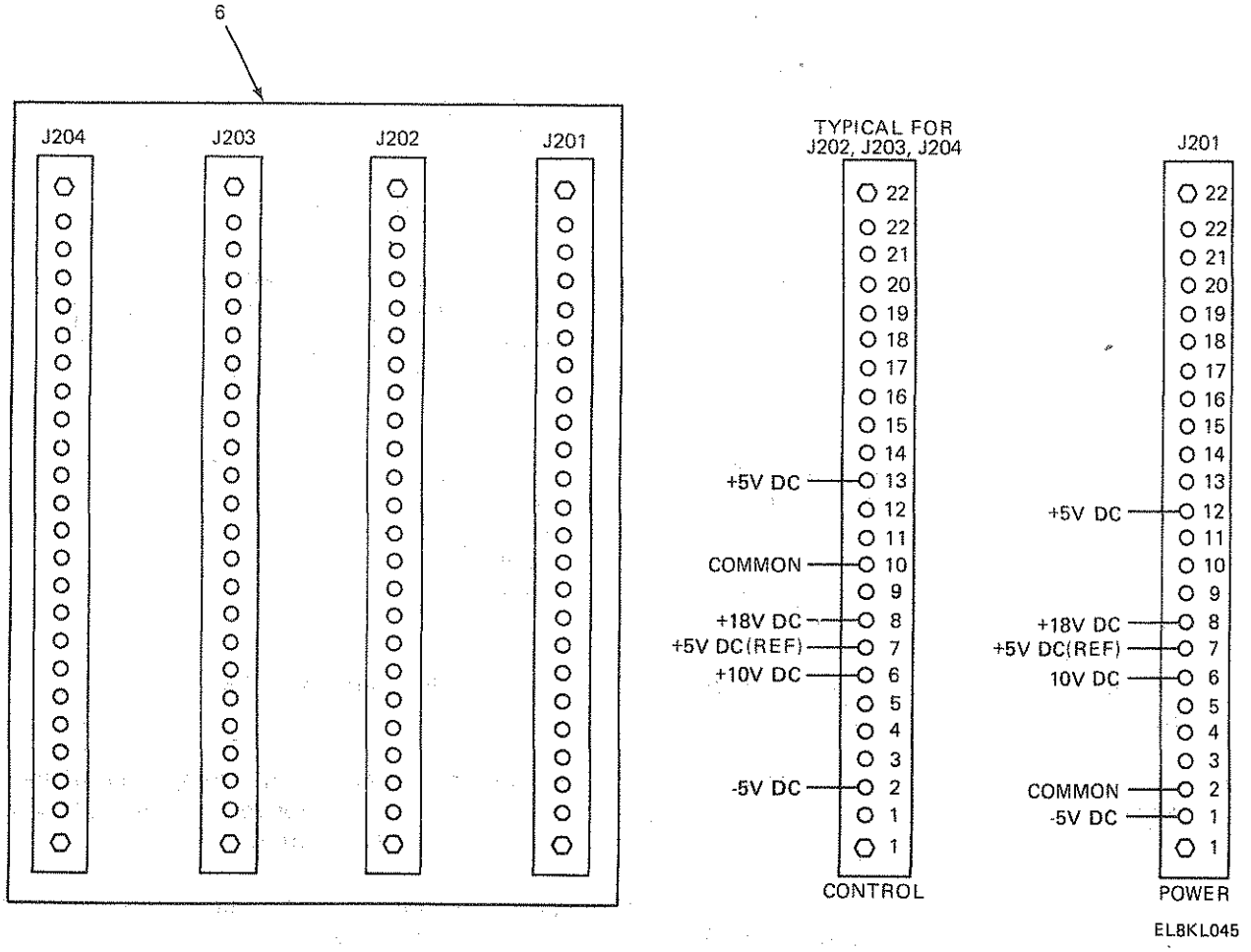
LOCATION	ITEM	ACTION REMARKS
VOLTAGE CHECKS		
1. Charger panel	Charger assembly (1)	Remove. See paragraph 5-6.
2. Charger chassis assembly	Board retainer (2) and fasteners (3)	Remove board retainer by turning three fasteners one quarter turn counterclockwise and lift retainer from its position.
3.	Circuit cards (4)	Carefully pull circuit cards straight out from its connector.
4. Charger panel	POWER-ON switch (5)	Set to ON.
5. Charger chassis assembly	Connector board (6)	Take voltage measurements at desired pin using a multimeter and compare reading with chart.

CAUTION

This equipment is transistorized. When measuring voltages, use tape or sleeving (spaghetti) to insulate the entire test probe except the extreme tip. A momentary short circuit can ruin a transistor.

5-7. TESTING OF CIRCUIT CARD INPUT VOLTAGES (CONT)





5-8. REPLACEMENT OF CONTROL AND POWER SUPPLY CIRCUIT CARDS.

This task covers:

1. Removal
2. Installation

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment
TK-100/G

Materials/Parts

Power supply circuit card
NSN 6130-00-247-1057
Control circuit card
NSN 6130-00-247-1059

Personnel Required

One technician

Equipment Condition

Equipment Off

LOCATION	ITEM	ACTION	REMARKS

NOTE

The charging channels are numbered one, two and three beginning with the leftmost channel as viewed from the front panel. To aid in locating the desired circuit card for replacement, the following designations are asigned to each circuit card.

CIRCUIT CARD	CONNECTOR DESIGNATION
Channel 1	J202
Channel 2	J203
Channel 3	J204
Power supply board	J201

REMOVAL

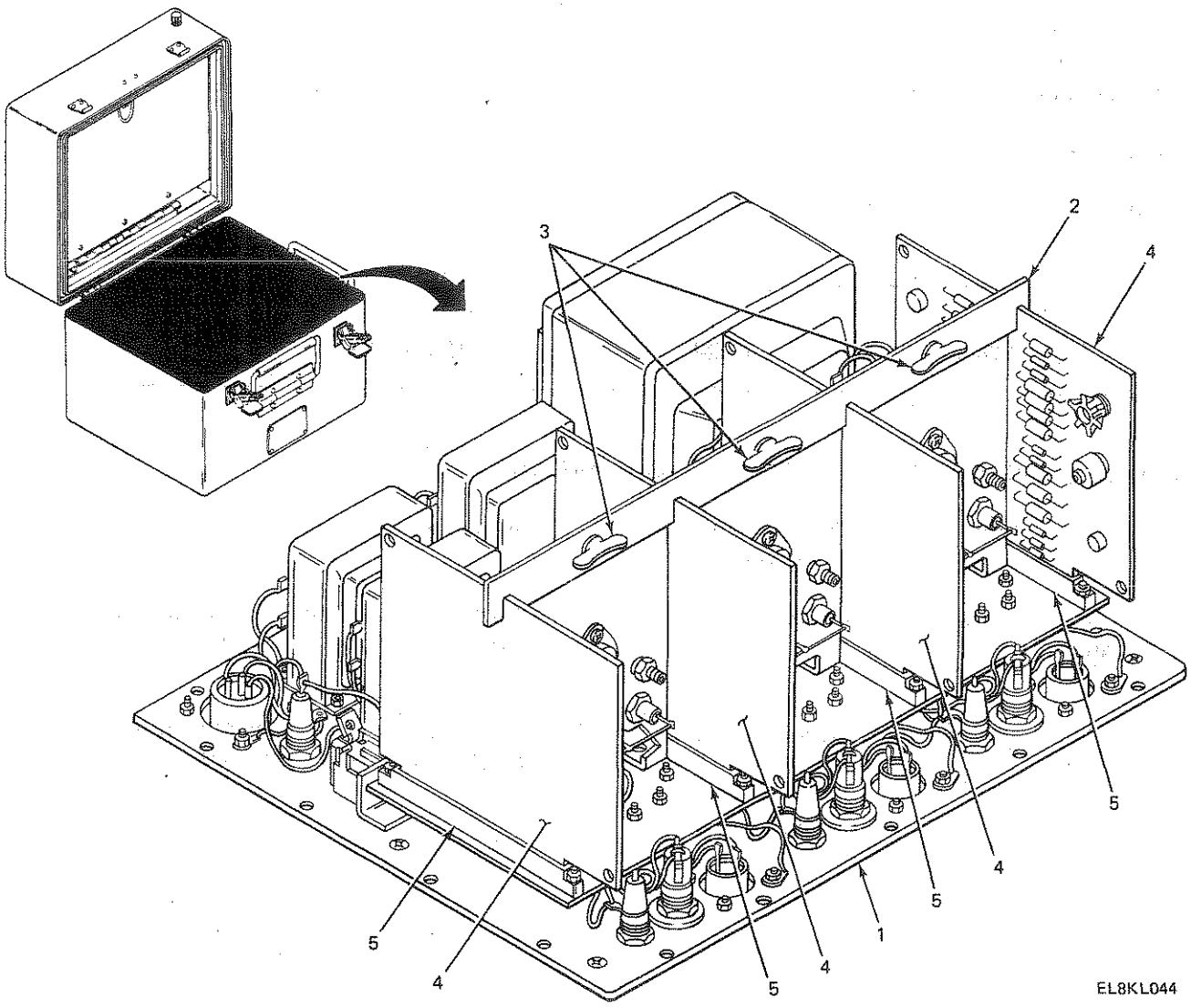
1.	Charger front panel	Charger chassis assembly (1)	Remove. See paragraph 5-6.
2.	Charger chassis assembly	Board retainer (2) and fasteners (3)	Remove board retainer by turning three fasteners one quarter turn counterclockwise and lift board retainer from its position.
3.		Circuit cards (4) and connectors (5)	Carefully pull the desired circuit card straight out from its connector.

5-8. REPLACEMENT OF CONTROL AND POWER SUPPLY CIRCUIT CARDS (CONT)

LOCATION	ITEM	ACTION	REMARKS

INSTALLATION

1.	Charger chassis assembly	Circuit cards (4) and connectors (5)	Press new board down into its connector socket.
2.		Board retainer (2) and fasteners (3)	Replace and turn fasteners one quarter turn, clockwise.
3.	Charger case	Charger chassis assembly (1)	See paragraph 5-6 for installation procedures.



5-9. TESTING OF DIODE AND TRANSISTOR.

CAUTION

Since the RX1 range normally connects the ohmmeter internal battery directly across the test leads, the comparatively high current (50 MA or more) may damage a semiconductor under test. As a general rule do not use the RX1 range of an ohmmeter when testing low power semiconductors.

This task covers:

Continuity and resistance check of diode and transistor

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-100/G
Multimeter TS-352B/U

Materials/Parts

None

Personnel Required

One technician

Equipment Condition

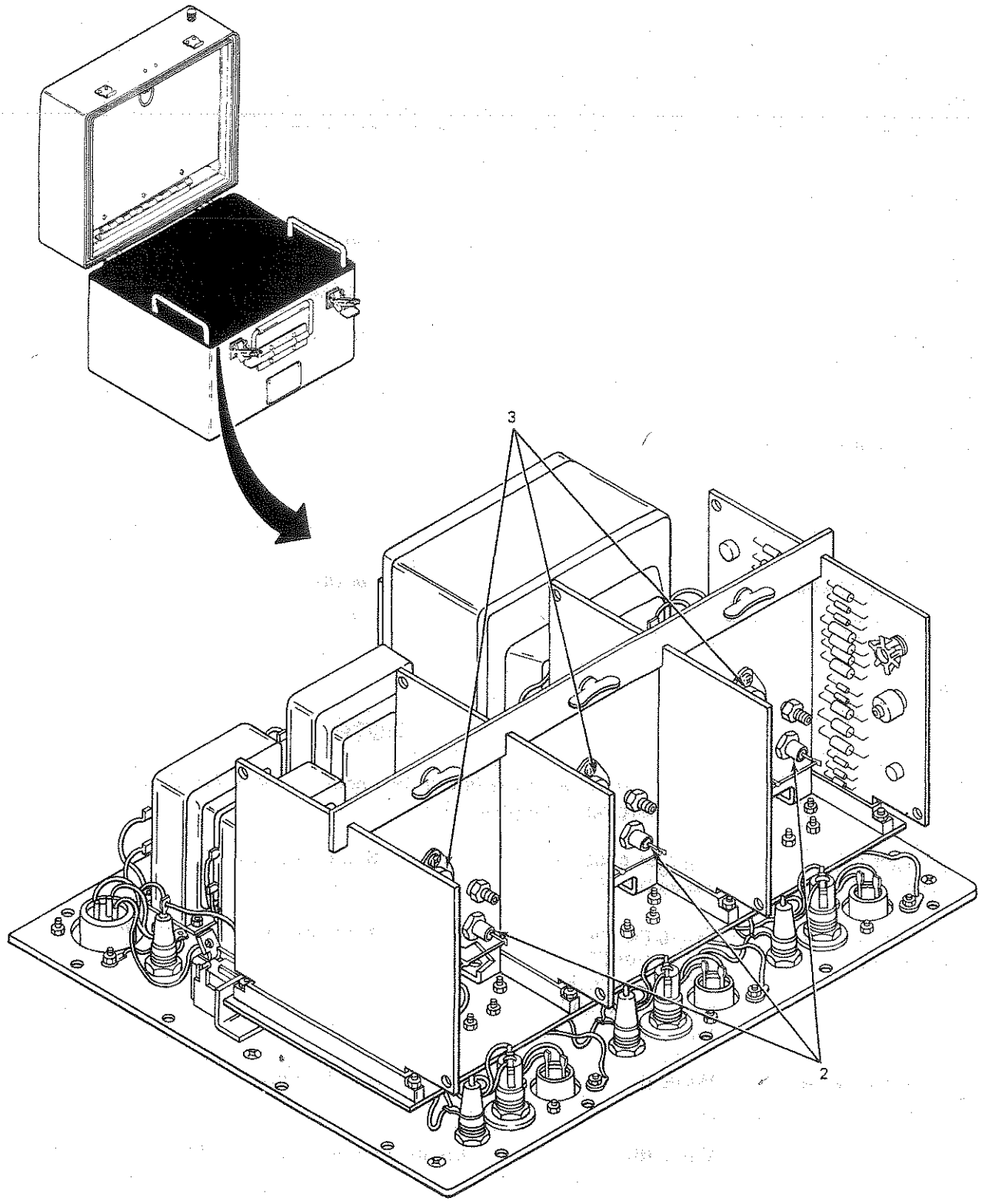
Equipment off

LOCATION	ITEM	ACTION REMARKS

CONTINUITY AND RESISTANCE CHECK OF DIODE AND TRANSISTOR

1.	Charger front panel	Charger chassis assembly (1)	Remove. See paragraph 5-6.
2.	Heat sink circuit card	Diodes (2)	Perform continuity and resistance test of diode. See paragraph 5-19.
3.		Transistors (3)	Perform continuity and resistance tests of transistor. See paragraph 5-20.

5-9. TESTING OF DIODE AND TRANSISTOR (CONT)



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5-10. REPLACEMENT OF POWER CABLE CONNECTOR AND CHARGING CABLE CONNECTOR.

This task covers:

1. Removal
2. Installation

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-100/G
25-watt soldering iron

Materials/Parts

Connector, plug, electrical
See TM 11-6130-351-24P

Personnel Required

One technician

Equipment Condition

Equipment off

LOCATION	ITEM	ACTION	REMARKS

REMOVAL

NOTE

The removal of the power connector is the same as for the charging cable connector.

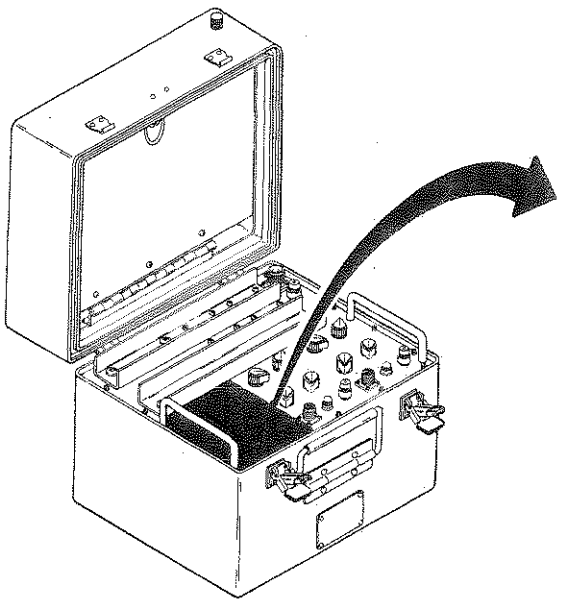
1.	Charger front panel	Charger chassis assembly (1)	Remove. See paragraph 5-6.
2.	Charger chassis assembly	Charging cable connector (2) screws (3), lock-washers (4) and nuts (5)	Using cross-tip screwdriver, remove.
3.	Charging cable connector	Wires (6)	Tag for identification.
4.		Wires (6)	Using soldering iron, unsolder.

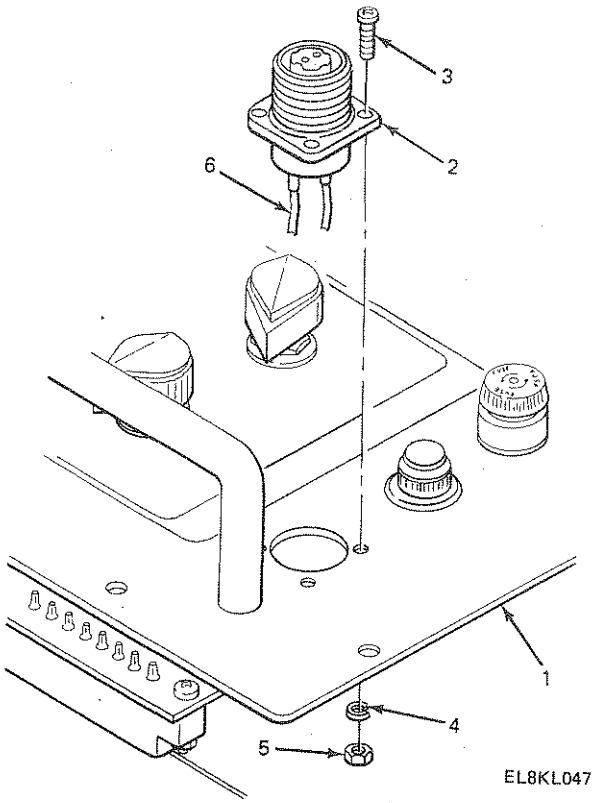
5-10. REPLACEMENT OF POWER CABLE CONNECTOR AND CHARGING CABLE CONNECTOR (CONT)

LOCATION	ITEM	ACTION REMARKS

INSTALLATION

1.		Wires (6)	Using soldering iron, solder.
2.	Charger chassis assembly	Nuts (5), lock-washers (4), screws (3) and charging cable connector (2)	Using cross-tip screwdriver, install.
3.	Charger case	Charger chassis assembly (1)	Carefully place charger assembly into case. See paragraph 5-6 for installation.





5-11. REPLACEMENT OF FUSE AND LAMP ASSEMBLIES.

This task covers:

1. Removal
2. Installation

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment
TK-100/G

Materials/Parts

Fuseholder, NSN 5920-00-892-9311
Light Indicator, NSN 6240-00-155-8706

Personnel Required

One technician

Equipment Condition

Equipment off

LOCATION	ITEM	ACTION	REMARKS

REMOVAL

NOTE

The removal of fuse assembly is the same as lamp assembly.

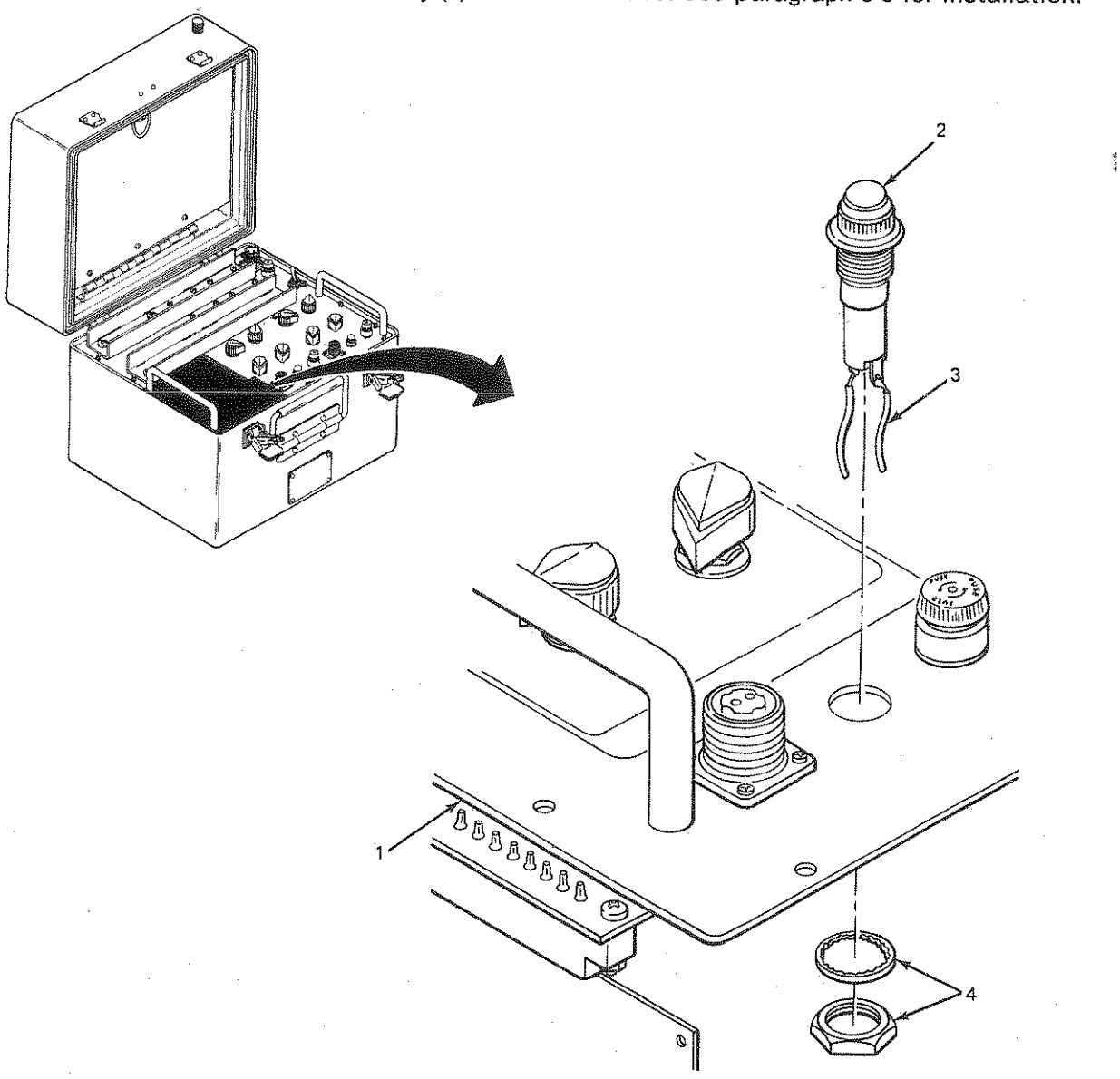
1.	Charger front panel	Charger chassis assembly (1)	Remove. See paragraph 5-6.
2.		Lens cover (2)	Turn counterclockwise to remove.
3.	Lamp assembly	Wires (3)	Tag for identification.
4.		Wires (3)	Using soldering iron, unsolder.
5.		Locking nut and washer (4)	Remove.

INSTALLATION

1.	Lamp assembly	Locking nut and washer (4)	Install.
2.		Wires (3)	Using soldering iron, solder.

5-11. REPLACEMENT OF FUSE AND LAMP ASSEMBLIES (CONT)

LOCATION	ITEM	ACTION / REMARKS
INSTALLATION (CONT)		
3. Charger chassis assembly	Lens cover (2)	Install.
4. Charger case	Charger chassis assembly (1)	Carefully place charger chassis assembly into case. See paragraph 5-6 for installation.



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5-12. REPLACEMENT OF POWER-ON SWITCH.

This task covers:

1. Removal
2. Installation

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment
TK-100/G

Materials/Parts

POWER-ON Switch
NSN 5930-00-655-1514

Personnel Required

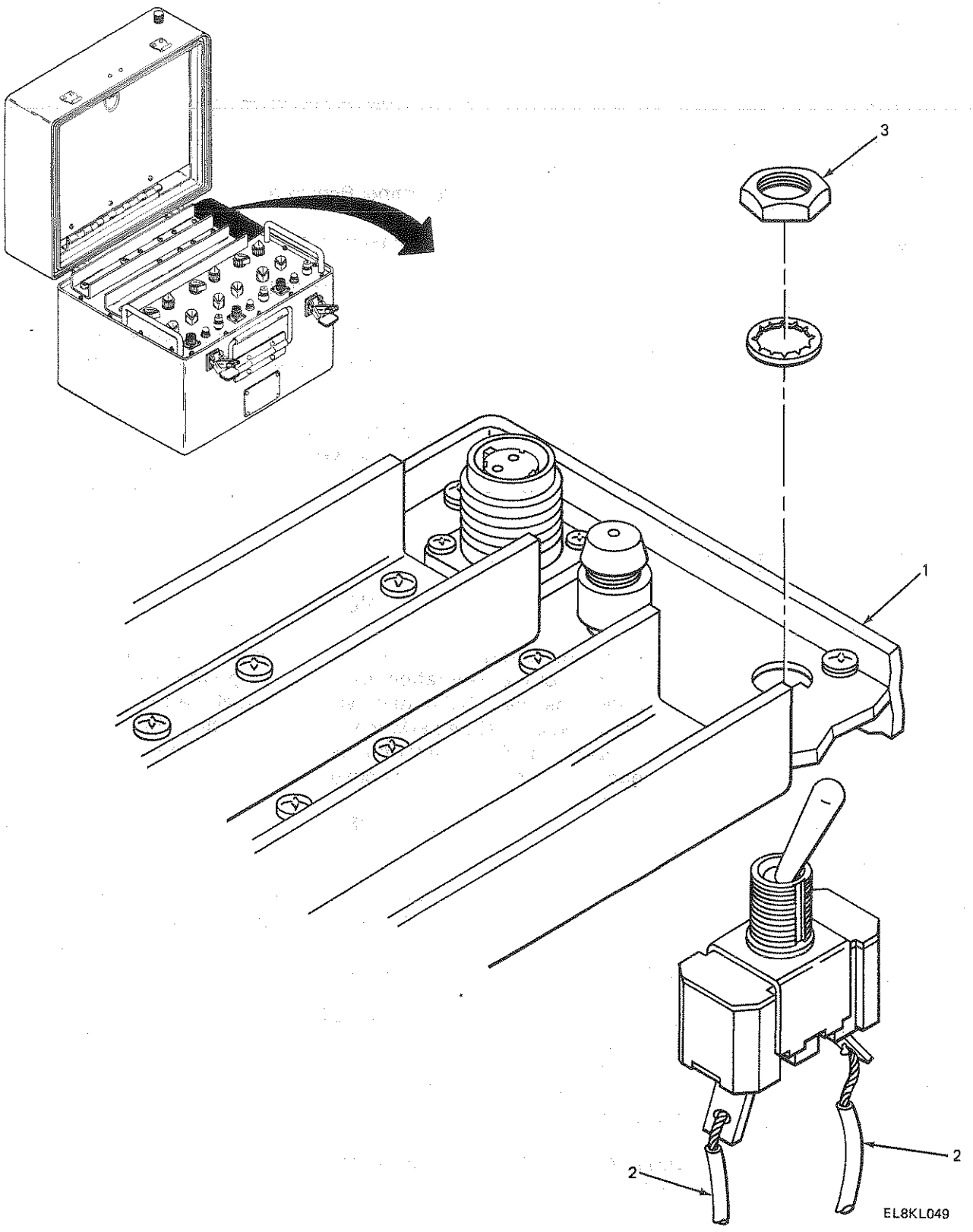
One technician

Equipment Condition

Equipment off

LOCATION	ITEM	ACTION / REMARKS
REMOVAL		
1. Charger front panel	Charger chassis assembly (1)	Remove. See paragraph 5-6.
2. POWER ON switch	Wires (2)	Tag for identification.
3.	Wires (2)	Using soldering iron, unsolder.
4.	Locking nut and washers (3)	Using 9/16 inch wrench, remove.
INSTALLATION		
1. POWER ON switch	Locking nut and washers (3)	Using 9/16 inch wrench, install.
2.	Wires (2)	Using soldering iron, solder.
3. Charger case	Charger chassis assembly (1)	Carefully place charger chassis assembly into case. See paragraph 5-6 for installation.

5-12. REPLACEMENT OF POWER-ON SWITCH (CONT)



5-13. CALIBRATION FOR ZERO CUTOFF VOLTAGE OF BATTERY CHARGER.

This task covers:

Zero cutoff voltage test

INITIAL SETUP

Tools	Personnel Required
None	One technician
Materials/Parts	**Equipment Condition**
None	Power cord connected to power source. Charging cables disconnected.

LOCATION	ITEM	ACTION **REMARKS**

ZERO CUTOFF VOLTAGE TEST

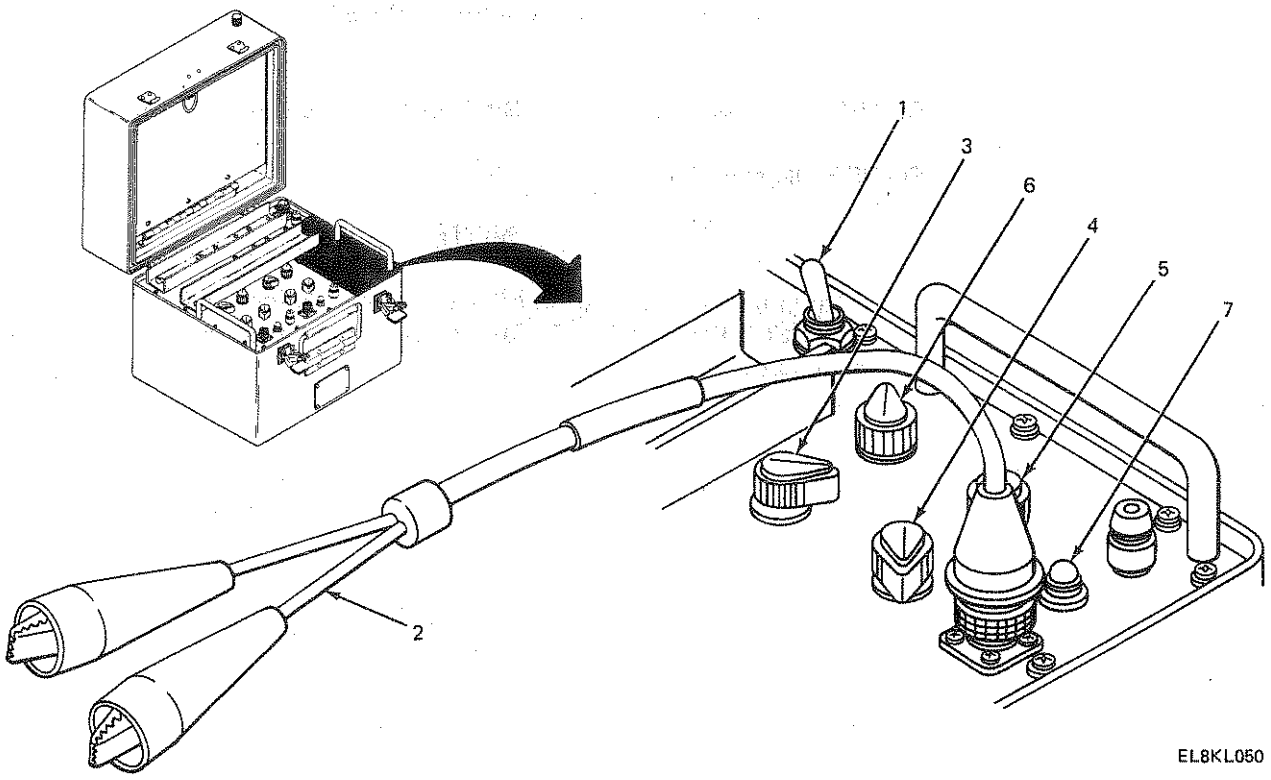
NOTE

When the calibration of the battery charger is to be tested, all three of the calibration tests must be performed in the order presented. Calibration tests and recalibration procedures must be performed with the battery charger at room temperature. The calibration test is to be performed for each of the three charging channels.

1.	Charger front panel	POWER ON switch (1)	Set to OFF.
2.		Charging cable (2)	Connect a charging cable to the channel to be tested and short clips together.
3.		RANGE switch (3)	Set to 0 cutoff volt.
4.		UNIT VOLTS switch (4)	Set to 0 cutoff volt.
5.		TENTH VOLTS switch (5)	Set to 0 cutoff volt.
6.		Power ON switch (1)	Set to ON.

5-13. CALIBRATION FOR ZERO CUTOFF VOLTAGE OF BATTERY CHARGER (CONT)

	LOCATION	ITEM	ACTION REMARKS
ZERO CUTOFF VOLTAGE TEST (CONT)			
7.		CHARGE CURRENT switch (6)	Set to START 1.0A and hold.
8.		CHARGING LAMP (7)	Lamp will light while CHARGE CURRENT switch is set to START.
9.		CHARGE CURRENT switch (6)	Release switch from START position.
10.	Charger front panel	CHARGING LAMP (7)	Lamp should turn off within 5 seconds from the time CHARGE CURRENT switch is released from START 1.0A position.



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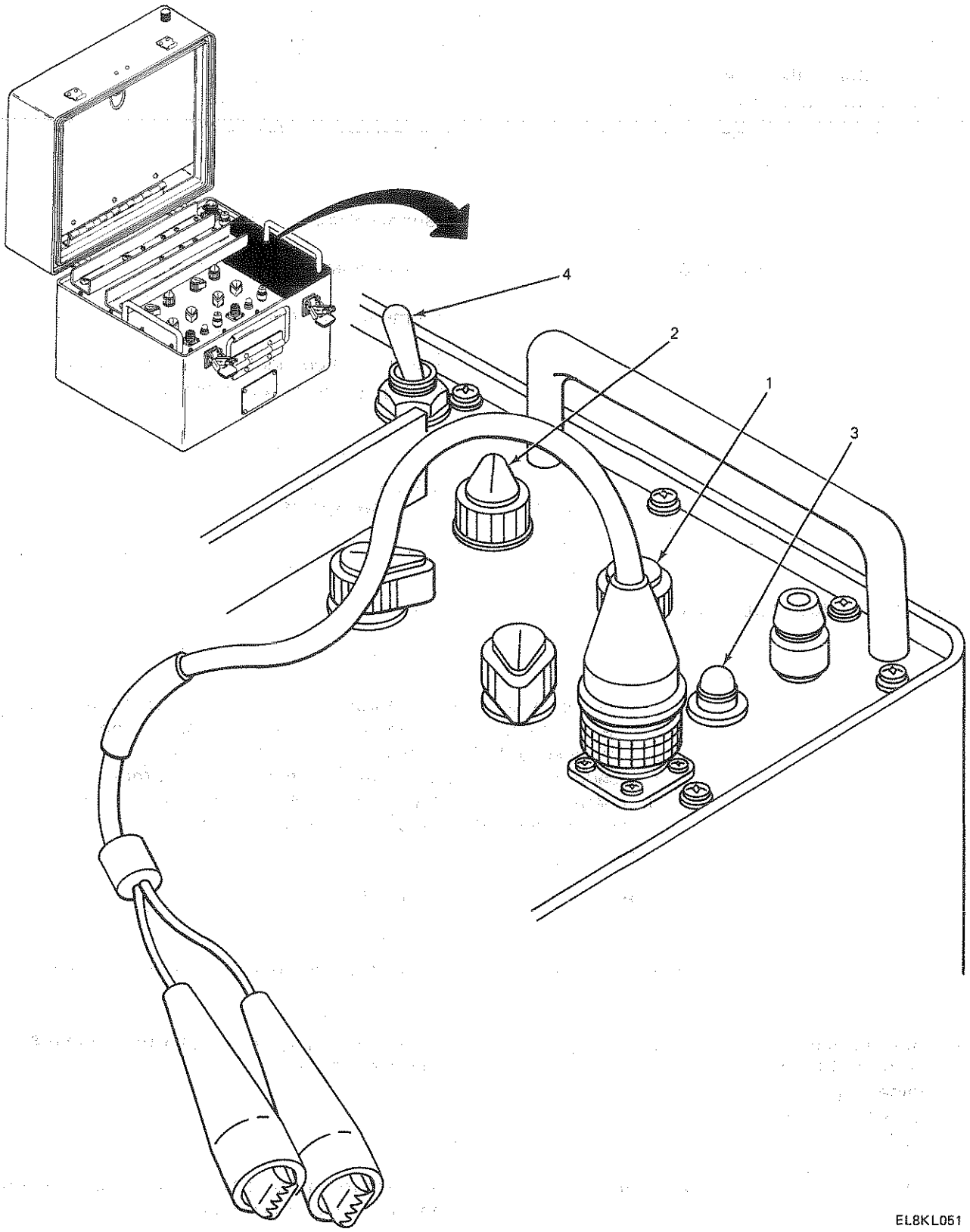
5-13. CALIBRATION FOR ZERO CUTOFF VOLTAGE OF BATTERY CHARGER (CONT)

	LOCATION	ITEM	ACTION / REMARKS
ZERO CUTOFF VOLTAGE TEST (CONT)			
			NOTE If lamp remains lit longer than five seconds after releasing the CHARGE CURRENT switch from START 1.0A position, recalibration is necessary. See paragraph 5-16.
11.	Charger front panel	TENTH VOLTS switch (1)	Set channel for cutoff voltage of 00.3 volts using TENTH VOLTS switch.
12.		CHARGE CURRENT switch (2)	Set to 1.0A START and hold.
13.		CHARGING LAMP (3)	CHARGING LAMP will light.
14.		CHARGE CURRENT switch (2)	Release from 1.0A START position.
15.		CHARGING LAMP (3)	CHARGING LAMP should remain on.
16.		POWER ON switch (4)	Set to Off.
			NOTE If lamp immediately turns off after releasing the CHARGE CURRENT FROM START 1.0A position, recalibration is necessary. See paragraph 5-16.

5-13. CALIBRATION FOR ZERO CUTOFF VOLTAGE OF BATTERY CHARGER (CONT)



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5-14. CALIBRATION TEST FOR UPPER CUTOFF VOLTAGE OF BATTERY CHARGER.

This task covers:

1. Upper cutoff voltage Test Part I
2. Upper cutoff voltage Test Part II

INITIAL SETUP

Tools

Voltmeter, Digital AN/GSM-64

Materials/Parts

None

Personnel Required

One technician

Equipment Condition

Power cord connected to power source.
Charging cables disconnected.

LOCATION	ITEM	ACTION	REMARKS

UPPER CUTOFF VOLTAGE PART I

NOTE

When the calibration of the battery charger is be tested, all three of the calibration checks must be performed in the order presented. Calibration tests and recalibration procedures must be performed with the battery charger at room temperature. The calibration tests for upper cutoff voltage is to be performed for each of the three charging channels.

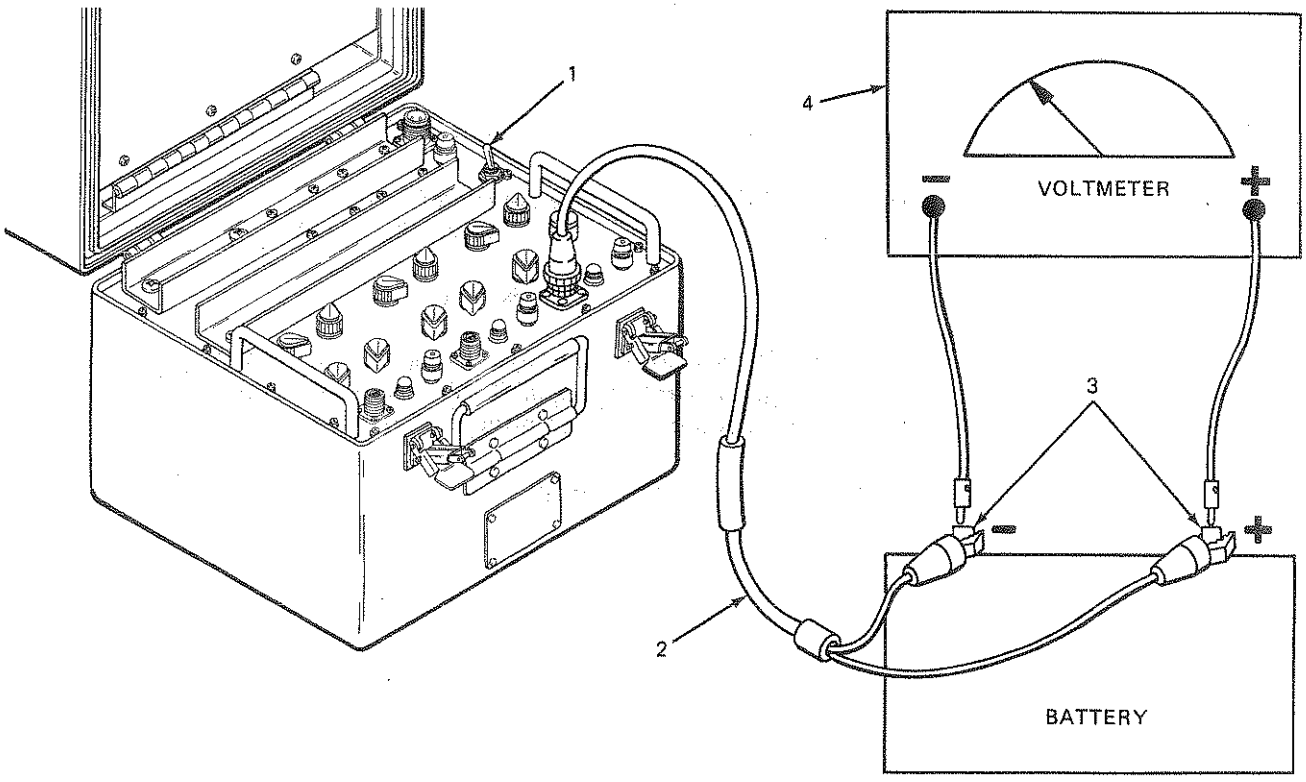
1.	Charger front panel	POWER ON switch (1)	Set to OFF.
2.		Charging cable (2)	Connect a charging cable to the channel to be tested.
3.	Any storage battery with terminal voltage greater than 20 volts	Terminals (3)	Connect charging cable to battery. Be sure that polarities are correct.
4.	Storage battery	Voltmeter (4)	Connect voltmeter to battery terminal. Be sure that polarities are correct.

5-14. CALIBRATION TEST FOR UPPER CUTOFF VOLTAGE OF BATTERY CHARGER (CONT)

LOCATION	ITEM	ACTION REMARKS
UPPER CUTOFF VOLTAGE PART I (CONT)		
5. Storage battery	Voltmeter (4)	Measure and record the terminal voltage of the battery. Label voltage (Vb).

NOTE

Subtract 10% of terminal voltage obtained in Step 5. Example: 20.00 volts terminal voltage (Vb) - 10% or minus 2.00 equals 18.00 volts. For steps 6,7, and 8, set cutoff voltage of battery charger to the minus 10% value.



5-14. CALIBRATION TEST FOR UPPER CUTOFF VOLTAGE OF BATTERY CHARGER (CONT)

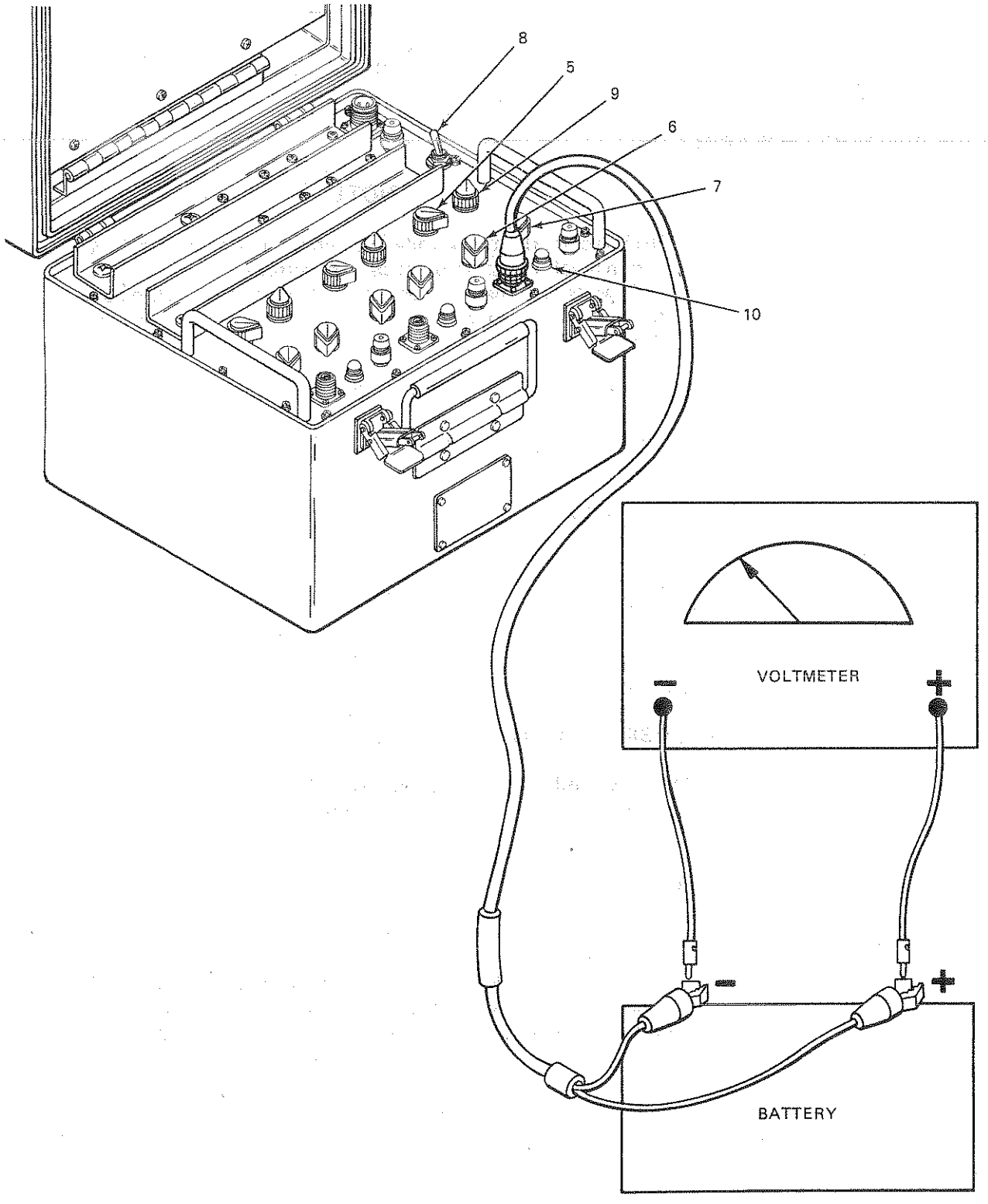
	LOCATION	ITEM	ACTION REMARKS
UPPER CUTOFF VOLTAGE PART I (CONT)			
6.	Charger front panel	RANGE switch (5)	Set to ADJUSTABLE position.
7.		UNIT VOLTS switch (6)	Set to unit digit cutoff.
8.		TENTH VOLTS switch (7)	Set to tenth digit cutoff.
9.		POWER ON switch (8)	Set to ON.
10.		CHARGE CURRENT switch (9)	Set to START and hold.
11.		CHARGING LAMP (10)	LAMP will light.
12.		CHARGE CURRENT (9)	Release from START. **Lamp will go out.**

NOTE

If CHARGING LAMP remains lit longer than 1/2-second after releasing the CHARGE CURRENT switch from START, recalibration is necessary. See paragraph 5-17 for procedure.

13.		POWER ON switch (8)	Set to off.

5-14. CALIBRATION TEST FOR UPPER CUTOFF VOLTAGE OF BATTERY CHARGER (CONT)



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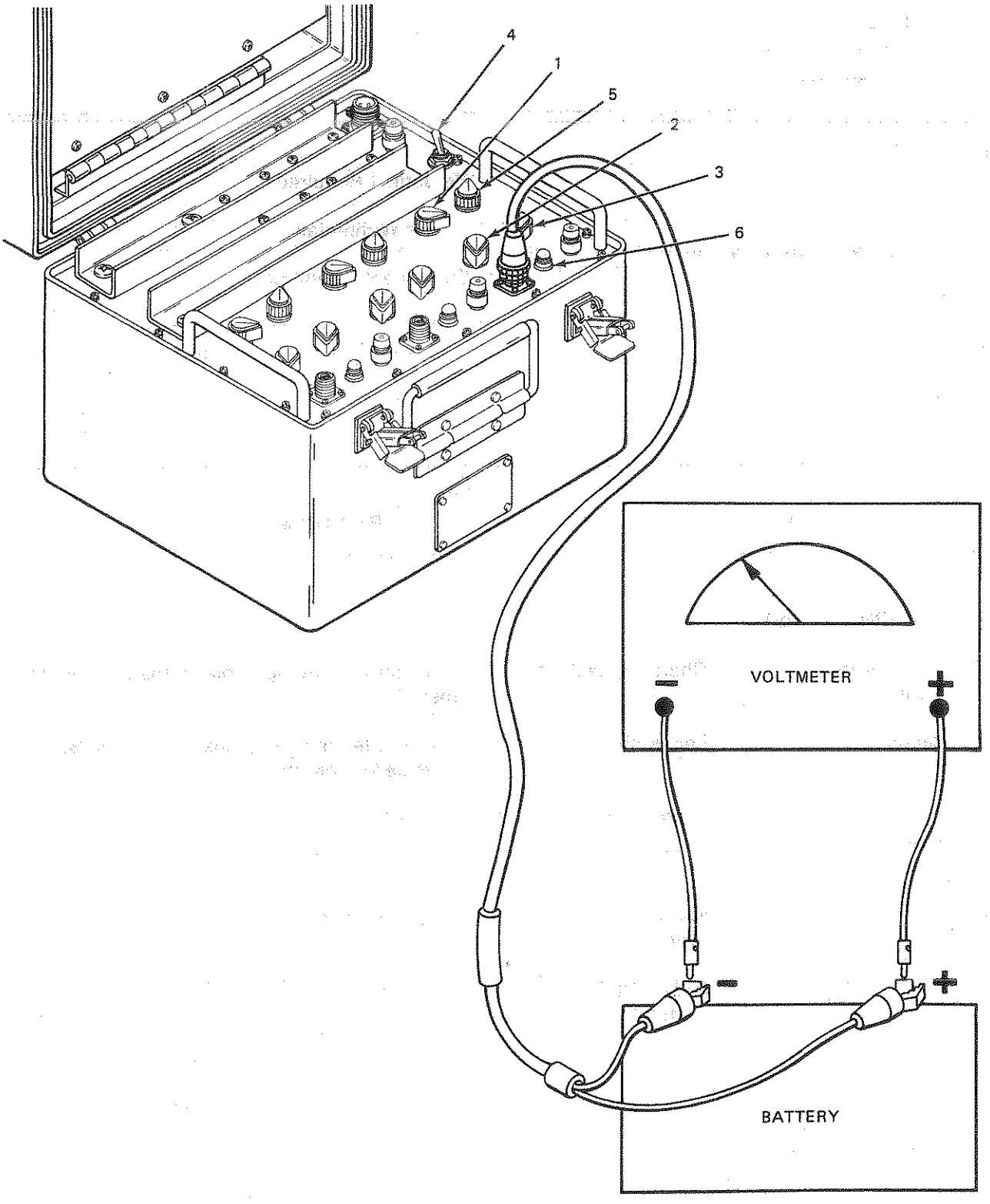
5-14. CALIBRATION TEST FOR UPPER CUTOFF VOLTAGE OF BATTERY CHARGER (CONT)

LOCATION	ITEM	ACTION REMARKS
UPPER CUTOFF VOLTAGE PART II		
		NOTE From recorded battery voltage of step 5 in Part I, add 10% of terminal voltage to value of battery voltage. Example: 20.00 volts terminal voltage (Vb) + 10% or plus 2.00 equals 22.00 volts. For steps 1, 2, and 3, set cutoff voltage of battery charger to plus 10% value.
1. Charger front panel	RANGE switch (1)	Set to ADJUSTABLE position.
2.	UNIT VOLTS switch (2)	Set to unit digit cutoff.
3.	TENTH VOLTS switch (3)	Set to tenth digit cutoff.
4.	POWER ON switch (4)	Set to ON.
5.	CHARGE CURRENT switch (5)	Set to START and hold.
6.	CHARGING LAMP (6)	Lamp will light.
7.	CHARGE CURRENT switch (5)	Release from START. Light will go out.
8.	POWER ON switch (4)	Set to off.
		NOTE If CHARGING LAMP remains lit longer than 1/2-second after releasing the CHARGE CURRENT switch from START, recalibration is necessary. See paragraph 5-17 for procedure.

5-14. CALIBRATION TEST FOR UPPER CUTOFF VOLTAGE OF BATTERY CHARGER (CONT)



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5-15. CALIBRATION TEST FOR CHARGE CURRENT OF BATTERY CHARGER.

This task covers:

Charge current test

INITIAL SETUP

Tools

Ammeter (accurate to within 1% indication)
0-1 ampere range

Materials/Parts

None

Personnel Required

One technician

Equipment Condition

Power cord connected to power source.
Charging cables disconnected.

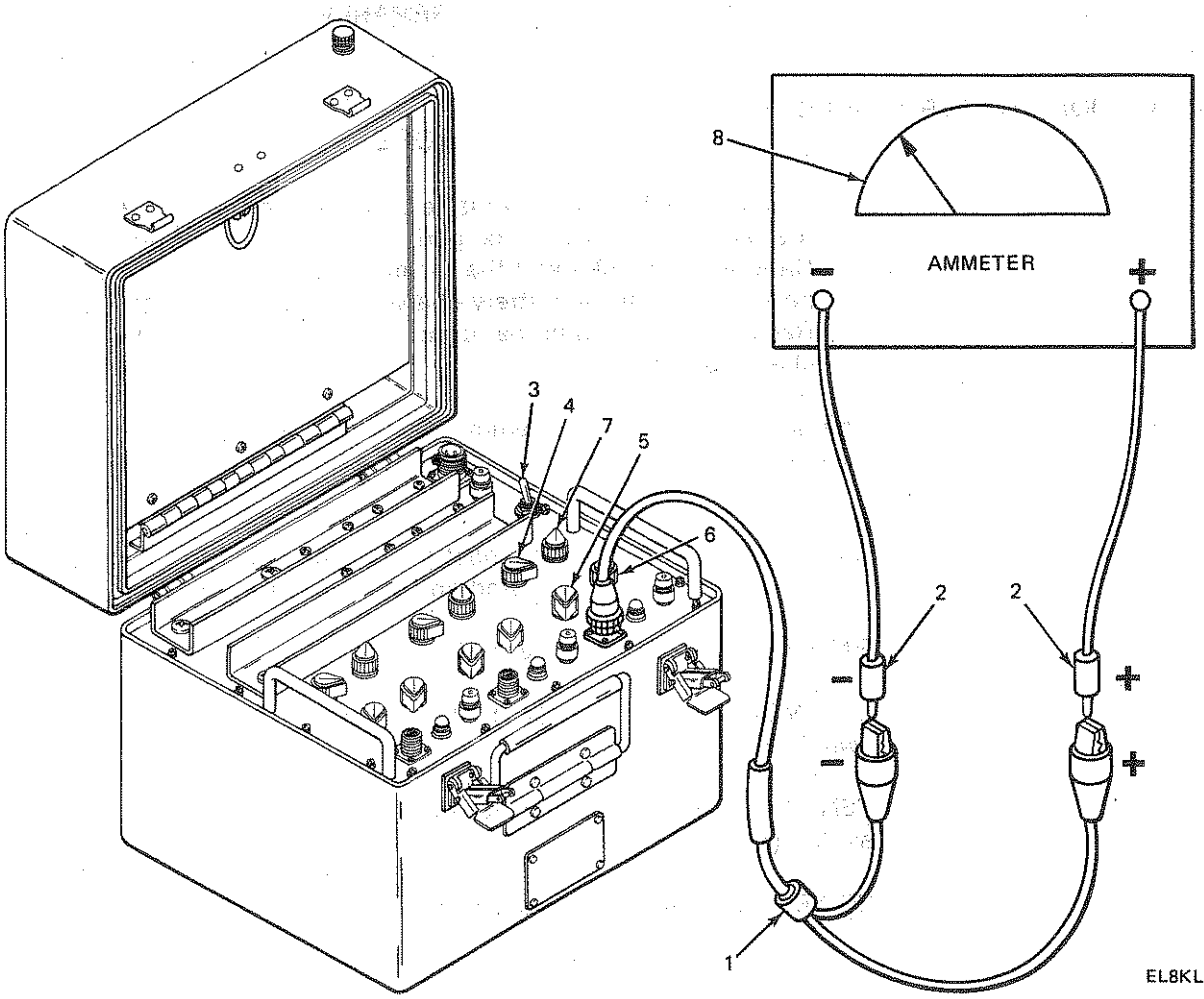
LOCATION	ITEM	ACTION	REMARKS
CHARGE CURRENT TEST			
1. Charger front panel	Charging cable (1)	Connect a charging cable to the channel to be tested.	
2. Ammeter	Leads (2)	Connect leads across charging clips. Be sure to observe polarity.	
3. Charger front panel	POWER ON switch (3)	Set to ON.	
4.	RANGE switch (4)	Set to 30 volts.	
5.	UNIT VOLTS switch (5)	Set to 0 volt.	

5-15. CALIBRATION TEST FOR CHARGE CURRENT OF BATTERY CHARGER (CONT)

	LOCATION	ITEM	ACTION REMARKS
CHARGE CURRENT TEST (CONT)			
6.		TENTH VOLTS switch (6)	Set to 0 volt.
7.		CHARGE CURRENT switch (7)	Set to START and hold.
8.	Ammeter	Dial (8)	Dial must show value between 0.95 to 1.05 amps.

NOTE

If ammeter indication is not within limits of step 8, recalibration is necessary. See paragraph 5-18 for procedure.



5-16. RECALIBRATION FOR ZERO-VOLT CUTOFF.

This task covers:

Recalibration, zero-volt cutoff

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-100/G

Materials/Parts

None

Personnel Required

One technician

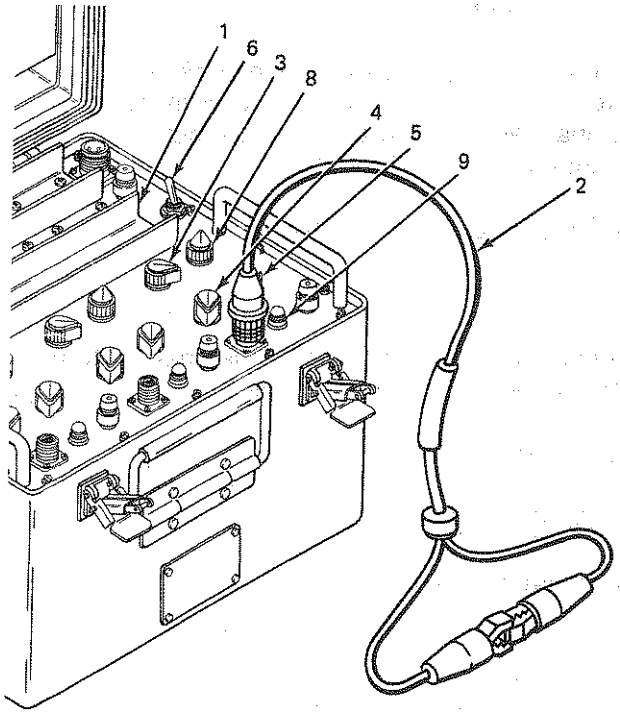
Equipment Condition

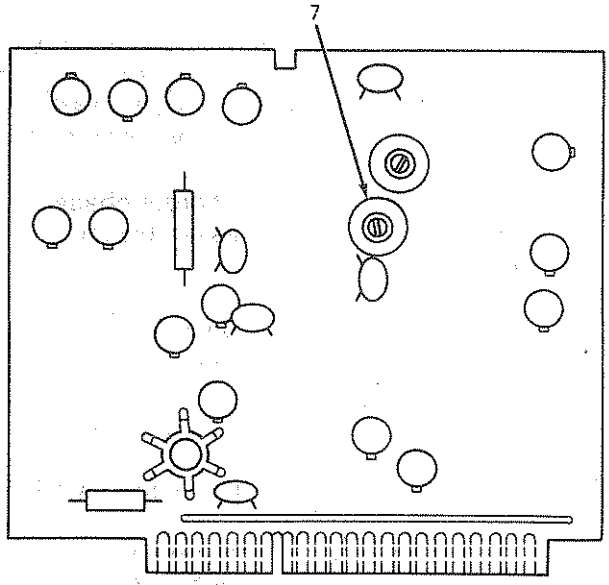
Power cord connected to power source.
Charging cables disconnected.

	LOCATION	ITEM	ACTION REMARKS
RECALIBRATION FOR ZERO-VOLT CUTOFF			
		NOTE When the battery charger is to be calibrated, all three of the recalibrations must be performed in the order presented. Calibration checks and the recalibration procedures must be performed with the battery charger at room temperature. Recalibration is to be performed for each of the three charging channels.	
1.	Charger front panel	Charger chassis assembly (1)	Remove. See paragraph 5-6.
2.		Charging cable (2)	Connect a charging cable to the channel to be tested and short clips together.
3.		RANGE switch (3)	Set to 0 volt.
4.		UNIT VOLTS switch (4)	Set to 0 volt.
5.		TENTH VOLTS switch (5)	Set to 0 volt.
6.		POWER ON switch (6)	Set to ON.

5-16. RECALIBRATION FOR ZERO-VOLT CUTOFF (CONT)

LOCATION	ITEM	ACTION REMARKS
RECALIBRATION FOR ZERO-VOLT CUTOFF (CONT)		
7. Charger chassis assembly (control board)	Potentiometer R422 (7)	Turn shaft of potentiometer fully to the right.
8. Charger front panel	CHARGE CURRENT switch (8)	Set to START and release. Repeat at 1/2-second interval while adjusting potentiometer R422.
9.	CHARGING LAMP (9) and CHARGE CURRENT switch (8)	Light will stay on when CHARGE CURRENT switch is released from START.
10. Charger chassis assembly (control board)	Potentiometer R422 (7)	Slowly turn shaft to the left or right until CHARGING LAMP turns off immediately after CHARGE CURRENT switch is released from START. **Be sure to repeat at 1/2-second intervals. See step 8.**





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5-17. RECALIBRATION FOR UPPER CUTOFF VOLTAGE.

This task covers:

Recalibration, upper cutoff voltage.

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-100/G
Voltmeter, Digital AN/GSM-64

Materials/Parts

None

Personnel Required

One technician

Equipment Condition

Power cord connected to power source.
Charging cables disconnected.

LOCATION	ITEM	ACTION	REMARKS

RECALIBRATION, UPPER CUTOFF VOLTAGE

NOTE

The recalibration procedure for upper cutoff voltage does not need to be performed for each channel. The procedure must be performed on only one channel to calibrate the upper cutoff voltage for the entire equipment.

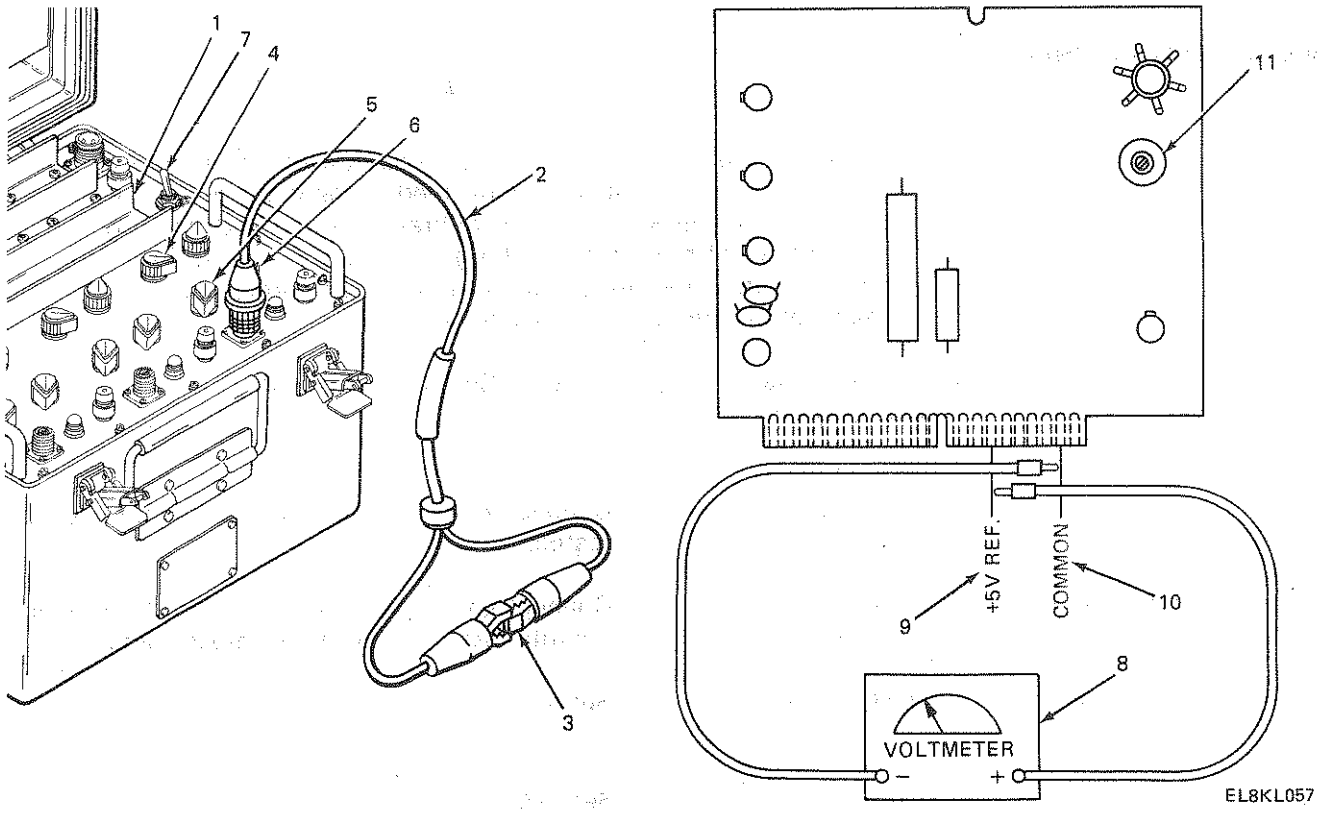
1.	Charger front panel	Charger chassis assembly (1)	Remove. See paragraph 5-6.
2.		Charging cable (2) and clips (3)	Connect a charging cable to the channel to be tested and short clips together.
3.		Range switch (4)	Set switch to 0 volt.
4.		Unit volts switch (5)	Set switch to 0 volt.
5.		Tenth volts switch (6)	Set switch to 0 volt.
6.		POWER ON switch (7)	Set to ON.

5-17. RECALIBRATION FOR UPPER CUTOFF VOLTAGE (CONT)

LOCATION	ITEM	ACTION / REMARKS
RECALIBRATION, UPPER CUTOFF VOLTAGE (CONT)		
7. Charger chassis assembly (mother board)	Voltmeter (8), PIN #7 (9) and PIN #2 (10)	Connect positive lead of the voltmeter to pin #7 of J201 on mother board. Negative lead pin #2.
8. Charger chassis assembly (power supply board)	Potentiometer R310 (11)	Adjust the position of the shaft of the potentiometer by turning to the right or left until the voltmeter indicates 5.014 volts.

NOTE

The upper cutoff voltage of the entire equipment is calibrated. However, recalibration of the charge current is necessary. See paragraph 5-18 for recalibration of charge current.



5-18. RECALIBRATION FOR CHARGE CURRENT.

This task covers:

Recalibration, charge current.

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-100/G
DC ammeter

Materials/Parts

None

Personnel Required

One technician

Equipment Condition

Power cord connected to power source.
Charging cables disconnected.

LOCATION	ITEM	ACTION	REMARKS

RECALIBRATION, CHARGE CURRENT

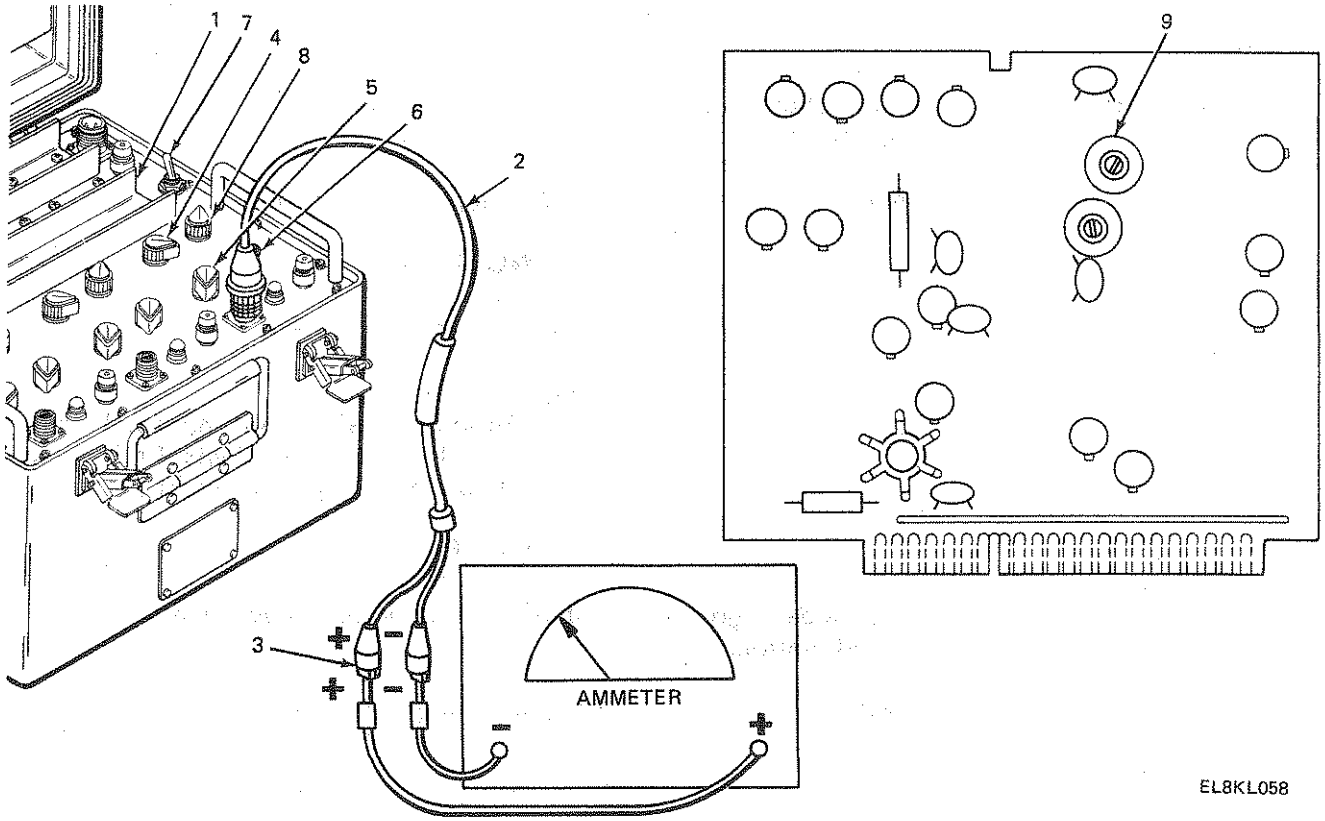
NOTE

When the battery charger is to be recalibrated, all three of the recalibrations must be performed in the order presented. Calibration checks and the recalibration procedures must be performed with the battery charger at room temperature. Recalibration for charge current is to be performed for each of the three charging channels.

1.	Charger front panel	Charger chassis assembly (1)	Remove. See paragraph 5-6.
2.		Charging cable (2)	Connect a charging cable to the channel to be tested.
3.	Charging cable	Clips (3)	Connect ammeter to clips. Be sure to observe polarity. Set ammeter to 1 ampere range.
4.	Charger front panel	RANGE switch (4)	Set to 30 volts.
5.		UNIT VOLTS switch (5)	Set to 0 volt.

5-18. RECALIBRATION FOR CHARGE CURRENT (CONT)

LOCATION	ITEM	ACTION REMARKS
RECALIBRATION, CHARGE CURRENT (CONT)		
6.	TENTH VOLTS switch (6)	Set to 0 volt.
7.	POWER ON switch (7)	Set to ON.
8.	CHARGE CURRENT switch (8)	Set to START.
		CAUTION Do not switch ammeter ranges while the charging lamp is on.
9. Charger chassis assembly (control board)	Potentiometer R425 (9)	Using screwdriver, adjust the position of the shaft of the potentiometer by turning the shaft clockwise or counterclockwise until the ammeter indicates 1.00 amperes.



5-19. MAINTENANCE OF DIODE.

This task covers:

1. Testing
2. Removal
3. Installation

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment
TK-100/G
Multimeter TS-352B/U

Materials/Parts

Semiconductor diode
NSN 5961-00-080-5239

Personnel Required

One technician

Equipment Condition

Equipment off

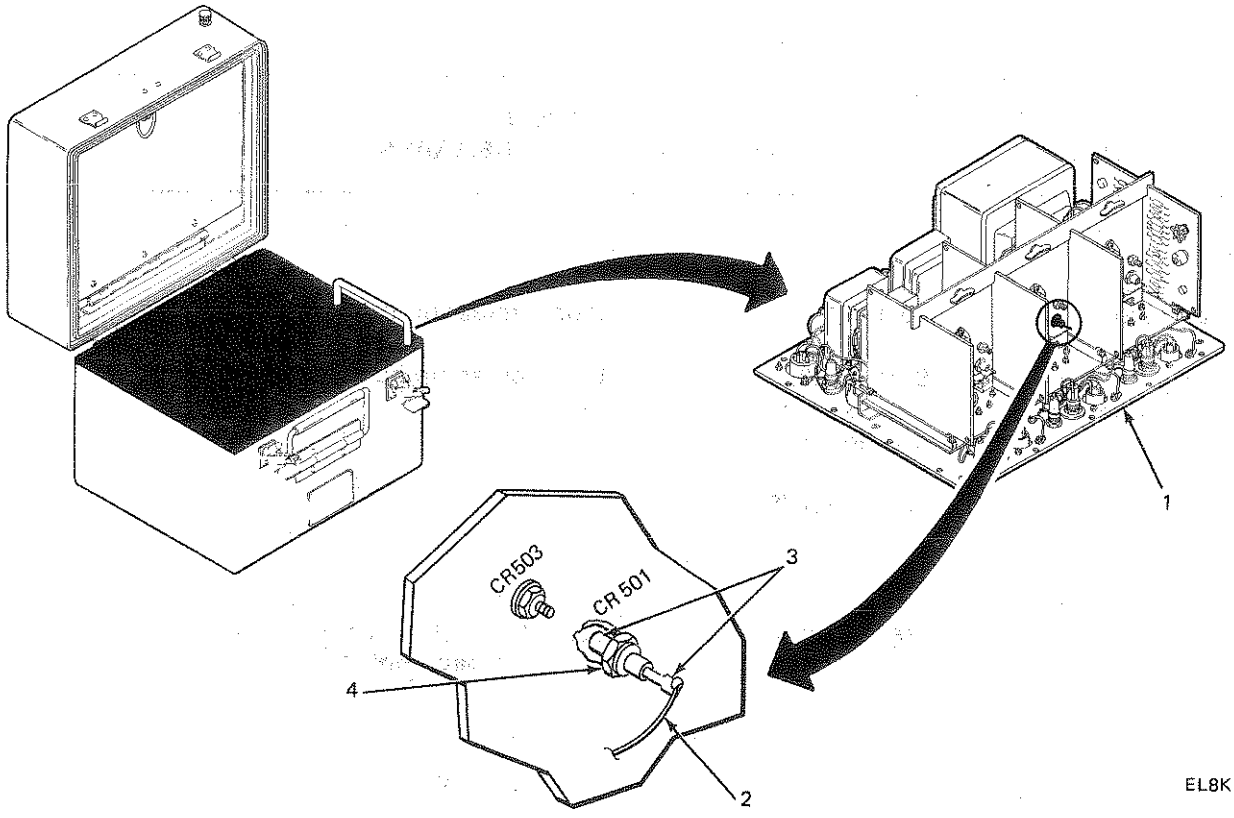
LOCATION	ITEM	ACTION / REMARKS
TESTING		
1. Charger front panel	Charger chassis assembly (1)	Remove. See paragraph 5-6.
2. Bracket	Wire (2)	Using soldering iron, unsolder.
		NOTE Set multimeter to ohms RX10 scale.
3. Diode	Terminals (3)	Using multimeter, test. **Alternate positive and negative leads of multimeter to terminals. Resistance should be infinite one direction.**
		NOTE If diode is good, go to step 4. If bad, go to removal and installation.
4.	Wire (2)	Using soldering iron, solder.

5-19. MAINTENANCE OF DIODE (CONT)

LOCATION	ITEM	ACTION REMARKS
REMOVAL		
1. Diode	Locking nut (4)	Using 3/8 inch wrench, remove.
INSTALLATION		
1. Bracket	Locking nut (4)	Using 3/8 inch wrench, install.
2. Diode	Wire (2)	Using soldering iron, solder.

NOTE

This procedure applies to diodes 501 through 505 on the three brackets.



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5-20. MAINTENANCE OF TRANSISTOR.

This task covers:

1. Removal
2. Testing
3. Installation

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-100/G

Materials/Parts

Transistor
Trichlorotrifluoroethane NSN 6850-00-105-3054
Thermal conductive grease NSN 5961-00-410-5450

Personnel Required

One technician

Equipment Condition

Equipment off

Test Equipment

Test Set, Transistor TS-1836/U

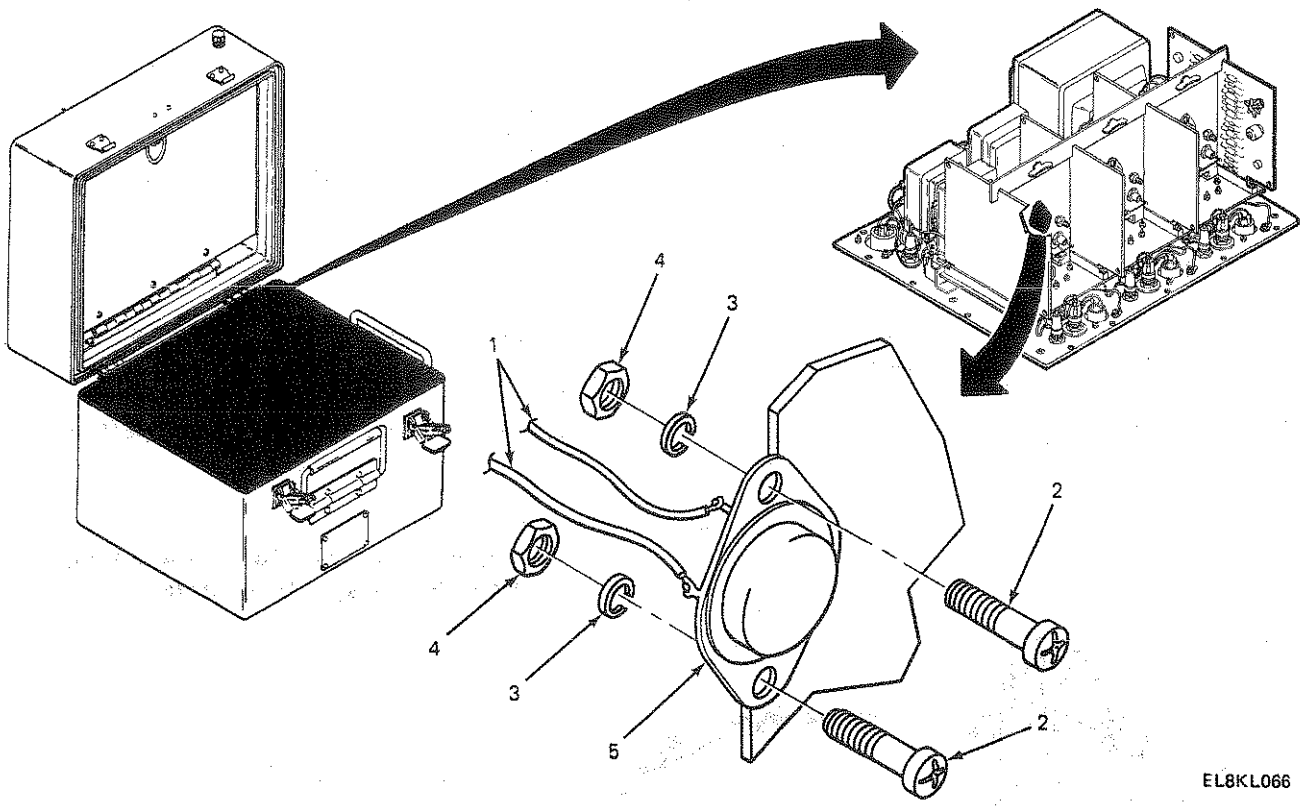
LOCATION	ITEM	ACTION / REMARKS
REMOVAL		
1. Transistor	Leads (1)	Using soldering iron and aid, unsolder.
2. Heat sink circuit card	Screws (2), lockwashers (3) and hex nuts (4)	Using cross-tip screwdriver, remove.
3.	Transistor (5)	Remove.
TESTING		
1. Transistor test set	Transistor (5)	Using test set, test transistor. **If bad, replace.**
INSTALLATION		

NOTE

Before installing transistor, clean heat sink circuit card area with trichlorotrifluoroethane. Apply thermal conductive grease to back of transistor.

5-20. MAINTENANCE OF TRANSISTOR (CONT)

LOCATION	ITEM	ACTION REMARKS
INSTALLATION (CONT)		
1. Heat sink circuit card	Transistor (5)	Install.
2.	Hex nuts (4) lockwashers (3) and screws (2)	Using cross-tip screwdriver, install.
3. Transistor	Leads (1)	Using soldering iron and aid, solder.



5-21. INSPECTION OF RUNNING SPARES.

This task covers:

Inspection

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment
TK-105/G

Materials/Parts

Fuse (4 amp), NSN 5920-00-557-2647
Fuse (5 amp), NSN 5920-00-284-6787
Lamp, NSN 6240-00-155-8706

Personnel Required

One technician

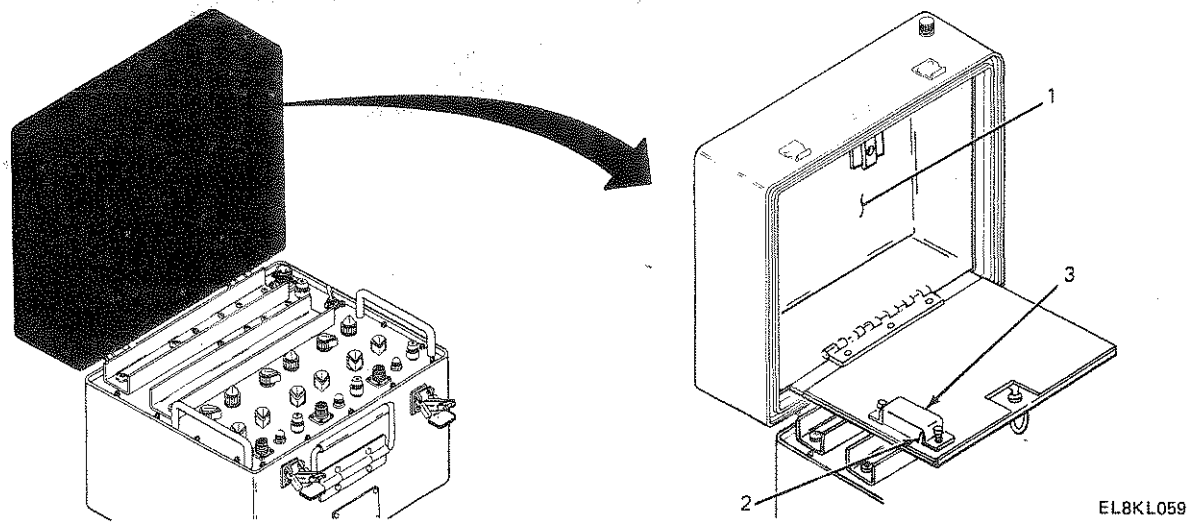
Equipment Condition

Equipment off

LOCATION	ITEM	ACTION REMARKS

INSPECTION

1.	Charger cover assembly	Inside storage (1) cover	Open cover by turning inside cover handle and lift.
2.	Inside storage cover	Running spare (2) compartment	Remove two screws and lift off compartment.
3.	Running spare compartment	Running spares (3)	Check contents: **There should be 4 fuses and 3 lamps.** **Replace missing fuses or lamps.**



CHAPTER 6

GENERAL SUPPORT MAINTENANCE

OVERVIEW

This chapter contains direct support servicing, troubleshooting, and maintenance procedures for the battery charger.

Section I REPAIR PARTS, SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT

6-1. COMMON TOOLS AND EQUIPMENT.

The common tools and equipment needed for maintenance is listed in Maintenance Allocation Chart, Appendix B, of this manual.

6-2. REPAIR PARTS.

The repair parts for general support maintenance are listed and shown in the Repair Parts and Special Tools List TM 11-6130-351-14P.

6-3. SPECIAL TOOLS, TMDE, AND SUPPORT EQUIPMENT.

The special tools and support equipment needed for maintenance is listed in Maintenance Allocation Chart, Appendix B, of this manual.

Section II TROUBLESHOOTING

GENERAL SUPPORT TROUBLESHOOTING

6-4. OVERVIEW.

See Chapter 5, Section II for troubleshooting procedures.

Section III MAINTENANCE PROCEDURES

6-5. OVERVIEW.

Maintenance procedures authorized at the general support maintenance level are the replacement of master board, transformer T101 and inductors.

6-6. REMOVAL OF MASTER BOARD.

This task covers:

Removal

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment TK-105/G

Materials/Parts

None

Personnel Required

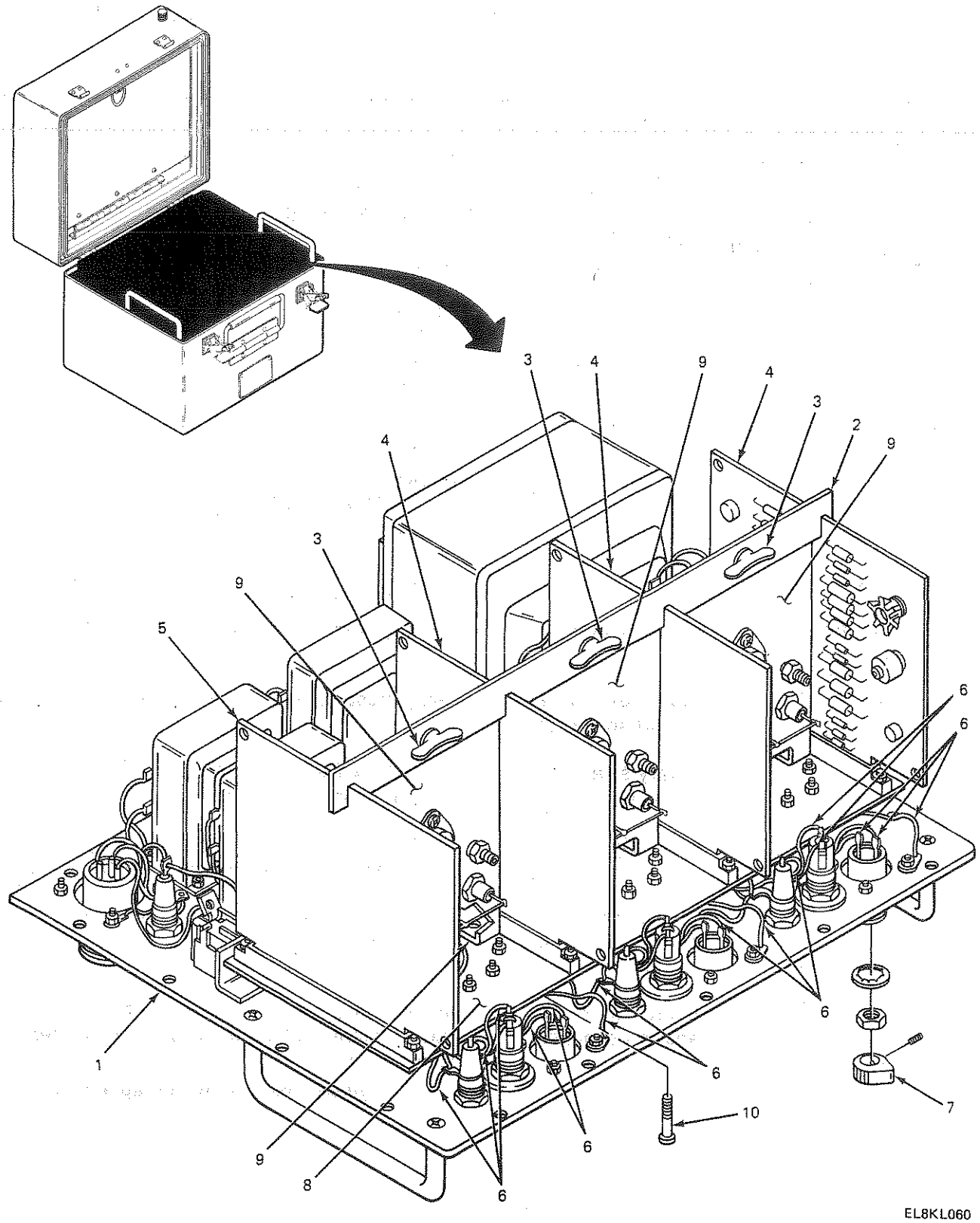
One technician

Equipment Condition

Equipment off

LOCATION	ITEM	ACTION REMARKS
REMOVAL		
1. Charger front panel	Charger chassis assembly (1)	Remove. See paragraph 5-6.
2. Charger chassis assembly	Board retainer (2) and fasteners (3)	Remove board retainer by turning three fasteners one quarter turn counterclockwise.
3.	Control board (4) and power supply board (5)	Carefully pull three control boards and power supply board straight out from their connectors on the master board.
4.	Wires (6)	Using soldering iron, unsolder. Unsoldering is to be at component end of wire. Tag all wires for identification and remove.
5. Charger front panel	Rotary switch knobs (7)	Remove all rotary switch knobs and all the hardware securing switches to the front panel. See paragraph 4-17 for procedure.
6.	Master board (8)	Lift master board from front panel.
7. Charger chassis assembly	Heat sink brackets (9) and screws (10)	Using cross-tip screwdriver, remove.

6-6. REMOVAL OF MASTER BOARD (CONT)



6-7. INSTALLATION OF MASTER BOARD.

This task covers:

Installation

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment
TK-105/G

Materials/Parts

Master Board Assembly
NSN 6130-00-247-1059

Personnel Required

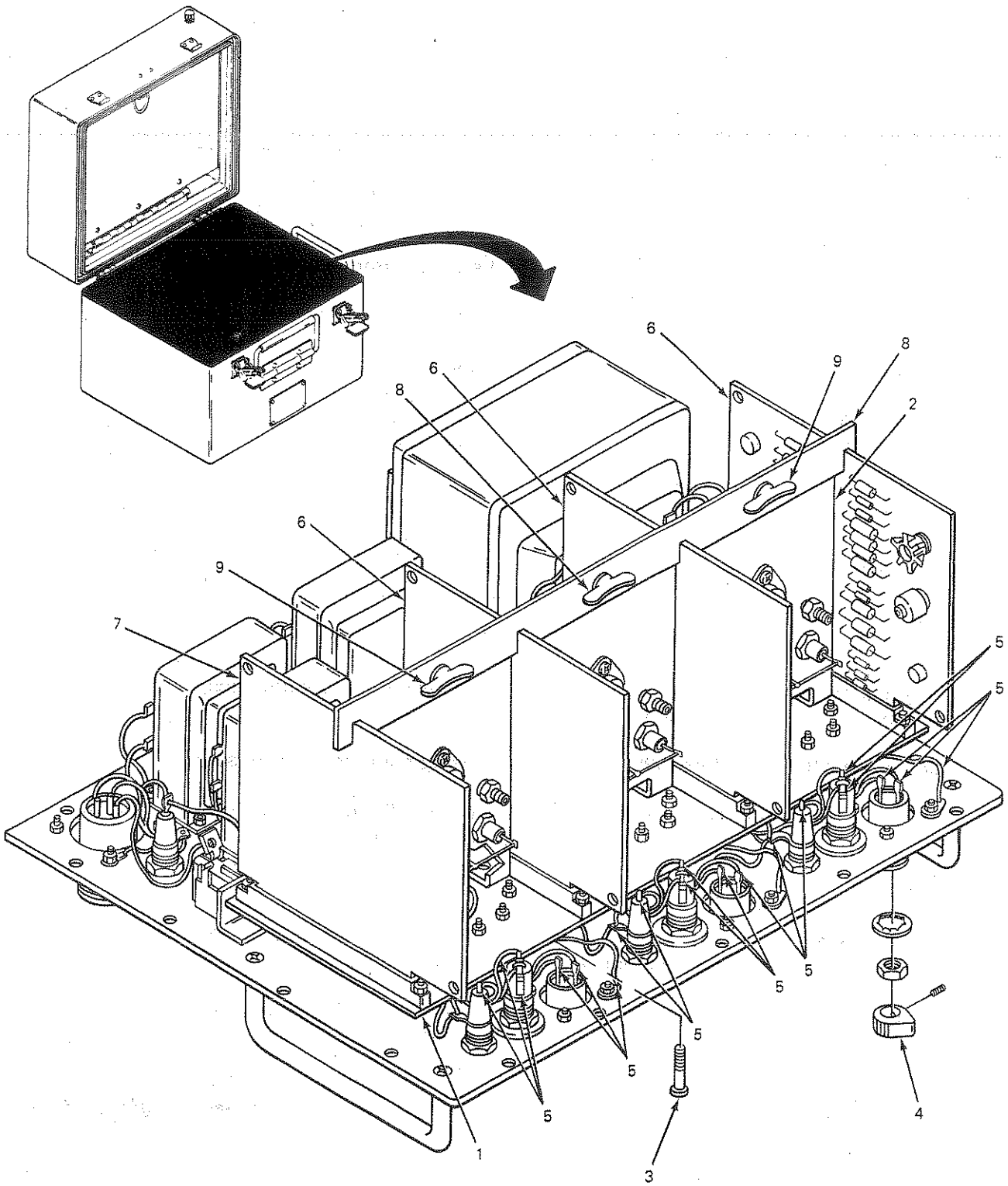
One technician

Equipment Condition

Chassis removed, see paragraph 5-6.

LOCATION	ITEM	ACTION / REMARKS
INSTALLATION		
1. Charger front panel	Master board (1)	Place master board in position on front panel.
2.	Heat sink bracket (2) and screws (3)	Using cross-tip screwdriver, install.
3.	Rotary switch knobs (4)	Install rotary switch knob and all hardware to front panel.
4.	Wires (5)	Using soldering iron, solder. Soldering is to be done at component end of wire.
5.	Control board (6) and power supply board (7)	Carefully push into their proper connectors on the master board.
6.	Board retainer (8) and fasteners (9)	Install board retainer and secure by turning three fasteners along its length one quarter turn clockwise.
		Install chassis. See paragraph 5-6.

6-7. INSTALLATION OF MASTER BOARD (CONT)



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6-8. REPLACEMENT OF TRANSFORMER.

This task covers:

1. Removal
2. Installation

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment
TK-105/G

Materials/Parts

Transformer, Power
NSN 5920-00-221-0646

Personnel Required

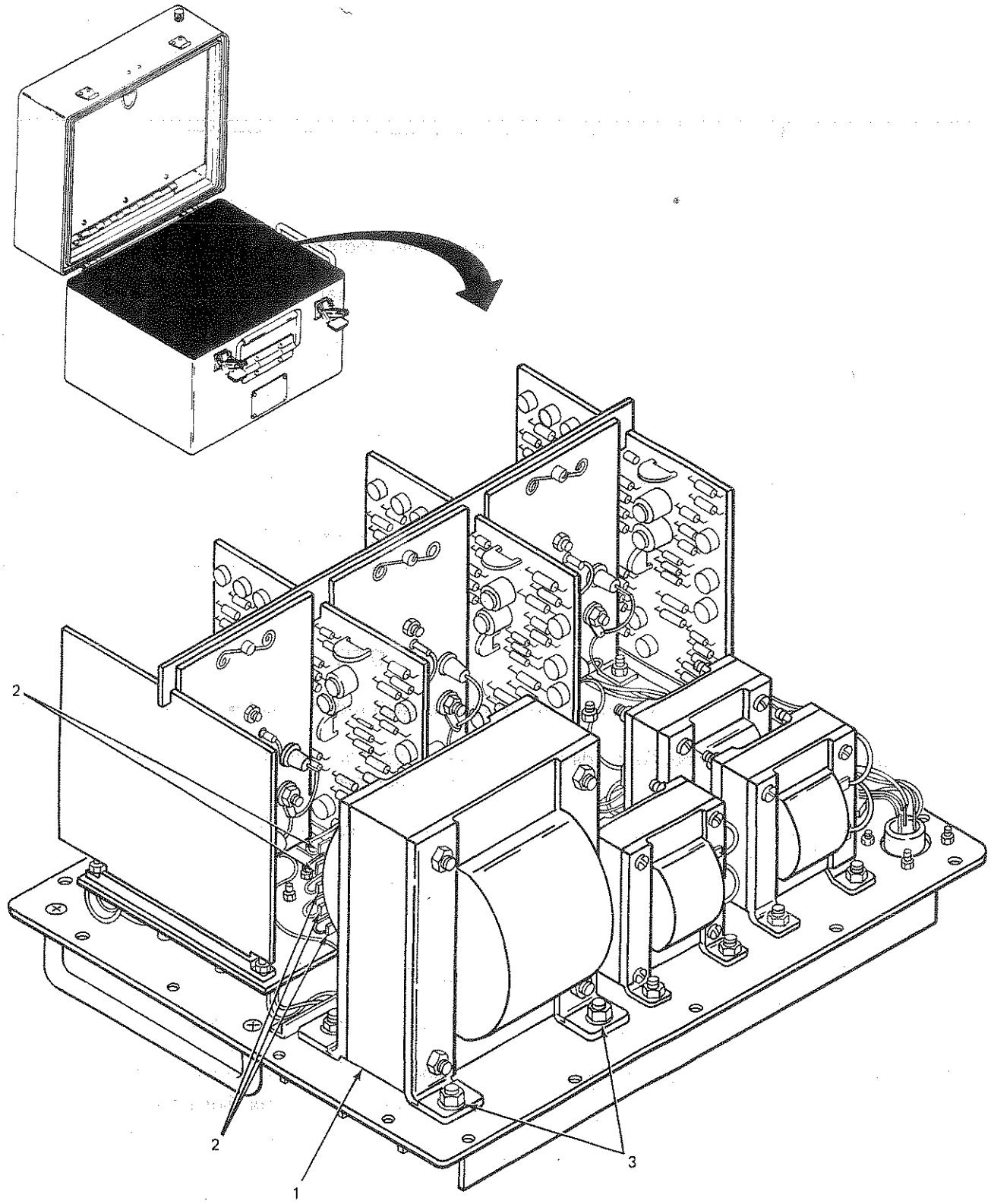
One technician

Equipment Condition

Chassis removed, see paragraph 5-6.

LOCATION	ITEM	ACTION / REMARKS
REMOVAL		
1. Charger chassis assembly	Transformer (1) and wires (2)	Tag wires for identification.
2. Transformer T101	Wires (2)	Using soldering iron, unsolder.
3.	Hex nuts (3)	Using 3/8 inch wrench, remove. Remove transformer.
INSTALLATION		
1. Charger chassis assembly	Transformer (1) and hex nuts (3)	Place transformer in position on front panel board. Using 3/8 inch wrench, install.
2. Transformer T101	Wires (2)	Connect. Be sure that wires are in proper location.
3.	Wires (2)	Using soldering iron, solder. **Install chassis. See paragraph 5-6.**

6-8. REPLACEMENT OF TRANSFORMER (CONT)



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6-9. REPLACEMENT OF INDUCTOR.

This task covers:

1. Removal
2. Installation

INITIAL SETUP

Tools

Tool Kit, Electronic Equipment
TK-105/G

Materials/Parts

Inductor
NSN 5950-00-221-0653

Personnel Required

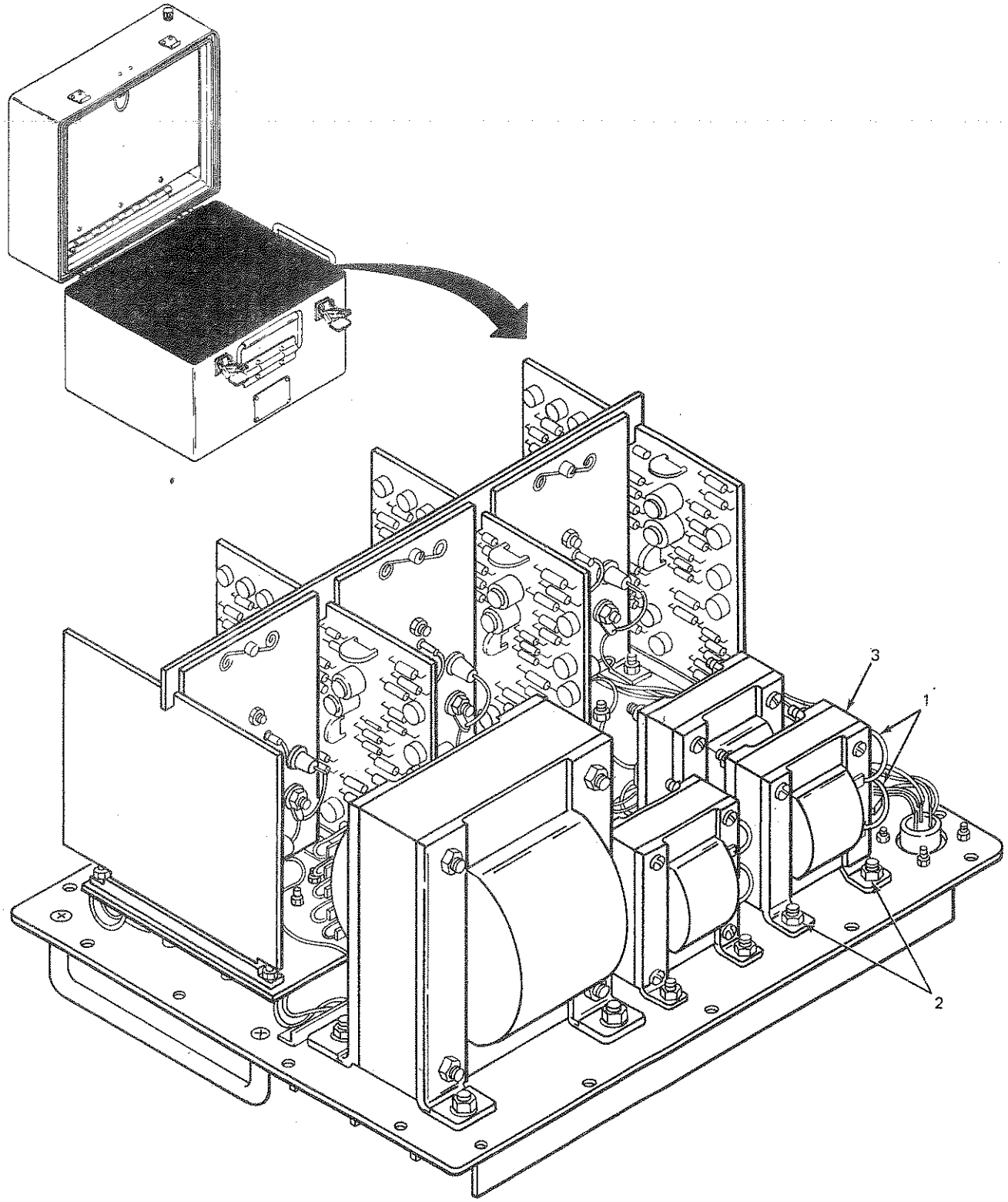
One technician

Equipment Condition

Chassis removed, see paragraph 5-6.

LOCATION	ITEM	ACTION REMARKS
REMOVAL		
		NOTE The procedure to replace each inductor is the same.
1. Inductor	Inductor leads (1)	Tag leads for identification. Using soldering iron, unsolder.
2. Charger chassis	Hex nuts (2)	Using 3/8 inch wrench, remove.
3.	Inductor (3)	Remove.
INSTALLATION		
1. Charger chassis	Inductor (3)	Install.
2.	Hex nuts (2)	Using 3/8 inch wrench, install.
3. Inductor	Inductor leads (1)	Using soldering iron, solder. Remove tags. **Install chassis. See paragraph 5-6**

6-9. REPLACEMENT OF INDUCTOR (CONT)



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APPENDIX A

REFERENCES

A-1. SCOPE.

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

A-2. TECHNICAL MANUALS.

Solder and Soldering	TB SIG 22
Field Instructions for Painting and Preserving Electronics Command Equipment, Including Camouflage Pattern Painting of Electrical Equipment Shelters	TB 43-0118
Operator's Organizational Maintenance Manuals: Multimeter AN/URM-105 and AN/URM-105C, Including Multimeter ME-77/U and ME-77C/U	TM 11-6625-203-12
Direct Support, General Support and Depot Maintenance Manual: Multimeters, AN/URM-105 (NSN 6625-00-581-2036) and AN/URM-105C (6625-00-999-6282), Including Multimeters ME-77/U (6625-00-284-0854) and ME-77C/U 6625-00-999-6625)	TM 11-6625-203-35
Operator's and Organizational Maintenance Manual: Voltmeter, Meter ME-30A/U and Voltmeters, Electronic EM-30B/U, ME-30/CU and ME-30E/U	TM 11-6625-320-12
Operator's, Organizational, DS, GS, and Depot Maintenance Manual: Multimeter TS-352B/U (NSN 6625-00-553-0142)	TM 11-6625-366-15
Operator's, Organizational, DS, GS, and Depot Maintenance Manual: Digital Voltmeter AN/GSM-64	TM 11-6625-444-15
Operator's, Organizational, Field and Depot Maintenance Manual: Transistor Test Set TS-1836/U	TM 11-6625-539-15
The Army Maintenance Management System (TAMMS)	TM 38-750
Administrative Storage of Equipment	TM 740-90-1

A-3. MISCELLANEOUS PUBLICATIONS.

Index of Technical Publications	DA PAM 310-4
Painting and Preservation Supplies Available for Field Use for Electronics Command Equipment	SB 11-573
Tool Kit, Electronic Equipment TK-105/G	SC 5180-91-CL-R07
Tool Kit, Electronic Equipment TK-100/G	SC 5180-91-CL-S21

APPENDIX B

MAINTENANCE ALLOCATION CHART

Section I INTRODUCTION

B-1. GENERAL.

This appendix provides a summary of the maintenance operations for the Battery Charger PP-6241/U. It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

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 equipment 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, aline, 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.

B-2. MAINTENANCE FUNCTION (CONT)

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, SECTION II.

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

C - Operator/Crew

O - Organizational

F - Direct Support

H - General Support

D - Depot

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

f. Column 6, Remarks. Column 6 contains an alphabetic code which is keyed to the remarks in section IV.

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

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

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

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

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

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

B-5. REMARKS (SECTION 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

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY C	O	F	H	D	(5) TOOLS AND EQUIP	(6) REMARKS
00	CHARGER, BATTERY PP-6241/U	Inspect	0.3	0.3	0.4				A
		Test	0.3	0.6	2.0			3,7,8,9	C
		Service	0.5	0.6				2,3	F
		Repair	0.2	0.2	2.0	1.0		1,3,7,8,9	H
		Overhaul					24.0	1 thru 9	A thru H
		Rebuild				24.0		1 thru 9	A thru H
01	BATTERY CHARGER ASSEMBLY								
0101	PANEL ASSEMBLY	Inspect	0.3	0.3					A
		Test	0.3					1,3,7,8,9	B,C
		Service	0.3	0.3				1,2	F
		Repair	0.3		0.6			1,2	G
		Overhaul							
		Rebuild							
010101	MASTER CIRCUIT CARD ASSEMBLY	Inspect				0.5			A
		Test							
		Service							
		Repair				2.0		2,4	F,G
		Overhaul							
		Rebuild							
010102	HEAT SINK BRACKET ASSEMBLY	Inspect			0.3				A
		Test			0.6			4,6	D
		Service							
		Repair			1.0			2,4	H
		Overhaul							
		Rebuild							
0102	CONTROL BOARD CIRCUIT CARD ASSEMBLY	Inspect			0.3				A
		Test			0.6			2,4,6,9	D
		Service							
		Repair			0.6			2,4	G
		Overhaul							
		Rebuild							
0103	POWER SUPPLY BOARD CIRCUIT CARD ASSEMBLY	Inspect			0.3				A
		Test			0.6			2,4,6,9	C,D
		Service							
		Repair			0.6			2,4,9	G
		Overhaul							
		Rebuild							

Section II MAINTENANCE ALLOCATION CHART (CONT)

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY C	O	F	H	D	(5) TOOLS AND EQUIP	(6) REMARKS
0104	RETAINER ASSEMBLY	Inspect			.3			2	A
		Test							
		Service							
		Repair			.5			2	G
		Overhaul							
		Rebuild							
02	BATTERY CHARGER CASE SUBASSEMBLY	Inspect	.3	.3				1	A
		Test							
		Service	.5	.5				1	A
		Repair							
		Overhaul							
		Rebuild							
0201	BATTERY CHARGER CASE TOP ASSEMBLY	Inspect	.3	.3	.3				A,E,G
		Test							
		Service							
		Repair	.5	.5				1,2	A,G
		Overhaul							
		Rebuild							
03	CABLE ASSEMBLY CX-11964/U	Inspect	.2	.2				1	A
		Test		1.				1,3	B,C,D,G
		Service							
		Repair							
		Overhaul							
		Rebuild							
04	CABLE ASSEMBLY CX-11972/U	Inspect	.2	.2				1	A
		Test		1.				1,3	B,C,D,G
		Service							
		Repair							
		Overhaul							
		Rebuild							
05	CABLE ASSEMBLY CX-11971/U	Inspect	.2	.2				1	A
		Test		1.				1,3	B,C,D,G
		Service							
		Repair							
		Overhaul							
		Rebuild							

Section III TOOL AND TEST EQUIPMENT REQUIREMENTS FOR BATTERY CHARGER

TOOLS OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	C, O	Tool Kit, Electronic Equipment TK-100/G	5180-00-610-8177	
2	F, H	Tool Kit, Electronic Equipment TK-105/G	5180-00-605-0079	
3	C, O	Multimeter AN/URM-105	6625-00-581-2036	
4	F, H	Multimeter TS-352B/U	6625-00-553-0142	
5	H	Oscilloscope AN/USM-281A	6625-00-228-2201	
6	F, H	Test Set, Transistor TS-1836/U	6625-00-893-2628	
7	O, F, H	Voltmeter, Meter ME-30( )/U	6625-00-643-1670	
8	O, F, H	Voltmeter, Digital AN/GSM-64	6625-00-870-2264	
9	O, F, H	D.C. Ammeter	6625-00-539-8207	

Section IV REMARKS

REFERENCE CODE	REMARKS
A	Exterior only
B	Cables and connectors
C	Operational testing
D	All tests
E	Preventive maintenance only
F	All servicing
G	By replacement of knobs, fuses, or circuit card
H	All repairs

APPENDIX C

COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LIST

Section I INTRODUCTION

C-1. SCOPE.

This appendix lists components of end item and basic issue items for the Battery Charger PP-6241/U to help you inventory items required for safe and efficient operation.

C-2. GENERAL.

The components of End Item and Basic Issue Items lists are divided into the following sections:

a. Section II. Components of End item. This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts.

a. Section III. Basic Issue Items. These are the minimum essential items required to place the Battery Charger in operation and to perform emergency repairs. Although packed and shipped separately, Basic Issue Items must be with the Battery Charger PP-6241/U during operation and whenever it is transferred between property accounts. This manual is your authority to request/ requisition replacement Basic Issue Items, based on TOE/MTOE authorization of the end item.

C-3. EXPLANATION OF COLUMNS.

The following provides an explanation of columns found in the tabular listings:

a. Column 1, Illus. No (Illustration Number). This column does not apply.

b. Column 2, National Stock Number. Indicates the National stock number assigned to the item and will be used for requisitioning purposes.

c. Column 3, Description. Indicates the Federal item name and if required, a minimum description to identify and locate the item. The last line for each item indicates the FSCM (in parentheses) followed by the part number. If an item needed differs on different models of equipment, the model is shown under the 'Usable On' heading in this column.

d. Column 4, U/M (Unit of Measure). Indicates the measure used in performing the actual operational/ maintenance function. This measure is expressed by a two-character alphabetical abbreviation (ea, in, pr).

e. Column 5, Qty Req'd (Quantity Required). Indicates the quantity of the item authorized to be used with/on the equipment.

Section II COMPONENTS OF END ITEM LIST

(1) ILLUS. NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION (FSCM) AND PART NUMBER	USABLE ON CODE	(4) U/M	(5) QTY REQ'D
	6130-00-106-6445	Battery Charger PP-6241/U			
		Charger assembly (13913)		1	EA
		Case assembly (13913)		1	EA
	6150-01-601-8765	Cable assembly (80058)		3	EA
	6150-00-228-3089	Cable assembly (80058)		3	EA
	6150-00-144-0070	Cable assembly, power (80058)		1	EA

Section III BASIC ISSUE ITEM LIST

(1) ILLUS. NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION (FSCM)	USABLE ON CODE	(4) U/M	(5) QTY REQ'D
	5920-00-557-2647	Fuse, Cartridge		2	EA
	5920-00-284-6787	Fuse, Cartridge		2	EA
	6240-00-155-8706	Lamp, Incandescent		3	EA

APPENDIX D

EXPENDABLE SUPPLIES AND MATERIALS LIST

Section I INTRODUCTION

D-1. SCOPE.

This appendix lists expendable supplies and materials you will need to operate and maintain Battery Charger PP-6241/U. These items are authorized to you by CTA 50-970, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

D-2. EXPLANATION OF COLUMNS.

a. Column 1, Item number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., Use Cleaning Compound, Item 5, App. D).

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

C - Operator/Crew

0 - Organizational Maintenance/Aviation Unit Maintenance

F - Direct Support Maintenance/Aviation Intermediate Maintenance

H - General Support Maintenance

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

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

e. Column 5, U/M (Unit of Measure). 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 SUPPLIES AND MATERIALS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
1	C	6850-00-105-3084	Trichlorotrifluoroethane (80244)	QT
2	C	8305-00-267-3015	Cleaning Cloth	YD
3	C	8020-00-205-6512	Sash brush (96906)	EA
4	O	5350-00-598-5908	Sandpaper, No. 000	SH
5	O	5350-00-221-0872	Cloth, abrasive	SH

INDEX

INDEX

INDEX

By Order of the Secretary of the Army

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

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Major *General, United States Army*
The Adjutant General

Distribution:

To be distributed in accordance with DA Form 12-51, Organizational Maintenance Requirements for AN/PRC-47.

THE METRIC SYSTEM AND EQUIVALENTS

LINEAR MEASURE

1 Centimeter = 10 Millimeters = 0.01 Meters = 0.3937 Inches
1 Meter = 100 Centimeters = 1000 Millimeters = 39.37 Inches
1 Kilometer = 1000 Meters = 0.621 Miles

WEIGHTS

1 Gram = 0.001 Kilograms = 1000 Milligrams = 0.035 Ounces
1 Kilogram = 1000 Grams = 2.2 Lb
1 Metric Ton = 1000 Kilograms = 1 Megagram = 1.1 Short Tons

LIQUID MEASURE

1 Milliliter = 0.001 Liters = 0.0338 Fluid Ounces
1 Liter = 1000 Milliliters = 33.82 Fluid Ounces

SQUARE MEASURE

1 Sq Centimeter = 100 Sq Millimeters = 0.155 Sq Inches
1 Sq Meter = 10,000 Sq Centimeters = 10.76 Sq Feet
1 Sq Kilometer = 1,000,000 Sq Meters = 0.386 Sq Miles

CUBIC MEASURE

1 Cu Centimeter = 1000 Cu Millimeters = 0.06 Cu Inches
1 Cu Meter = 1,000,000 Cu Centimeters = 35.31 Cu Feet

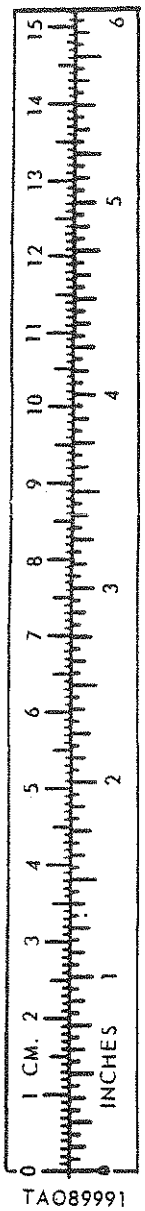
TEMPERATURE

$5/9\,(^{0}F - 32) = {}^{0}C$
212^{0} Fahrenheit is equivalent to 100^{0} Celsius
90^{0} Fahrenheit is equivalent to 32.2^{0} Celsius
32^{0} Fahrenheit is equivalent to 0^{0} Celsius
$9/5\,C^{0} + 32 = F^{0}$

APPROXIMATE CONVERSION FACTORS

TO CHANGE	TO	MULTIPLY BY
Inches	Centimeters	2.540
Feet	Meters	0.305
Yards	Meters	0.914
Miles	Kilometers	1.609
Square Inches	Square Centimeters	6.451
Square Feet	Square Meters	0.093
Square Yards	Square Meters	0.836
Square Miles	Square Kilometers	2.590
Acres	Square Hectometers	0.405
Cubic Feet	Cubic Meters	0.028
Cubic Yards	Cubic Meters	0.765
Fluid Ounces	Milliliters	29.573
Pints	Liters	0.473
Quarts	Liters	0.946
Gallons	Liters	3.785
Ounces	Grams	28.349
Pounds	Kilograms	0.454
Short Tons	Metric Tons	0.907
Pound-Feet	Newton-Meters	1.356
Pounds per Square Inch	Kilopascals	6.895
Miles per Gallon	Kilometers per Liter	0.425
Miles per Hour	Kilometers per Hour	1.609

TO CHANGE	TO	MULTIPLY BY
Centimeters	Inches	0.394
Meters	Feet	3.280
Meters	Yards	1.094
Kilometers	Miles	0.621
Square Centimeters	Square Inches	0.155
Square Meters	Square Feet	10.764
Square Meters	Square Yards	1.196
Square Kilometers	Square Miles	0.386
Square Hectometers	Acres	2.471
Cubic Meters	Cubic Feet	35.315
Cubic Meters	Cubic Yards	1.308
Milliliters	Fluid Ounces	0.034
Liters	Pints	2.113
Liters	Quarts	1.057
Liters	Gallons	0.264
Grams	Ounces	0.035
Kilograms	Pounds	2.205
Metric Tons	Short Tons	1.102
Newton-Meters	Pound-Feet	0.738
Kilopascals	Pounds per Square Inch	0.145
Kilometers per Liter	Miles per Gallon	2.354
Kilometers per Hour	Miles per Hour	0.621



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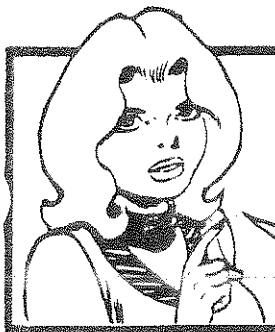

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DATE SENT

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 11-6130-351-14	24 Sep 82	BATTERY CHARGER PP-6241/U

BE EXACT. PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO.

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

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER

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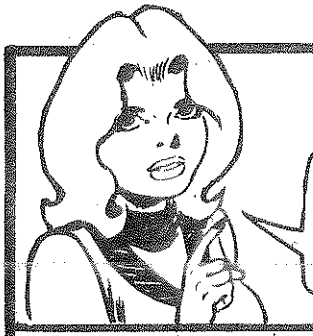

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PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 11-6130-351-14		Battery Charger PP-6241/U

BE EXACT. . .PIN-POINT WHERE IT IS

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

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 the 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.

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

SIGN HERE
SSG I. M. DeSpiritof

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TEAR ALONG PERFORATED LINE