TM 11-6130-225-12-1

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

OPERATOR AND ORGANIZATIONAL MAINTENANCE MANUAL

CHARGER, BATTERY
PP-2926A/U

This copy is a reprint which includes current pages from Changes 1 through 4.

HEADQUARTERS, DEPARTMENT OF THE ARMY

1 MARCH 1968

WARNING

EXTREMELY DANGEROUS VOLTAGES

208, 230, or 460 volts, three-phase alternating current are used in the operation of this equipment.

SEVERE INJURY OR

DEATH ON CONTACT

may result if operating personnel fail to observe safety precautions. DISCONNECT EXTERNAL POWER before changing terminal board connections of Charger, Battery PP-2926A/U.

DON'T TAKE CHANCES!

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

WARNING

Charger, Battery PP-2926A/U weighs 300 pounds. Be *careful* when moving. Mechanical lift required.

Adequate ventilation should be provided while using TRICHLORO-TRIFLUOROETHANE. 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 TRICHLORO-TRIFLUOROETHANE 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.

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HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, 1 March 1968

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CHARGER, BATTERY PP-2926A/U

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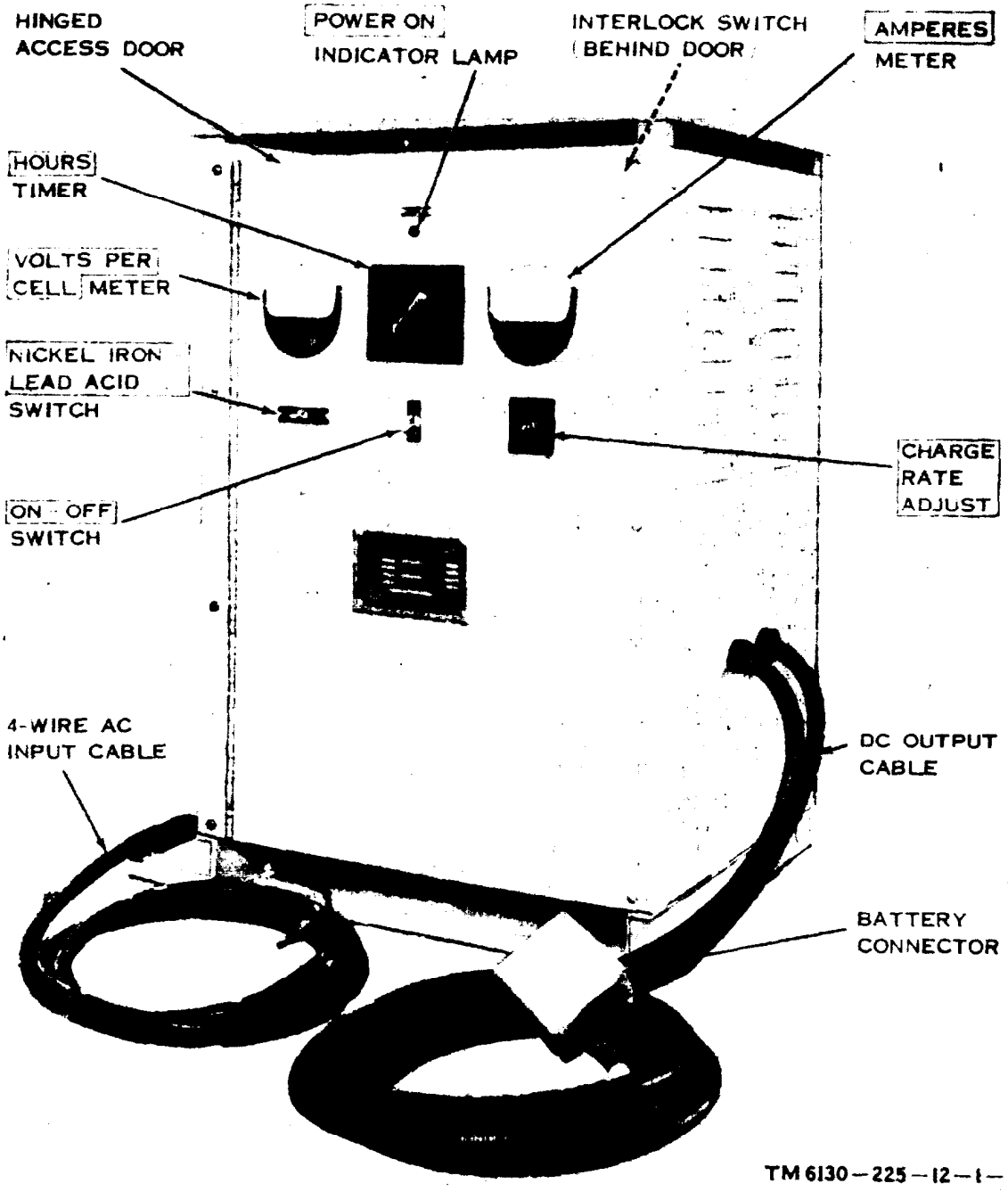


Figure 1-1. Charger, Battery PP-2926A/U.

CHAPTER 1
INTRODUCTION

Section 1. GENERAL

1-1. scope

This manual describes Charger, Battery PP-2926A/U and covers the installation, operation, and operator and organizational maintenance of this equipment. Charger, Battery PP-2926A/U is referred to as the battery ***charger*** in this manual. The manual also contains a maintenance allocation chart (app C).

1-2. Indexes of Publications

DA Pam 310-4. Refer to the latest issue of DA Pam 310-4 to determine whether there are new editions, changes, modification work orders (MWO's) or additional publications pertaining to the equipment.

1-3. Maintenance Forms, Records and Reports

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

b. Report of Item and Packaging Discrepancies. Fill out- and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/DLAR 4140.55/NAVMATINST 4355.73/AF 400-54/MCO 4430.3E.

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

1-3.1. 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 or DA Form 2028 (Recommended Changes to Publications and Blank Forms) direct to Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703. In either case, a reply will be furnished direct to you.'

1-3.2. 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. Tell us why a procedure is hard to perform. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703. We'll send you a reply.

1-3.3. 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. Original packing case may be used when repacking equipment for shipment for repair.

1-3.4. Destruction of Army Electronics Materiel

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

Section II. DESCRIPTION AND DATA

1-4. Purpose and Use (fig. l-l)

a. Charger, Battery PP-2926A/U provides a source of direct current (dc) for charging lead-acid and nickel-iron type storage batteries used in electrically operated forklift trucks.

b. The PP-2926A/U can be used to charge 18-cell, lead-acid batteries or 30-cell, nickel-iron batteries without removing the battery from the forklift truck.

1-5. Technical Characteristics

Power input:	
Voltage.	208 volts ± 10%, 230 volts ± 10% or 460 volts ± 10%, 60 Hz, three phase, four wire.
Current per phase (maximum at full load	15 amperes for 208-volt input; 22 amperes for 230-volt input; 15 amperes for 460-volt input.
Power output:	
Voltage.	Variable from 30 to 60 volts dc.
Current.	To 180 amperes.
Timing control.	Adjustable for automatic cutoff after up to 12 hours on-time.
Charging time (completely discharged battery)	Approximately 8 hours.
weight.....	300 pounds.

1-6. Description

Charger, Battery PP-2926A/U (fig. 1-1) is a self-contained unit in a metal cabinet. The front panel is side-hinged to provide access to the internal components. The front panel contains operating controls and indicators. The four-wire, alternating current (ac) input cable is connected through the bottom of the cabinet to the fuse blocks located on the upper left side of the cabinet (as viewed from the front). The dc output cable is located on the bottom right side of the unit (as viewed from the front). An interlock switch (located behind the hinged door) is used as an added safety feature to prevent injury to personnel when the operator changes tap leads and fuses. The physical dimensions of the battery charger are: 21 inches wide, 301/2 inches high, and 19 inches deep.

1-7. Item Comprising an Operable Charger PP-2926A/U

Charger, Battery PP-2926A/U (NSN 6130-00-500-0069) comprises an operable equipment and is shown in figure l-l.

CHAPTER 2
INSTALLATION

2-1. Unpacking

a. Packaging Data. When packed for shipment, Charger, Battery PP-2926A/U is placed in a carton and packed in a wooden box 26 inches by 28 inches by 37 inches; the weight of the unit is 382 pounds and the volume is 15.6 cubic feet.

b. Removing Contents.

WARNING

Charger, Battery PP-2926/U weighs 300 pounds. Be careful when moving. Mechanical lift is required.

Perform all the steps given below when unpacking the equipment (fig. 2-1).

(1) Cut and fold back the metal straps.

(2) Remove the nails from the top and one side of the box with a nailpuller. Remove the top and the side.

(3) Open the moistureproof barrier that covers the carton inside the box and remove the carton.

(4) Open the carton and the moisture-vaporproof barrier within the carton, and remove the inner carton; then, open the inner carton and remove the contents.

2-2. Checking Unpacked Equipment

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

b. Check to see that the equipment is complete as listed on the packing slip. Report all discrepancies in accordance with instructions given in TM 38-750 (para 1-3a). Shortage of a minor assembly or part that does not affect the proper functioning of the equipment should not prevent the use of the equipment.

c. If the equipment has been used or reconditioned, check to see whether it has been changed by a modification work order. If the equipment has been modified, the MWO number will appear on the front panel near the nomenclature plate. If the equipment has been modified, check to see that any operational instruction changes which result from the modification have been entered in the equipment manual.

NOTE

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

2-3. Sitting

a. Select a location in a building that has 208-, 230-, or 460-volt, three-phase, ac electrical service installed.

b. Select a site that will permit a forklift truck to drive up to the unit. The battery connector is permanently connected to a 10-foot, dc output cable (fig. l-l) which limits the distance between the battery charger and a forklift truck.

c. Position the battery charger away from partitions or any obstructions that will obstruct the flow of air through the cabinet.

d. The battery charger may be installed side-by-side with additional units, but must have a minimum clearance of 6 inches on each side.

2-4. Input Power Connections (fig. 2-2 and 2-3)

CAUTION

The ac power input electrical connections are made by authorized installation personnel; they should be protected with a fuse and controlled by an external switch for convenient removal of power during maintenance.

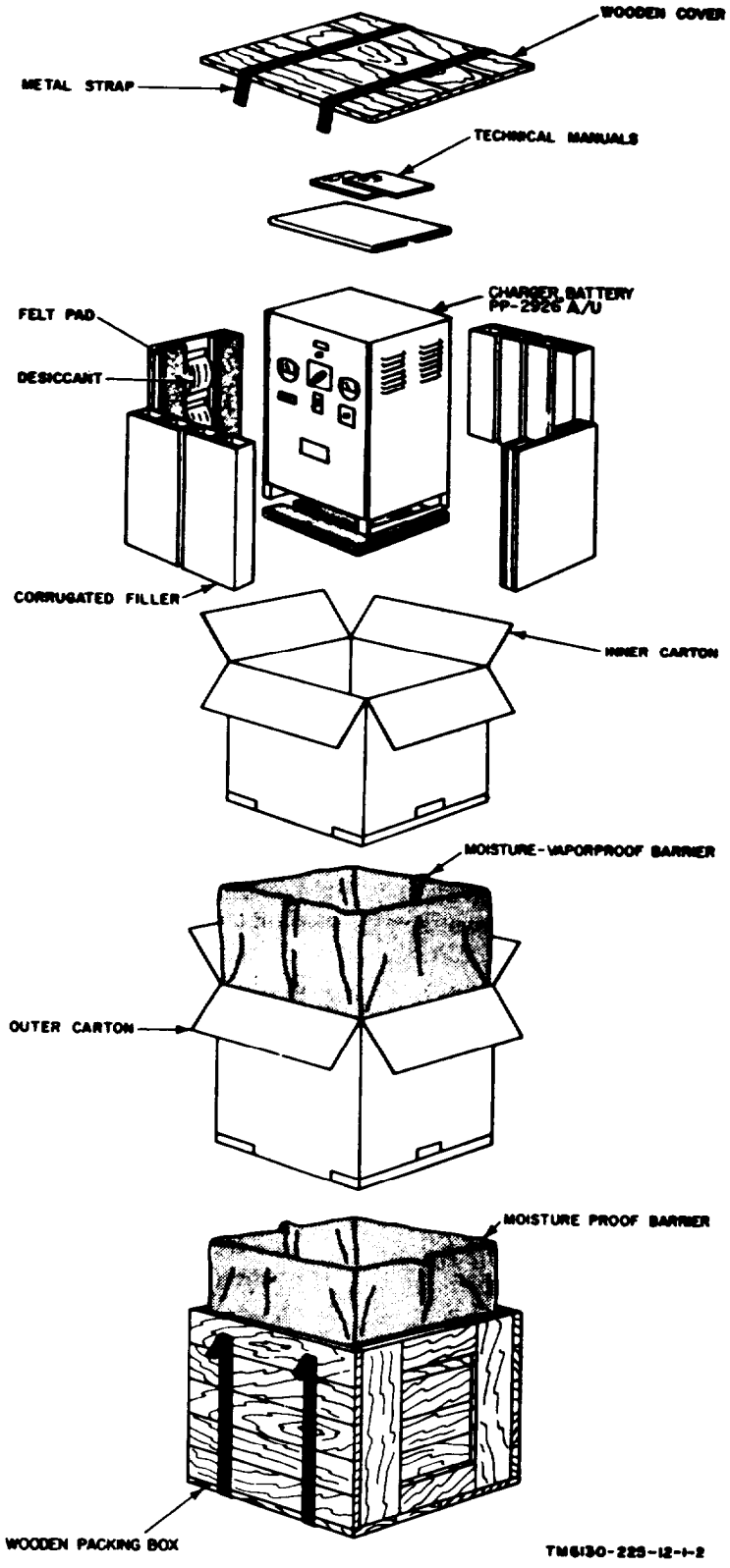


Figure 2-1. Typical packaging.

Warning: Extremely dangerous voltages exist in the battery charger. The input power must be turned off before opening the front panel to reach the fuses and the connection terminal boards.

a. To reach the fuses and the connection terminal boards, remove the three screws on the front panel that allow the front panel to swing open on its hinge. After opening the front panel, check to see that the four-wire input power leads are connected as follows:

(1) White lead to top terminal of fuse F2 (fig. 2-2).

(2) Red lead to top terminal of fuse F3 (fig. 2-2).

(3) Black lead to top terminal of fuse F4 (fig. 2-2).

(4) Green lead to chassis.

b. Perform the procedures given below for three-phase, 60-Hertz (Hz), 208-volt input power (A, fig. 2-3):

(1) With three 35-ampere fuses, mount one 35-ampere fuse in the F5 fuseholder (fig. 2-2), one 35-ampere fuse in the F6 fuseholder (fig. 2-2), and one 35-ampere fuse in the F7 fuseholder (fig. 2-2). (Be sure that the three 20-ampere fuses are not mounted in the F2, F3, and F4 fuseholders.)

(2) Connect the terminal jumpers supplied as follows:

(a) Terminal 1 on TB2 to terminal 2 on TB2.

(b) Terminal 3 on TB2 to terminal 4 on TB2.

(c) Terminal 2 on TB4 to terminal 5 on TB4.

(d) Terminal 3 on TB4 to terminal 17 on TB4.

(e) Terminal 7 on TB4 to terminal 10 on TB4.

(f) Terminal 8 on TB4 to terminal 17 on TB4.

(a) Terminal 12 on TB4 to terminal 15 on TB4.

(h) Terminal 13 on TB4 to terminal 16 on TB4.

(i) Terminal 16 on TB4 to terminal 17 on TB4.

(j) Terminal 17 on TB4 to terminal 18 on TB4.

(3) Connect the three wires from relay K1 as follows:

(a) Wire number 41 to terminal 2 on TB4.

(b) Wire number 42 to terminal 7 on TB4.

(c) Wire number 43 to terminal 12 on TB4.

c. Perform the procedures given below for three-phase, 60-Hz, 230-volt input power (B, fig. 2-3):

(1) With three 35-ampere fuses, mount one 35-ampere fuse in the F5 fuseholder (fig. 2-2), one 35-ampere fuse in the F6 fuseholder (fig. 2-2), and one 35-ampere fuse in the F7 fuseholder (fig. 2-2). (Be sure that the three 20-ampere fuses are not mounted in the F2, F3, and F4 fuseholders.)

(2) Connect the terminal jumpers sup plied as follows:

(a) Terminal 1 on TB2 to terminal 2 on TB2.

(b) Terminal 3 on TB2 to terminal 4 on TB2.

(c) Terminal 1 on TB4 to terminal 4 on TB4.

(d) Terminal 3 on TB4 to terminal 17 on TB4.

(e) Terminal 6 on TB4 to terminal on TB4.

(f) Terminal 8 on TB4 to terminal 17 on TB4.

(g) Terminal 11 on TB4 to terminal 14 on TB4.

(h) Terminal 13 on TB4 to terminal 16 on TB4.

(i) Terminal 16 on TB4 to terminal 17 on TB4.

(j) Terminal 17 on TB4 to terminal 18 on TB4.

(3) Connect the three wires from relay K1 as follows:

(a) Wire number 41 to terminal 1 on TB4.

(b) Wire number 42 to terminal 6 on on TB4.

(c) Wire number 43 to terminal 11 on TB4.

d. Perform the procedures given below for three-phase, 60-Hz, 460-volt input power (C, fig. 2-3):

(l) With three 20-ampere fuses, mount one 20-ampere fuse in the F2 fuseholder (fig. 2-2), one 20-ampere fuse in the F3 fuseholder (fig. 2-2). and one 20-ampere fuse in the F4 fuseholder (fig. 2-2). (Be sure that the three 35-ampere fuses are not mounted in the F5, F6, and- F7 fuseholders.)

(2) Connect the six terminal jumpers as follows:

(a) Terminal 2 on TB2 to terminal 3 on TB2.

(b) Terminal 3 on TB4 to terminal 4 on TB4.

(c) Terminal 8 on TB4 to terminal 9 on TB4.

(d) Terminal 13 on TB4 to terminal 14 on TB4.

(e) Terminal 16 on TB4 to terminal 17 on TB4.

(f) Terminal 17 on TB4 to terminal 18 on TB4.

(3) Connect the three wires from relay K1 as follows:

(a) Wire number 41 to terminal 1 on TB4.

(b) Wire number 42 to terminal 6 on TB4.

(c) Wire number 43 to terminal 11 on TB4.

e. Close the front panel and replace the three screws.

Caution: The ac power input electrical connections are made by authorized installation personnel.

f. Connect the four-wire input power cable to the ac power input source.

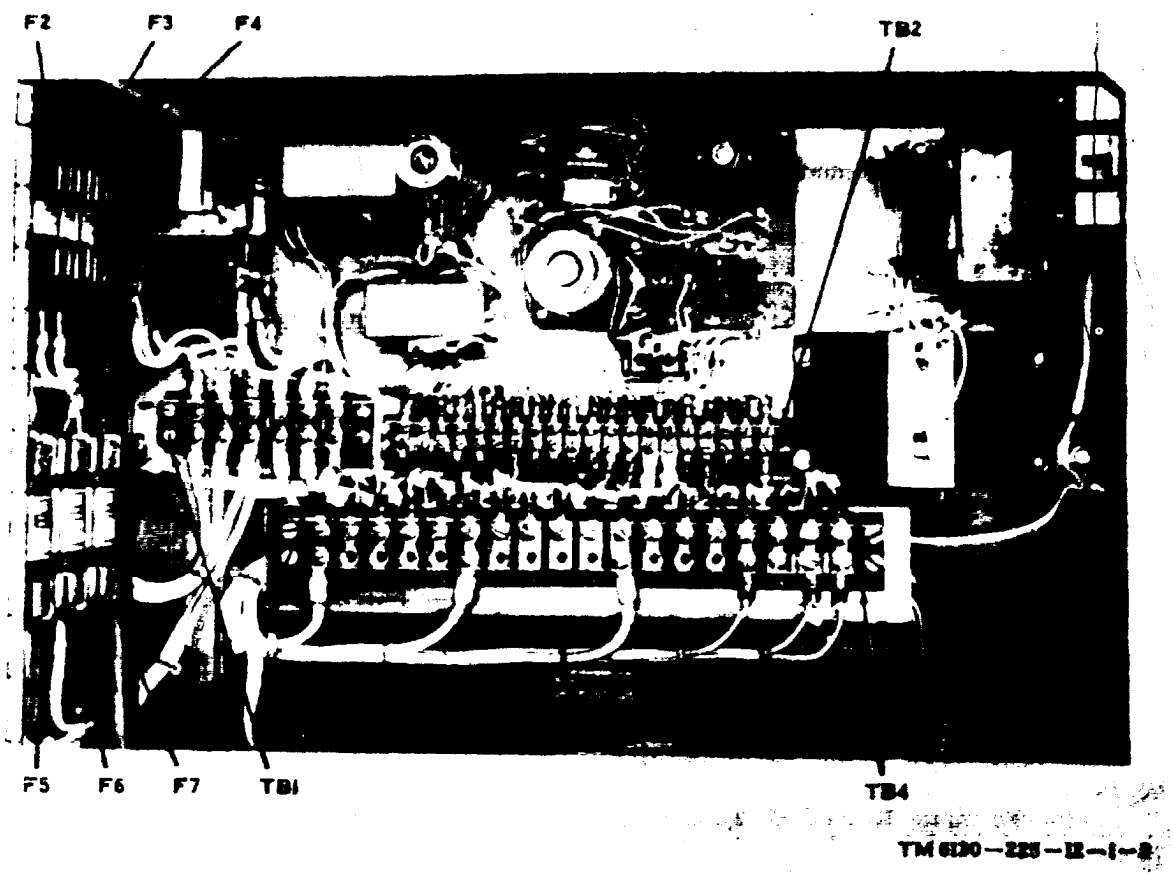
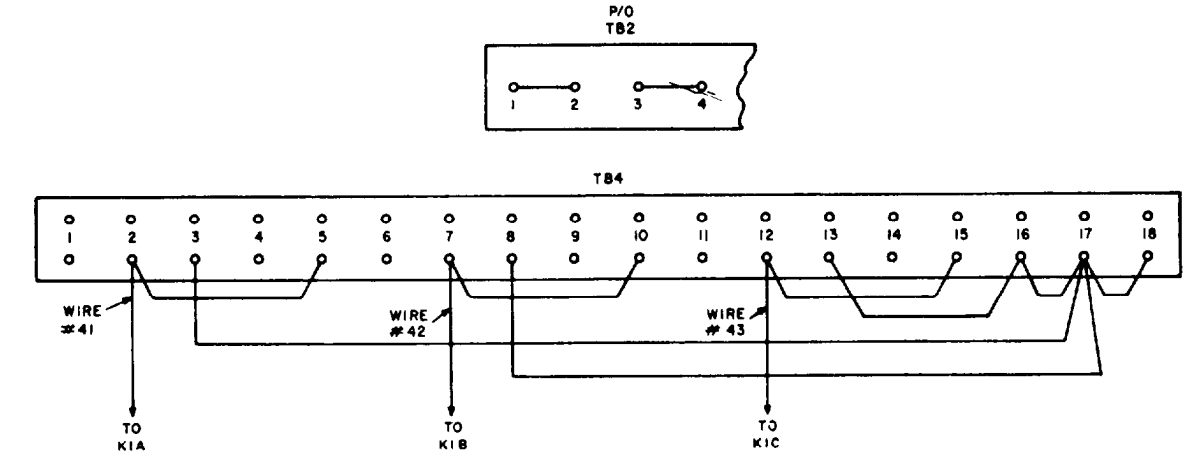
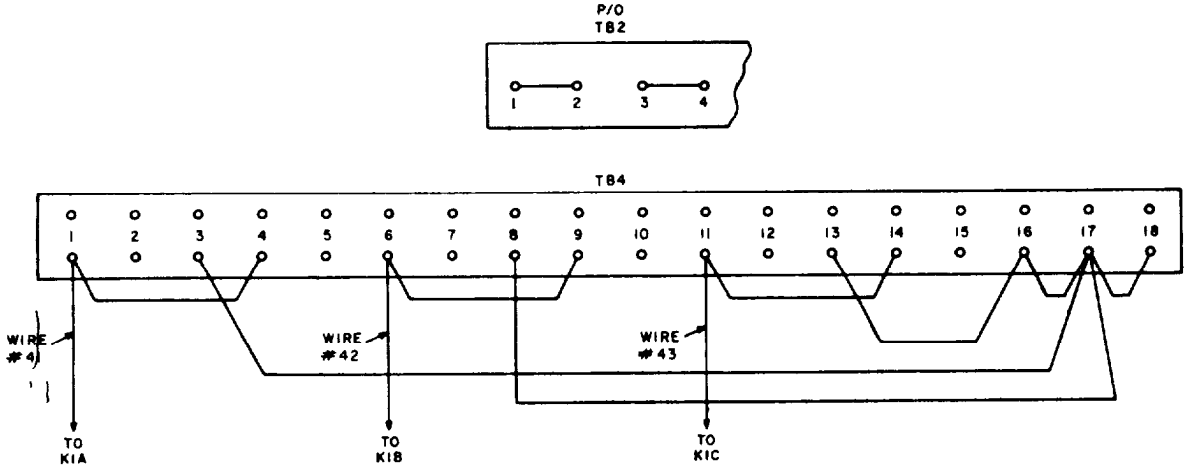


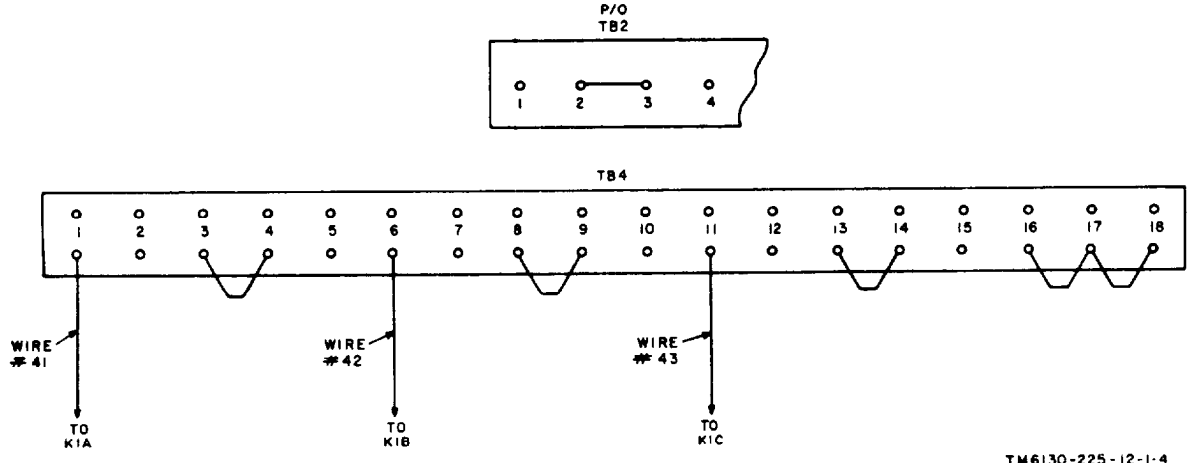
Figure 2-2. Location of fuses and terminal boards.



A. CONNECTIONS FOR 208 VOLTS INPUT POWER.



B. CONNECTIONS FOR 230 VOLTS INPUT POWER.



C. CONNECTIONS FOR 460 VOLTS INPUT POWER.

Figure 2-3. Performance procedures

CHAPTER 3

OPERATION

Warning: Extremely dangerous voltages exist in the PP-2926A/U. Severe injury or death on contact may result if operating personnel fail to observe safety precautions. Set the ON-OFF switch to OFF and remove Be four-wire, ac input cable from the ac power source before changing terminal board connections.

3-1. Controls and Indicators
(fig. 1-1)

Control or indicator	Function	
ON-OFF switch - - - - - - - - - - - - - - - - - - -	When set to ON, and with HOURS timer switch set to a position other than 0, turns on input power to the battery charger. Input power is turned off when ON-OFF switch is set to OFF.	
	SW pos	**Action**
NICKEL IRON-LEAD ACID switch (2-position toggle).	NICKEL IRON	Connects circuitry to provide charging current for nickel-iron batteries.
	LEAD ACID	Connects circuitry to provide charging current for lead-acid (lead-antimony or lead-calcium) batteries.
HOURS timer switch - - - - - - - - - - - - - - -	Sets mode of operation charge time cycle to maximum of 12 hours. Input power to battery charger goes off when HOURS timer switch reaches 0.	
	Sw pos	
	LEAD ACID 8.	Sets HOURS timer for lead-acid battery charging. After 6 hours (HOURS timer switch at LEAD, ACID EQUALIZE 2), sets HOURS timer for lead-acid battery topping charge.
	LEAD ACID EQUALIZE 2.	Sets HOURS timer for lead-acid battery topping charge.
	NICKEL IRON 1	With NICKEL IRON - LEAD switch set to NICKEL IRON, provides charging current for nickel-iron battery until VOLTS PER CELL meter indicates between 1.6 and 1.7 on lower range. When VOLTS PER CELL meter indicates between 1.6 and 1.7 HOURS timer starts, and topping charge is applied to nickel-iron battery for l hour.

Control or indicator	Function
POWER ON indicator Lamp- - - - - - - - - - - - -	Illuminates when power is applied to battery charger.
VOLTS PER CELL meter- - - - - - - - - - - - - - - - - -	Upper range indicates lead-acid cell charging voltage. Lower range indicates nickel-iron cell charging Voltage.
AMPERES- -	Indicates charging current in amperes.
CHARGE RATE ADJUST control (screwdriver adjustment).	Sets maximum charging-current limit.
Interlock switch- - - - - - - - - - - - - - - - - - -	Opens input power circuit when hinged front panel is opened. Closes input power circuit when hinged front panel is closed.

3-2. Charging 18-Cell, Lead-Acid Battery

Note. For complete information concerning lead-acid batteries, refer to TM 9-6140-200-14 and TM 10-6140-200-14.

After performing the connection procedures given in paragraph 2-4, change an 18-cel1, lead-acid battery as follows:

a. Set the ON-OFF switch to OFF, the NICKEL IRON-LEAD ACID switch to LEAD ACID, and the HOURS timer switch to LEAD ACID 8.

b. Remove the vent caps from the battery to be charged and add distilled or deionized water as necessary. Replace the vent caps.

c. Connect the dc output cable battery connector to the forklift 18-cell, lead-acid battery receptacle.

Caution: Never smoke or light matches in the charging area. Observe gassing carefully, particularly near the end of charge. Excessively violent gassing indicates that the battery is becoming overcharged.

d. Set the ON-OFF switch to ON, and monitor the initial battery-charging current on the AMPERES meter. If the AMPERES meter indicates greater than 180amperes, refer to higher category maintenance for adjustment of the CHARGE RATE ADJUST control.

e. After the battery-charging current has reduced to one-twentieth of the initial battery-charging current, note the time remaining on the HOURS timer switch. If the HOURS timer switch indicates greater than 2 hours, set the HOURS timer to LEAD ACID EQUALIZE 2, and continue charging the battery until the HOURS timer switch reaches 0. (When the HOURS timer switch reaches, or is set to LEAD ACID EQUALIZE 2, an equalizing charge is applied to the battery.) The HOURS timer switch will automatically turn off the battery charger when the HOURS timer switch is at 0.

f. Set the ON-OFF switch to OFF and disconnect the dc ouput cable battery connecter from the forklift 18-cell, lead-acid battery receptacle.

3-3. Charging 30-Cell, Nickel-Iron Battery

Note. For complete information concerning nickel-iron batteries, refer to TM 10-6140-200-14.

After performing the connection procedures given in paragraph 2-4, charge a 30-cell, nickel-iron battery as follows:

a. Set the ON-OFF switch to OFF, the NICKEL IRON-LEAD ACID switch to NICKEL IRON, and the HOURS timer switch to NICKEL IRON 1.

b. Remove the vent caps from the battery to be charged and add distilled or deionized water as necessary. Replace the vent caps.

c. Connect the dc output cable battery connector to the forklift 30-cel1, nickel-iron battery receptacle.

Caution: Never smoke or light matches in the charging area. Observe gassing carefully, particularly near the end of charge. Excessively violent gassing indicates that the battery is becoming overcharged.

d. Set the ON-OFF switch to ON, and monitor the initial battery-charging current on the AMPERES meter. If the AMPERES meter indicates greater than 180 amperes, refer to higher category maintenance for adjustment of the CHARGE RATE ADJUST control.

e. The HOURS timer switch indicator will not move until the VOLTS PER CELL meter indicates between 1.6 and 1.7. When VOLTS PER CELL meter indicates between 1.6 and 1.7, the HOURS timer starts and clocks off 1 hour to 0 on the HOURS timer switch. The HOURS timer switch will automatically turn off the battery charger when the HOURS timer switch is at 0.

f. Set the ON-OFF switch to OFF, and disconnect the dc output cable battery connector from the forklift 30-cel1, nickel-iron battery receptacle.

CHAPTER 4

OPERATOR AND ORGANIZATIONAL MAINTENANCE

4-1. Scope of Maintenance

The maintenance duties assigned to the operator and organizational repairman for the battery charger are listed below, together with a reference to the paragraphs covering the specific maintenance functions. Tools and test equipment required for maintenance are listed in appendix C.

a. Operator's daily preventive maintenance checks and services chart (para 4-4).

b. Operator's weekly preventive maintenance checks and services chart (par-a 4-5).

c. Organizational monthly preventive maintenance checks and services chart (para 4-6).

d. Organizational quarterly preventive maintenance checks and services chart (para 4-7).

e. Cleaning (para 4-8).

f. Touchup painting (para 4-9).

g. Troubleshooting (para 4-10 and 4-11).

4-2. Preventive Maintenance

Preventive maintenance is the systematic care, servicing, and inspection of the battery charger to prevent occurrence of trouble, reduce downtime, and insure that the equipment is serviceable.

a. Systematic Care. Procedures given in paragraphs 4-4 through 4-8 cover routine systematic care and cleaning essential to the proper upkeep and operation of theequipment.

b. Preventive Maintenance Checks and Services. The preventive maintenance checks and services charts (para 4-4 through 4-7) outline functions to be performed at specific intervals. These checks and services are to maintain Army electronic equipment in a combat-serviceable condition; that is, in good general (physical) condition and in good operating condition, To assist operators in maintaining combat serviceability, the chart indicates what to check, how to check, and the normal indications. The References column lists the paragraphs or manuals that contain detailed repair or replacement procedures. If the defect cannot be remedied by performing the corrective actions listed, a higher category of maintenance or repair is required. Records and reports of these checks and services must be made in accordance with requirements given in TM 38-750.

4-3. Preventive Maintenance Checks and Services Periods

Preventive maintenance checks and services of the equipment are required daily, weekly, monthly,. and quarterly. Paragraph 4-4 specifies the checks and services that mu& be done daily (or at least once a week if the equipment is maintained in a standby condition). Paragraphs 4-5, 4-6, and 4-7 specify additional checks and services that must be performed weekly, monthly, and quarterly.

4-4. Operator's Daily Maintenance Checks and Services Chart

Sequences No.	Item to be inspected	Procedures	References
1	Completeness - - - - - - - - -	Check to see that equipment is complete.	Appendix B.
2	Exterior surfaces - - - - - - - - -	Clean exterior surfaces, including panel and meter glasses. Check all meter glasses and indicator lenses for cracks.	Para 4-8.
3	Connectors - - - - - - - - -	Check tightness of all connectors - - - -	None.

Sequence No.	Item to be inspected	Procedures	References
4	Controls and indicators	While making operating checks (item 5 below), check to see that mechanical action of each switch is smooth and free of external or internal binding, and that there is no excessive looseness. Also. check meters for sticking or bent pointers.	None.
5	Operation	During operation, be alert for any abnormal indication.	Para 3-2 and 3-3

4-5. Operator's Weekly Preventive Maintenance Checks and Services Chart

Sequence No.	Item to be inspected	Procedures	References
1	Cable	Inspect cables for chafed, cracked, or frayed insulation.	None.
2	Metal surfaces	Inspect exposed metal surfaces for rust and corrosion; clean and touchup paint as required.	Para 4-9.

4-6. Organizational Monthly Preventive Maintenance Checks and Services Chart

Sequence No.	Item to be inspected	Procedures	References
I	Transformer terminals	Inspect terminals on power transformer. All nuts must be tight. There should be no evidence of dirt or corrosion.	None.
2	Terminal blocks	Inspect terminal blocks for loose connections and cracked or broken insulation.	None.
3	Resistors	Inspect resistors for cracks, blistering. or other defects.	None.
4	Gaskets and insulators	Inspect gaskets, insulators, bushings, and sleeves for cracks, chipping, and excessive wear.	None.
5	Interior	Clean interior of chassis and cabinet.	Para 4-8.

4-7. Organizational Quarterly Preventive Maintenance Checks and Services Chart

Sequence No.	Item to be inspected	Procedures	References
1	Publications.	Check to see that all publications are complete, serviceable, and current.	DA Pam 310-4.
2	Modifications	Check DA Pam 310-4 to determine whether new applicable MWO's have been published. All URGENT MWO's must be applied immediately. All NORMAL MWO's must be scheduled.	TM 38-750 and DA Pam 310-4.

4-8. Cleaning

Inspect the exterior of the equipment; exterior surfaces should be free of dust, dirt, grease, and fungus.

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

WARNING

Adequate ventilation should be provided while using TRICHLOROTRIFLUOROETHANE. Prolonged breathing of vapor should not be used near heat or open flame; the products of decomposition are toxic and irritating. Since TRICHLOROETHANE 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.

b. Remove grease, fungus, and ground-in dirt from the case; use a cloth dampened (not wet) with Cleaning Compound Trichlorotrifluoroethane, NSN 6860-00-105-3084.

c. Remove dust or dirt from the dc output cable battery connector with a brush.

Caution: Do not press on the meter faces (glasses) when cleaning; meters may become damaged.

d. Clean the front panel and the meters with a soft, clean cloth. If necessary, dampen the cloth with water; mild soap may be used for more effective cleaning.

4-9. Touchup Painting Instructions

a. Rustproofing. When the finish on the battery charger has become badly scarred or damaged, rust and corrosion can be prevented by touching up the bare surfaces. Use No. 000 sandpaper to clean the surfaces down to the bare metal. Obtain a bright, smooth finish.

b. Fainting. 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 to protect it from further corrosion. Refer to the applicable cleaning and refinishing practices specified in TB SIG 364.

4-10. General Troubleshooting Information

Troubleshooting the battery charger at the organizational category is based on an operational check. To troubleshoot the battery charger, perform the operation functions until an abnormal indication or result is observed; then, perform the checks and corrective actions indicated in the troubleshooting chart. If the corrective measures indicated do not result in the correction of the trouble, higher category maintenance repair is required.

4-11. Organizational Troubleshooting Chart

Item No.	Trouble symptom	Probable trouble	checks and corrective measure
1	Power ON indicator lamp does not illuminate when ON-OFF switch is set to ON, and HOURS TIMER switch is not at 0.	Defective power ON indicator lamp.	Higher category maintenance Repair is required.
2	AMPERES meter does not indicate charging current.	Meter is defective - - - - - - - -	Higher category maintenance is required.
3	VOLTS PER CELL meter does not indicate cell voltage.	VOLTS PER CELL meter is defective.	Higher category maintenance repair is required.

APPENDIX A
REFERENCES

DA Pam 310-4	Index of Technical Manuals, Technical Bulletins, Supply Manuals, (Types 7, 8, and 9), Supply Bulletins, Modification Work Orders and Lubrication Orders.
SB 38-100	Preservation, Packaging, Packing and Marking Materials, Supplies, and Equipment Used by the Army.
TB 43-0118	Field Instructions for Painting and Preserving Electronics Command Equipment Including Camouflage Pattern Painting of Electrical Equipment Shelters.
TM 9-6140-200-14	Operator's Organizational, Direct Support, and General Support Maintenance Manual for Lead-Acid Storage Batteries: 4HN, 24 V (NSN 6140-00-059-3528) MS75047-1; 2HN 12V (6140-00-057-2553) MS35000-1; 6TN, 12V (6140-00-057-2554) MS35000-3.
TM 10-6140-200-14	Installation, Use, Maintenance, and Repair of Industrial Motive Power Storage Batteries for Materials Handling Equipment.
TM 38-750	The Army Maintenance Management System (TAMMS).
TM 740-90-1	Administrative Storage of Equipment.
TM 750-244-2	Procedures for Destruction of Electronics Materiel to Prevent Enemy Use (Electronics Command).

APPENDIX C
MAINTENANCE ALLOCATION

Section I. INTRODUCTION

C-l. General.

This appendix provides a summary of the maintenance operations for PP-2926A/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.

C-2. Maintenance Function.

Maintenance functions will be limited to and defined as follows:

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

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

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

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

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

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

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

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

i. Repair. The application of maintenance services (inspect, test, service, adjust, align, calibrate, replace) or other maintenance actions (welding, grainding, 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. This function does not include the trial and error replacement of running spare type items such as fuses, lamps, or electron tubes.

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 equiiments/components.

C-3. Column Entries.

a. Column 1, Croup 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 mainte-

nance functions, it is solely for purpose of having the group numbers in the MAC and RPSTL coincide.

d. Column 4. Maintenance Category. column 4 specifies, by the listing of a "work time" figure in the appropriate subcolum(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 follows:

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

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

C-4. Tool and Test Equipment Requirements.

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

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

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

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

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

(Next printed page is C-3)

SECTION II MAINTENANCE ALLOCATION CHART
FOR

CHARGER, BATTERY PP-2926A/U

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQUIPMENT
			C	O	F	H	D	
00	CHARGER, BATTERY PP-2926A/U	Inspect		0.2				7
		Service		0.2				7
		Test 1		0.3				7
		Adjust 2		0.4				4 thru 6, 8, 10
		Test 3				0.6		8
		Adjust				0.4		8
		Repair				1.0		1 thru 6, 8 thru 10
		Test					1.0	8
		Replace				1.0		8
		Overhaul 4					12.0	

(1) Preoperational and operational
(2) Preoperational connections and operational controls excluding charge rate ADJ control
(3) All tests except input current and sensitivity
(4) Includes repair

TABLE 1. TOOL AND TEST EQUIPMENT REQUIREMENTS FOR

CHARGER, BATTERY PP-2926A/u

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL, NATO STOCK NUMBER	TOOL NUMBER
1	D	AMMETER, AN/USM-69, dc to 300 amps		
2	D	AMMETER, ME-65/U	6625-00-985-5251	
3	D	LOADS: a. 18 cell lead-acid battery b. 30 cell nickel iron battery		
4	H, D	MULTIMETER, TS-352B/U	6625-00-553-0142	
5	H, D	OHMMETER, ZM-21( )/U	6625-00-581-2466	
6	H, D	TEST SET, INSULATION BREAKDOWN, AN/GSM-6	6625-00-542-1331	
7	0	TOOL KIT, ELECTRONIC EQUIPMENT, TK-101/G	5180-064-5178	
8	H, D	TOOL KIT, ELECTRONIC EQUIPMENT, TK-105/G	5180-00-610-8177	
9	D	TRANSFORMER, VARIABLE, 3 PHASE TO 48ov 28AMP, SUPERIOR ELECTRICAL #1256 CLT-34 or EQUAL		
10	H, D	VOLTMETER, TS-443	6625-00-193-7l87	

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USACDCTA (1)
USACDCADA (l)
USACDCARMA (1)
USACDCAVNA (1)
USACDCARTYA (1)
USACDCSWA (1)
USAMC (5)
USCONARC (5)
ARADCOM (5)
ARADCOM Rgn (2)
OS Maj Comd (4)
LOGCOMD (2)
USAMICOM (4)
USASTRATCOM (4)
USAESC (70)
MDW (1)
Armies (2)
Corps (2)
USAC (3)
4th USASA Fld Sta (5)
lst Cav Div (Airmobile) (5)
Svc Colleges (2)
USASCS (5)
USAADS (2)
USAAMS (2)
USAARMS (10)
USAIS (2)
USAES (2)
USASESS (5)
USAQMS (10)
USATC Armor (2)
USATC Inf (2)
USATC Engr (2)
USASTC (2)
WRAMC (1)
Army Pic Cen (2)
USACDCEC (10)
USASPTC (8)
USATCFE (8)
Instl (2) except
Fort Hancock (4)
Fort Gordon (10)
Fort Huachuca (10)
WSMR (5)
Fort Carson (25)
Fort Knox (12)
USAEPG (5)
Army Dep (2) except
LBAD (14)
SAAD (30)
TOAD (14)
LEAD (7)
SHAD (3)
NAAD (5)
SVAD (5)
CHAD (3)
ATAD (10)
ANAD (8)
FTWIAD (8)
NCAD (8)
UMAD (8)
Gen Dep (2)
Sig Sec Gen Dep (5)
Sig Dep (12)
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For explanation of abbreviations used, see AR 320-50.

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