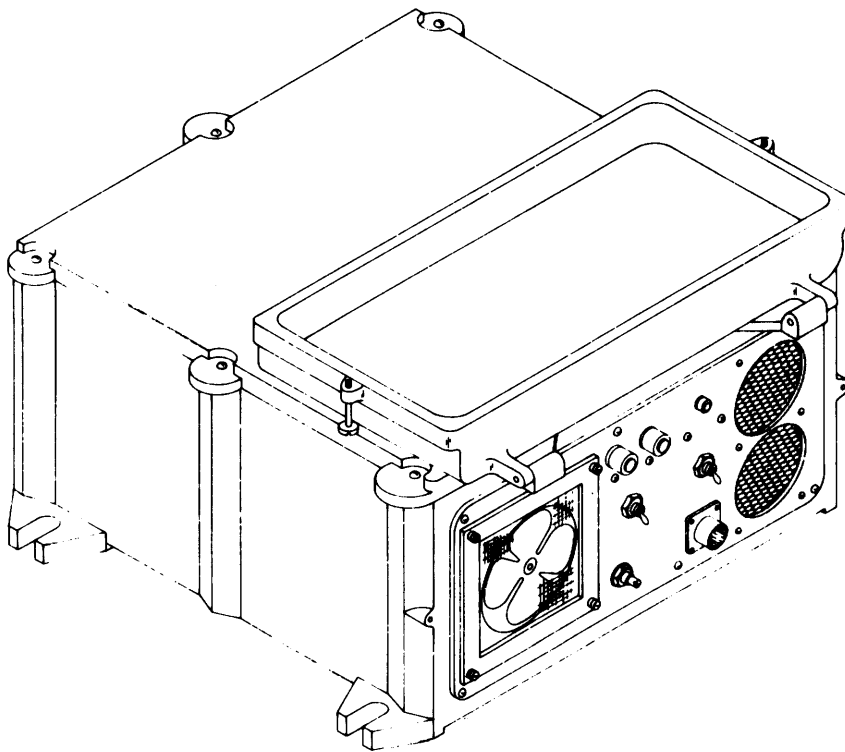


This copy is a reprint which includes current pages from Change 1.

TM 11-6130-233-12

OPERATOR'S AND ORGANIZATIONAL MAINTENANCE MANUAL



**EQUIPMENT DESCRIPTION
AND DATA**

**SERVICE UPON
RECEIPT**

**OPERATING
INSTRUCTIONS**

**PREVENTIVE
MAINTENANCE
CHECKS AND SERVICES**

TROUBLESHOOTING

**MAINTENANCE
PROCEDURES**

**PREPARATION FOR
STORAGE AND
SHIPMENT**

**POWER SUPPLIES PP-2953/U,
PP-2953A/U, PP-2953B/U, AND
PP-2953C/U (NSN 61 30-00-985-7899)**

**HEADQUARTERS, DEPARTMENT OF THE ARMY
9 JANUARY 1984**



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

CHANGE

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, DC, 1 June 1987

No. 1

**OPERATOR'S AND ORGANIZATIONAL MAINTENANCE MANUAL
POWER SUPPLIES PP-2953/U
PP-2953A/U, PP-2953B/U, AND PP-2953C/U (NSN 6130-00-985-7899)**

TM 11-6130-233-12, 9 January 1984, is changed as follows:

1. Remove old pages and insert new pages as indicated below. New or changed material is indicated by a vertical bar in the margin of the page. Added or revised illustrations are indicated by a vertical bar adjacent to the identification number.

Remove pages

Insert pages

i and ii.....	..i and ii
1-1 and 1-2 . . . . .	..1-1 and 1-2
2-1 and 2-2 . . . . .	..2-1 and 2-2
3-1 through 3-4 . . . . .	..3-1 through 3-4
3-7 through 3-12 . . . . .	..3-7 through 3-12
3-15 and 3-6 . . . . .	..3-15 and 3-16
3-15 and 3-16 . . . . .	..3-15 and 3-16
4-3 and 4-4 . . . . .	..4-3 and 4-4
5-5 through 5-8 . . . . .	..5-5 through 5-8
5-1 lthrough 5-14 . . . . .	..5-11 through 5-14
A-1/(A-2blank)... . . . .	..A-1/(A-2blank)
D-3 through D-6 . . . . .	..D-3 throug6 D-6

2. File this change sheet in the front of the publication for reference purposes.

Distribution authorized to the Department of Defense and DOD contractors only for official use or for administration or operational purposes. This determination was made on 13 February 1987. Other requests for this document will be referred to Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-ME-P, Fort Monmouth, NJ 07703-5000.

By Order of the Secretary of the Army:

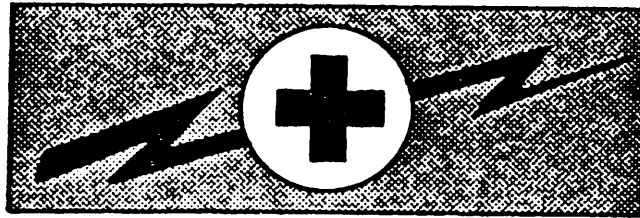
JOHN A. WICKHAM, JR.
General, United States Army
Chief of Staff

Official:

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

DISTRIBUTION:

To be distributed in accordance with DA Form 12-51 literature requirements for PP-2953(*)/U.

WARNING**HIGH VOLTAGE**

is used in the operation of this equipment

DEATH ON CONTACT

may result if personnel fail to observe safety precautions

Never work on electronic equipment unless there is another person nearby who is familiar with the operation and hazards of the equipment and who is competent in administering first aid. When the technician is aided by operators, he must warn them about dangerous areas.

Whenever Possible, the power supply to the equipment must be shut off before beginning work on the equipment. Take particular care to ground every capacitor likely to hold a dangerous potential. When working inside the equipment, after the power has been turned off, always ground every part before touching it.

Be careful not to contact high-voltage connections or 115 volt a input connections when installing or operating this equipment.

Whenever the nature of the operation permits, keep me hand away from the equipment to reduce the hazard of current flowing through the body.

Warning: Do not be misled by the term "low voltage." Potentials as low as 50 volts may cause death under adverse conditions.

For Artifical Respiration, refer to FM 21-11.

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 physician immediately.

**OPERATOR'S AND ORGANIZATIONAL MAINTENANCE MANUAL
POWER SUPPLIES PP-2953/U, PP-2953A/U, PP-2953B/U
AND PP-2953C/U
(NSN 6130-00-985-7899)**

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

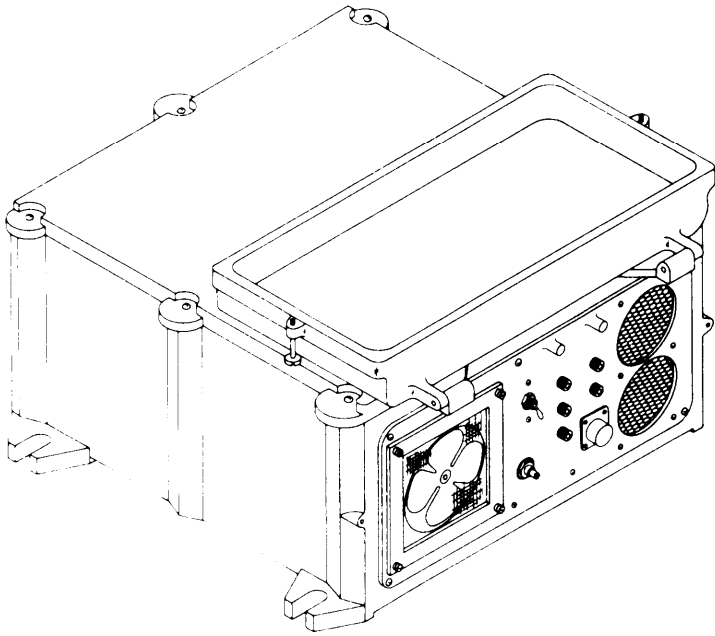
You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, US Army Communications-Electronics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

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

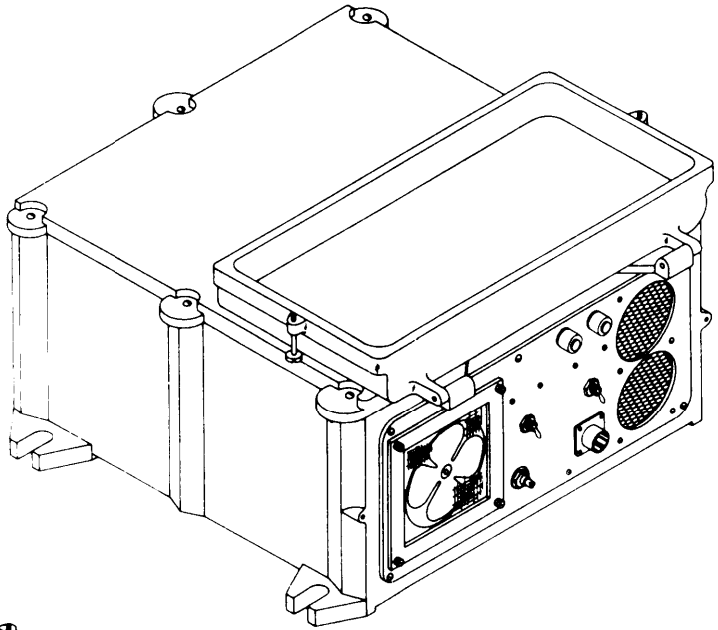
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*This manual supersedes TM 11-6130-233-12, 7 December 1964, including all changes. Change 1

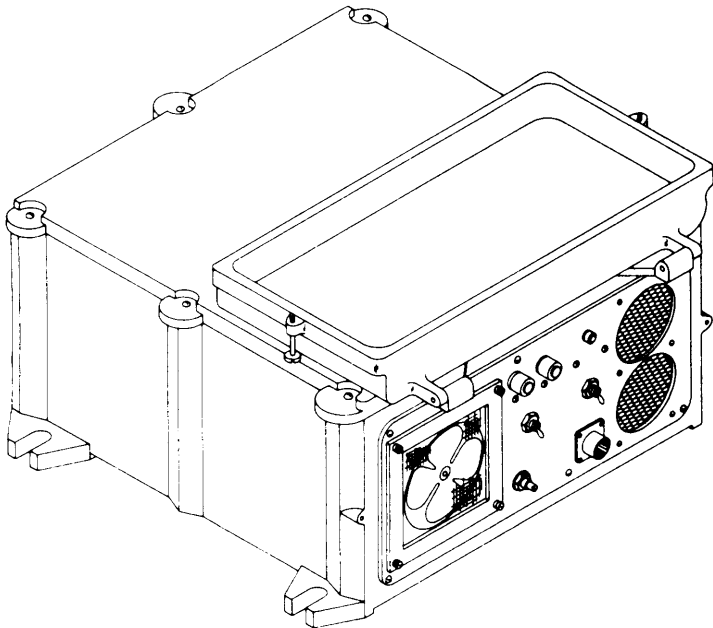
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POWER SUPPLY PP-2953/U
AND
POWER SUPPLY PP-2953A/U



POWER SUPPLY PP-2953B/U



POWER SUPPLY PP-2953C/U

**CHAPTER 1
INTRODUCTION**

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Section I. GENERAL INFORMATION

1.1. SCOPE

The purpose of this manual is to tell you how to operate and maintain Power Supplies PP-2953/U, PP-2953A/U, PP-2953B/U and PP-2953C/U.

Asterisk in parenthesis immediately after the nomenclature PP-2953 indicates all models treated as single equipment.

102. MAINTENANCE FORMS, RECORDS, AND REPORTS

a. Reports of Maintenance and Unsatisfactory Equipment, Department of the Army forms and procedures used for equipment maintenance will be those prescribed by DA PAM 738-750, as contained in Maintenance Management Update.

b. 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/NAVMATINST 4355.73 B/AFR 400-54/MCO 4430.3H.

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

1.2.1. CONSOLIDATED INDEX OF ARMY PUBLICATIONS AND BLANK FORMS.

Refer to the latest issue of DA Pam 310-1 to determine whether there are new editions, changes or additional publications pertaining to the equipment.

1-3. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your PP-2953(*)/U 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 the design. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-PA-MA-D, Fort Monmouth, NJ 07703-5000. We'll send you a reply.

1.4. 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. EQUIPMENT DESCRIPTION AND DATA

1.5. PURPOSE OF POWER SUPPLY

The power supply may be used as a general purpose power supply. It is primarily used in fixed building locations, and is designed to convert ac power into a usable dc power source for electronic equipment.

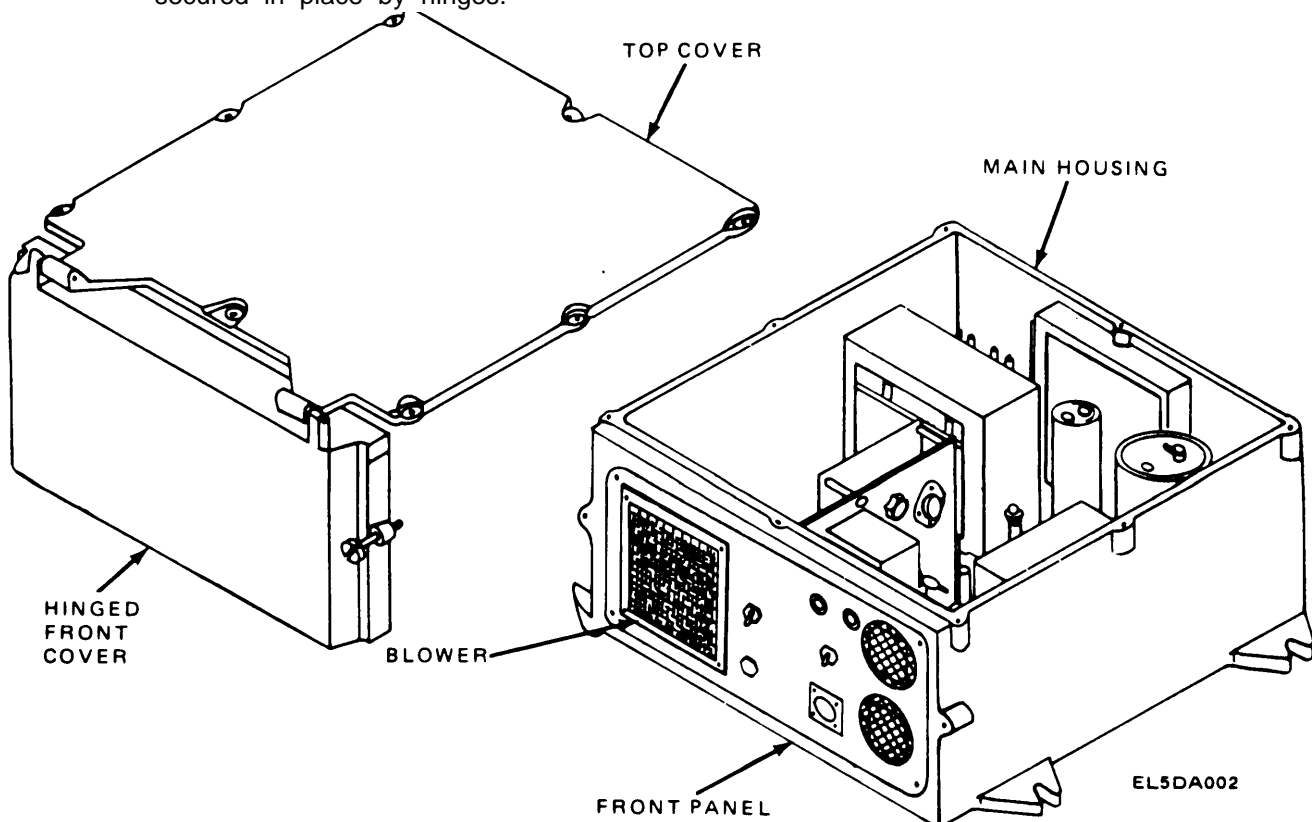
1-6. CAPABILITIES AND FEATURES

- Operates from ac power source of either 115/230 volts ac, 50/60 Hz, or 115 volts ac, 400 Hz.
- Capable of emergency operation from stand-by dc power source (storage battery) in case failure or undervoltage condition occurring in ac power source.
- Adjustable dc output makes power supply usable for many different types of equipment.
- Operator's control are mounted and visible on front panel, and allow easy access and monitoring of the power supply.
- It is compact and sturdily built.
- It is easily installed and capable of being quickly relocated or transported.
- Built-in circuits provide overload protection for both input and output voltage.
- Modular construction allows easy placement or positioning.

1-7. LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

PP-2953(*)/U is completely enclosed by a housing assembly consisting of the following:

- A top cover which is attached by eight screws and also holds the front cover, which is secured in place by hinges.

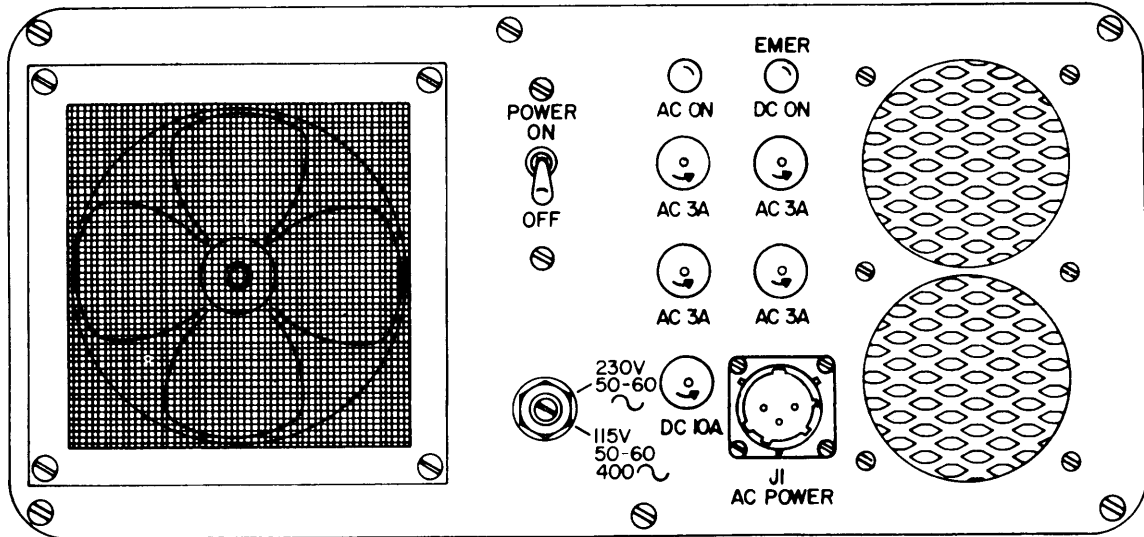


- The main housing contains all the working components of PP-2953(*)/U, consisting of the following:
 - Internal components -- Convert ac to dc.
 - Blower -- Provides necessary cooling.
- Front panel is attached to the main housing by six screws. It contains all operating controls and indicators necessary to operate PP-2953(*)/U.

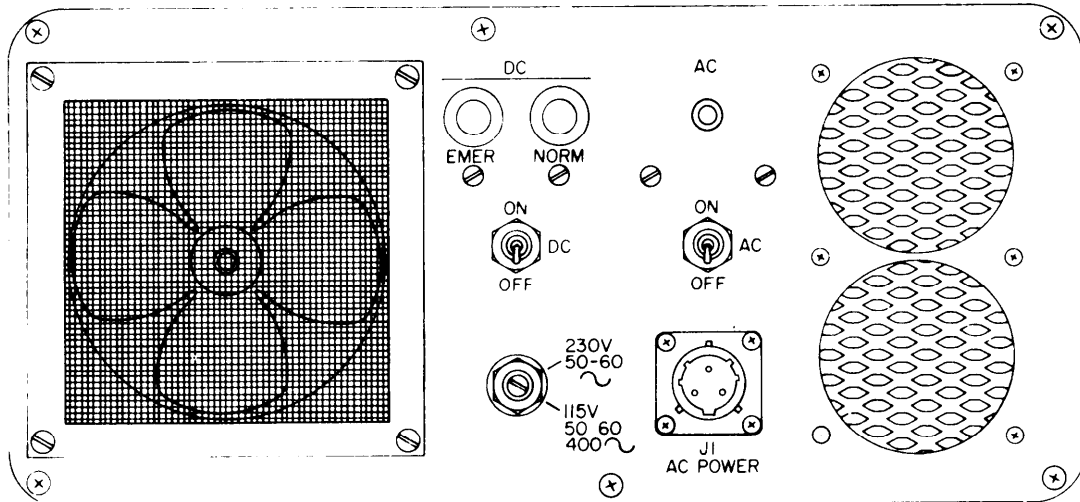
1-8. DIFFERENCES BETWEEN MODELS

The major difference between models is the change from fuses to circuit breakers.

PP-2953/U and PP-2953A/U use fuses (see below).



PP-2953B/U (not shown) and PP-2953C/U use circuit breakers.
This change affects the configuration of the front panel (see below).



EL5DA026

Minor differences are:

- Addition of a dc output control switch (DC ON/OFF switch).
- Addition of a dc output indicator (NORM lamp).
- Quick release fasteners on the blower screen.
- Dimout covers for the indicator lamps.

Differences will be illustrated and explained where applicable.

1-9. EQUIPMENT DATA

WEIGHT AND DIMENSIONS

Weight	18 kilograms (39.6 pounds)
Length	35.25 centimeters (13.9 inches)
Width	34.43 centimeters (13.5 inches)
Height	16.25 centimeters (6.5 inches)

ENVIRONMENTAL CONDITIONS

Ambient temperature	-40°C(-40°F) to 66°C (150 °F)
Relative humidity	up to97%.
(Limited to four hours of operation in 100% humidity)	
Altitude	up to 10,000 feet above sea level

POWER REQUIREMENTS

115/230 volts ac 50/60 Hz or, 115 volts ac 400 Hz	
Emergency dc power source	24 volt dc storage bat- tery (or equivalent)

POWER OUTPUT

22.7 to 27.7 volts dc, 2 to 10 amperes (10 amps maximum)

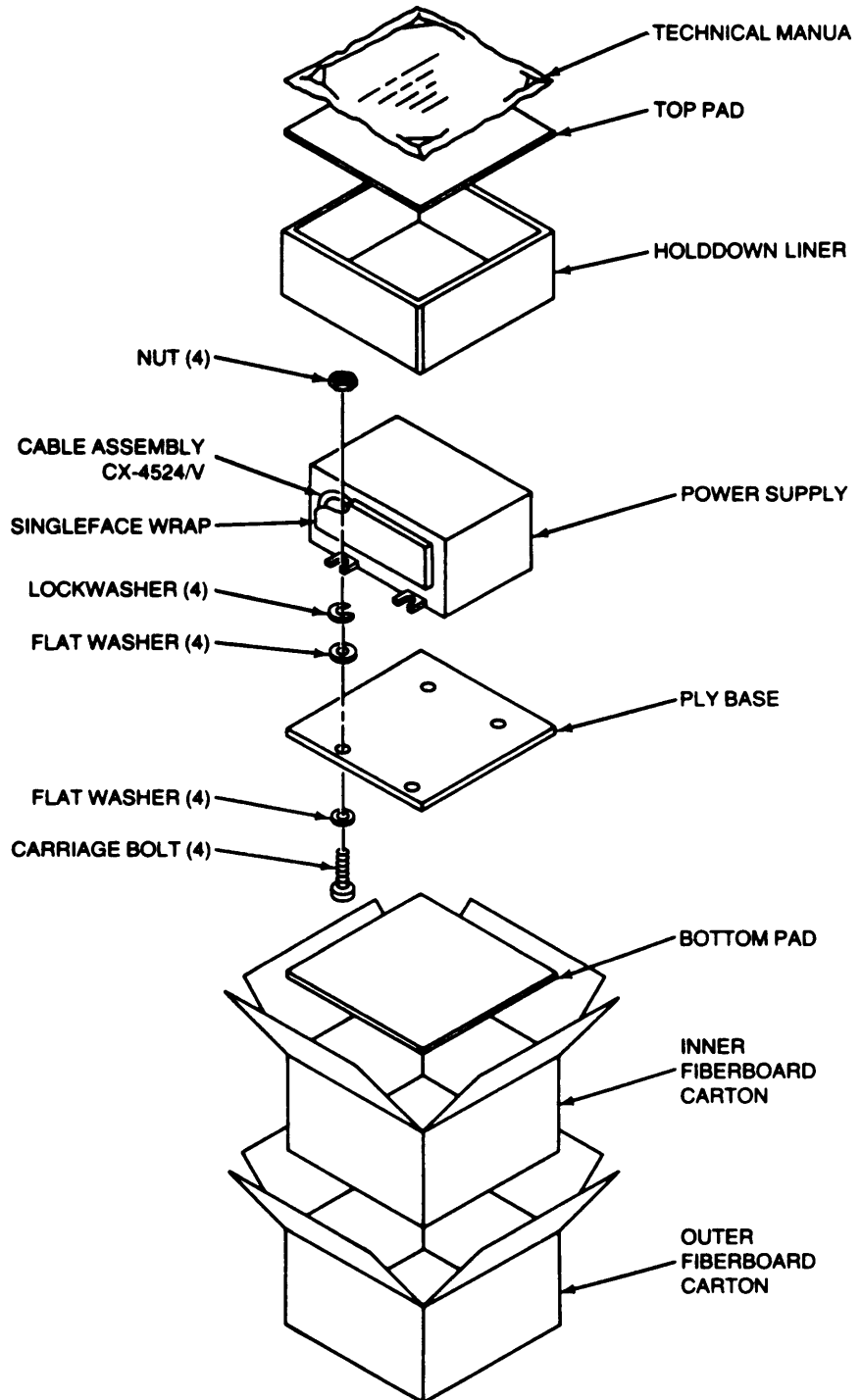
CHAPTER 2
SERVICE UPON RECEIPT

2-1. UNPACKING PP-2953(*)/U

ITEM	ACTION	REMARKS
1. Carton	Inspect for evidence of damage.	
2. Power Supply	Unpack. Inspect for damage caused during shipment. Compare with packing list. Check for modifications.	See packaging diagram on following page. Report any damage on SF 364 (Report of Discrepancy (ROD)). Be sure shipment is complete. Report any discrepancies in accordance with DA Pam 738-750. If packing list is not available, check the equipment against the Components of the End Item (COEI) list in appendix B. Report shortages on SF 364 in accordance with AR 735-11-2. Check on the front panel near the nomenclature plate, for any modification work order (MWO) numbers. They will appear ONLY if the unit has been used or reconditioned. Current MWO's which apply to PP-2953(*)/U are listed in DA Pam 310-1. Check to see whether all currently applicable MWO's have been applied.

To remove contents:

- ① Open the outer fiberboard carton and remove the inner fiberboard carton.
- ② Open the inner fiberboard carton and remove the envelope containing the technical manuals.
- ③ Remove the top pad and holddown liner.
- ④ Remove the four nuts, four lockwashers, and four flat washers that secure PP-2953(*)/U to the plywood base.
- ⑤ Carefully remove PP-2953(*)/U from the carton.
- ⑥ Remove the single face wrap from Cable Assembly CX4524/U.



EL5DA027

2-2. INSTALLATION

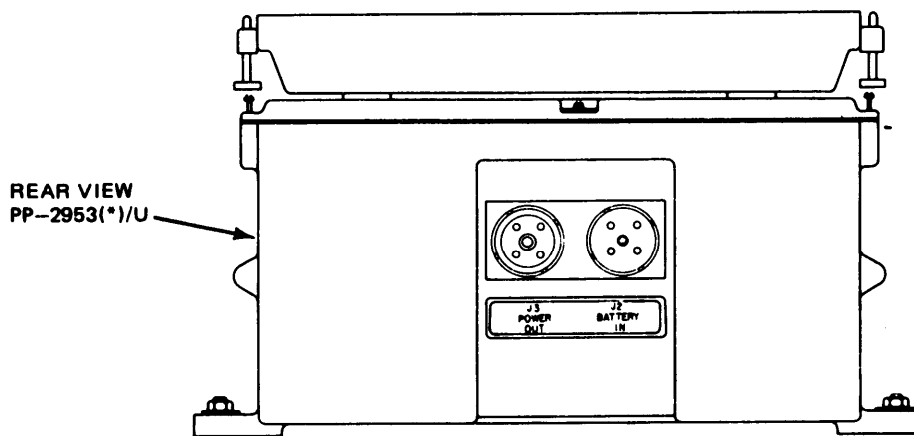
- a. No special tools or test equipment are required for installation.
- b. Common tools or material required for installation may be found in the Army Supply System.
- c. Additional material required, but not supplied, needed to operate PP-2953(*)/U may be found in Appendix C, Additional Authorization List.

Install PP-2953(*)/U as follows:

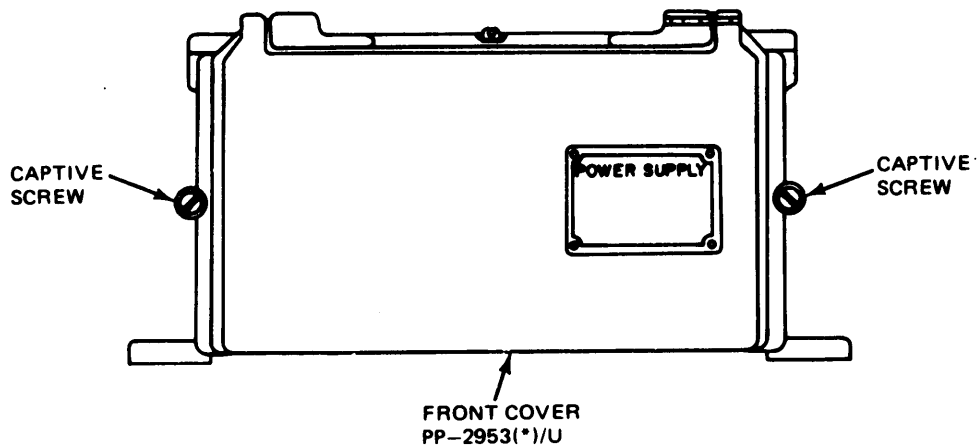
WARNING

The power supply is compact and heavy (over 50 pounds). Use care in handling in order to protect personnel from serious injury and the equipment from damage.

Position the rear of PP-2953(*)/U as close as possible to equipment requiring the dc power source.

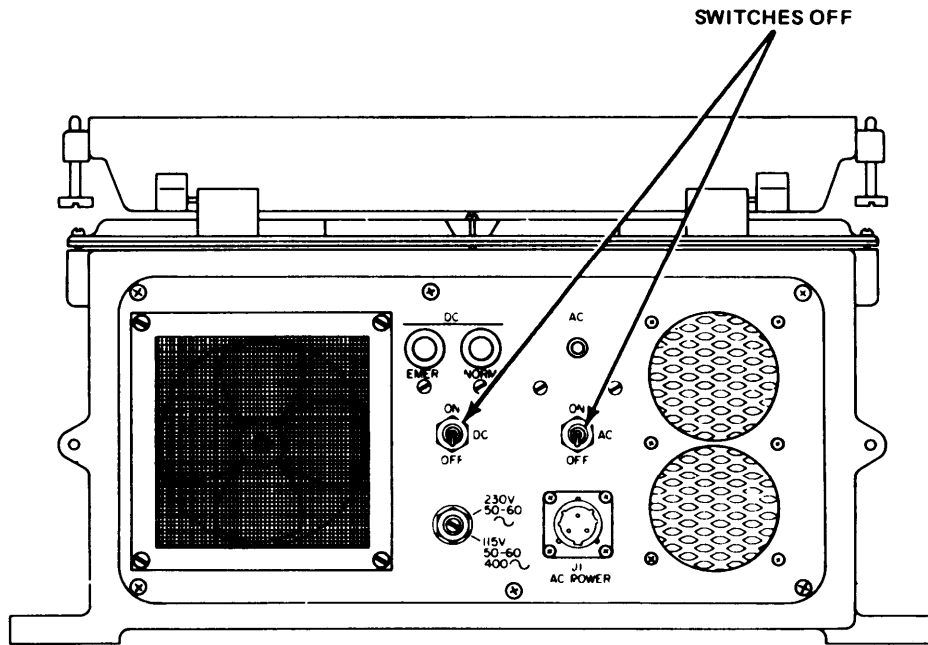


Loosen the two captive screws securing front cover and raise front cover exposing front panel.

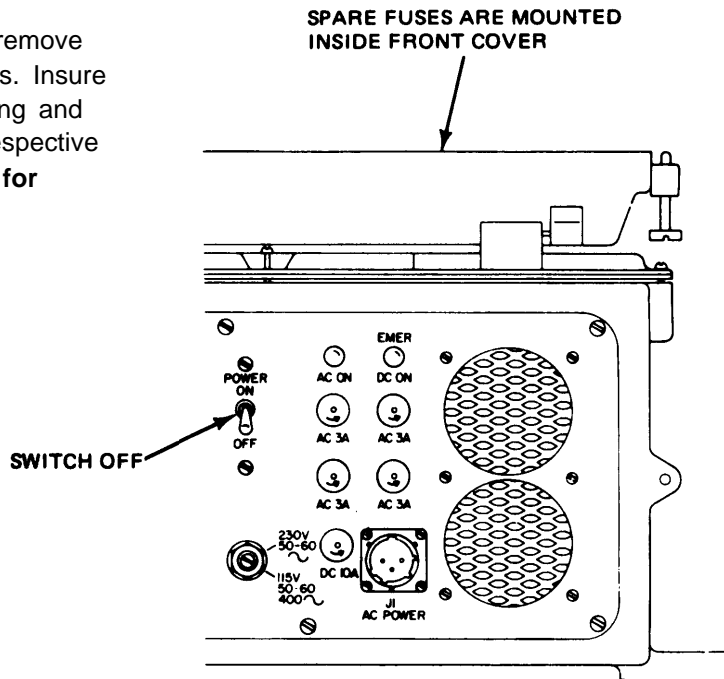


EL5DA003

With front cover raised, inspect your equipment. Place all switches in OFF position.



For the plain and A models remove and inspect all front panel fuses. Insure that they are of the correct rating and reinsert them back into their respective places. Refer to Paragraph 4-4 for instructions on removing fuses.



EQUIPMENT CHECK

EL5DA004

- Use Appendix B, Components of End Item (COEI) to inspect your equipment, Insure you have everything needed to operate the. power supply.
- Shortage of a minor part that does not affect operation of the equipment should not prevent use of the equipment.

CAUTION

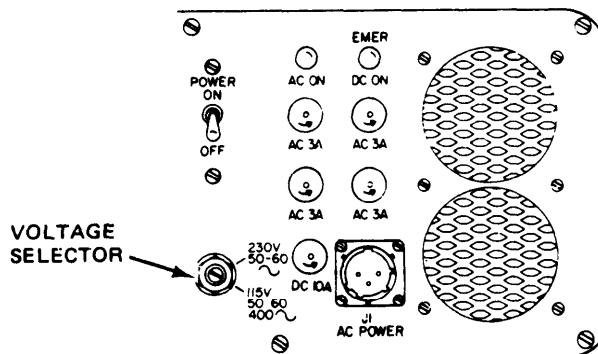
VOLTAGE SELECTOR switch must match the line voltage being used to operate this equipment in order to prevent damaging this equipment. Refer to Chapter 3, Section II, Damage From Improper Settings.

Determine the ac power source available for operation. Set the VOLTAGE SELECTOR switch to match the input voltage being used. The VOLTAGE SELECTOR switch is in the same location on all models.

VOLTAGE SELECTOR Switch positions:

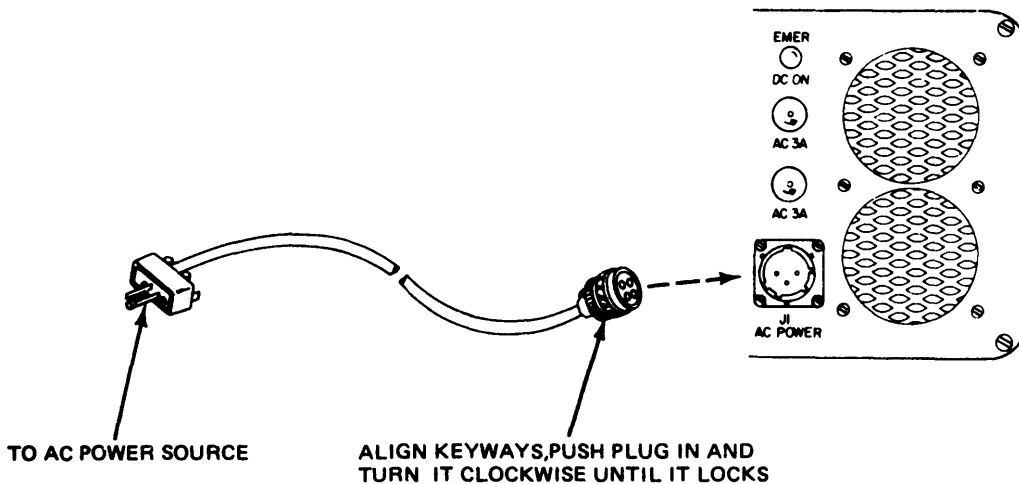
230 VAC 50/60 Hz
for
230 VAC input

115 VAC 50/60 Hz or 400 Hz
for
115 VAC input



Connect cable assembly CX-4524/U between J1 AC POWER and an ac power source.

Cable assembly CX-4524/U comes packed with PP-2953(*)/U.



EL5DA005

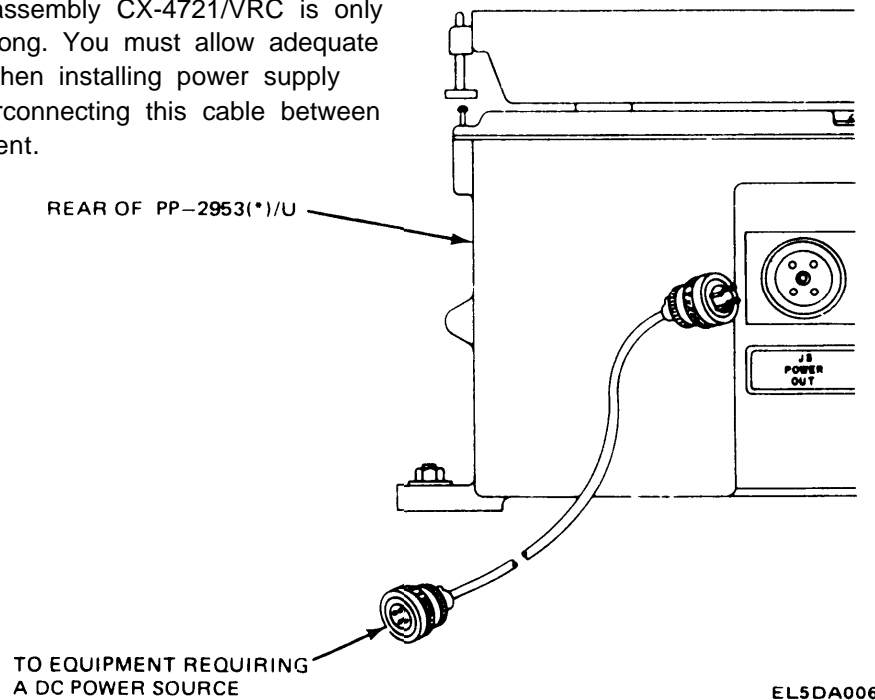
CAUTION

- Insure all switches are in the off position before plugging in CX-4524/U.
- Connect cable assembly CX-4524/U to J1 AC POWER before connecting to the ac power source.

Connect cable assembly CX-4721/VRC between J3 POWER OUT and equipment requiring the dc power source, J3 POWER OUT is located in the same place on all models.

CAUTION

Cable assembly CX-4721/VRC is only 3 feet long. You must allow adequate room when installing power supply for interconnecting this cable between equipment.



NOTE

Cable Assembly CX-4721 NRC is authorized for the support of power supply PP-2953(*)/U. Refer to Appendix C for additional information.

CHAPTER 3
OPERATING INSTRUCTIONS

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V Operation Under Unusual Conditions	3-16

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

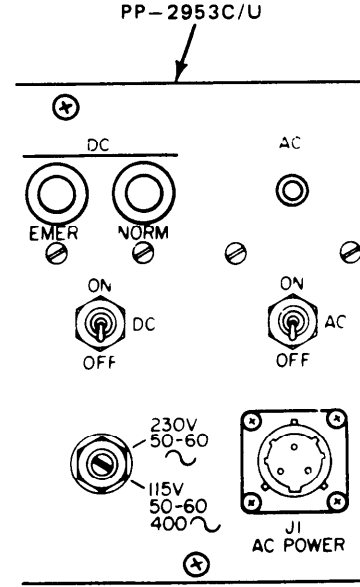
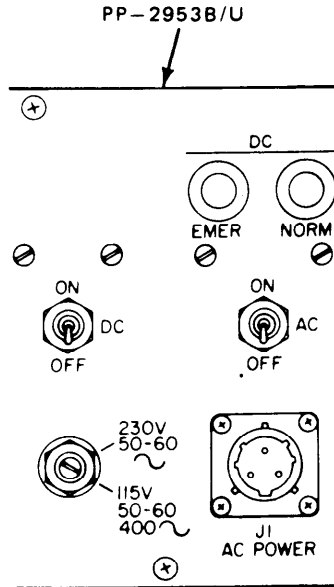
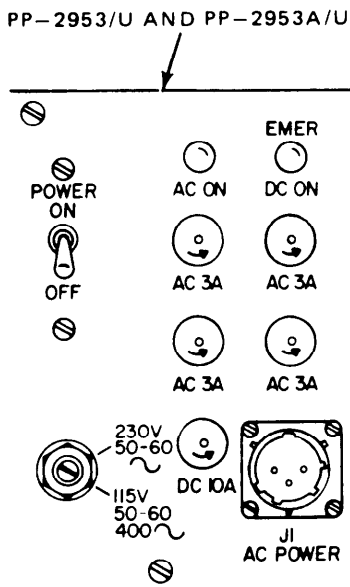
3-1. GENERAL

As operator of power supply PP-2953(*)/U you will reworking with the following controls, indicators, and receptacles.

CAUTION

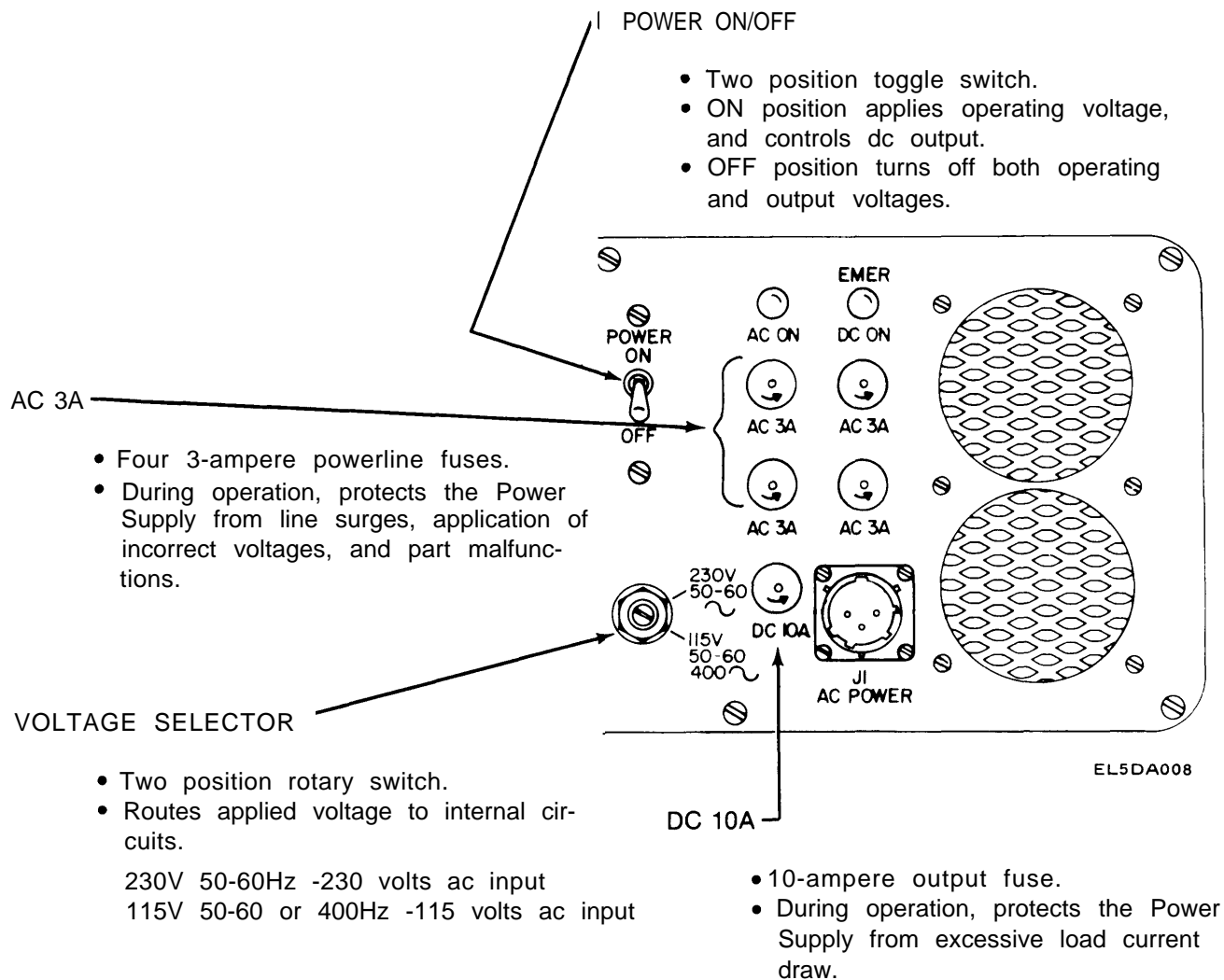
Do not operate the power supply until you understand the operation and function of all controls, indicators, and receptacles.

Operator's Control Panel

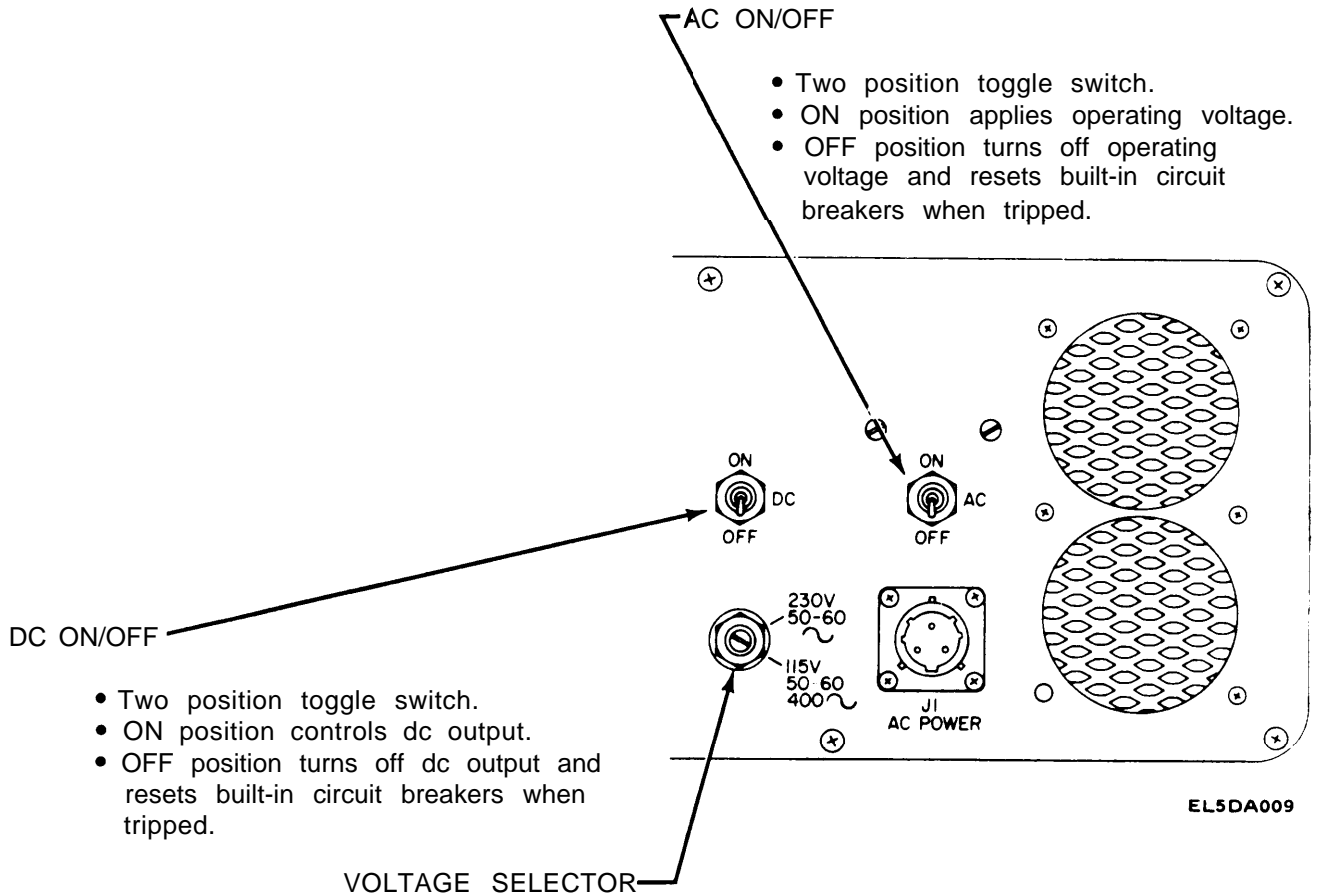


EL5DA007

3-2. CONTROLS FOR PP-2953/U AND PP-2953A/U



3-3. CONTROLS FOR PP-2953B/U AND PP-2953C/U



- Two position rotary switch.
 - Routes applied operating voltage to internal circuits.
- 230V 50-60Hz -230 volts ac input
 115V 50-60 or 400Hz -115 volts ac input

3-4. INDICATORS FOR PP-2953/U AND PP-2953A/U

EMER DC ON

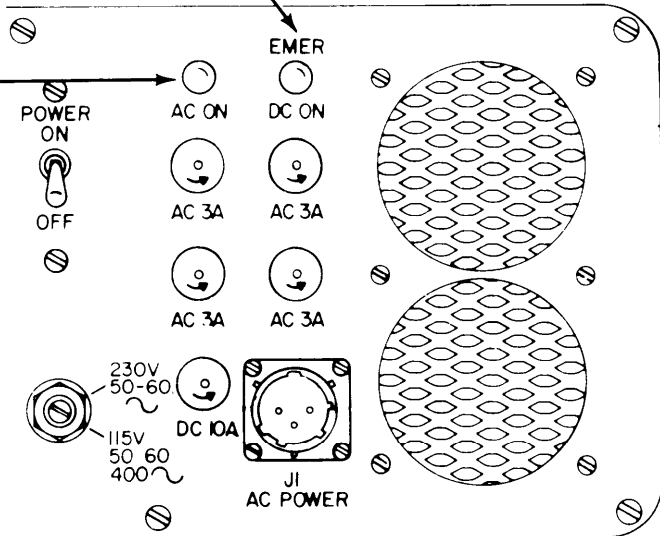
- Lamp indicator (Red).
- Indicates ac power failure.
- Will light ONLY when emergency dc power source is connected.

AC ON

- Lamp indicator (Green).
- Indicates Power Supply has been turned on and dc output voltage is available.

NOTE

Models PP-2953/U and PP-2953A/U have no dc output indicator lamp. AC indicator lamp will not light if no DC is available, but the blower will still operate.



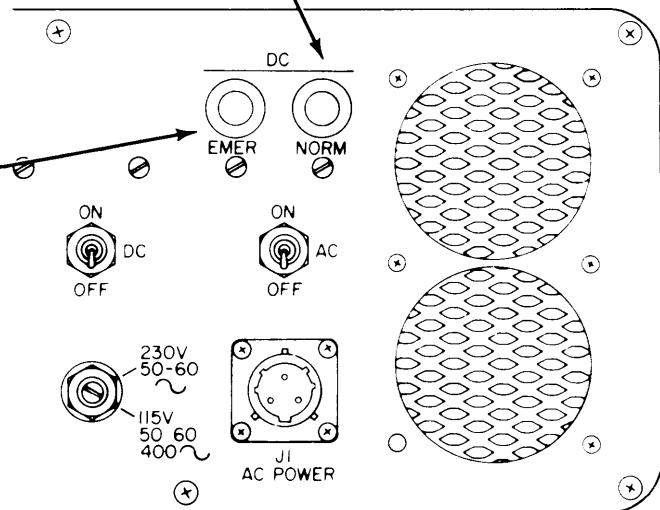
3-5. INDICATORS FOR PP-2953B/U

DC NORM

Lamp indicator (Green).
Indicates dc output is turned on and available for use.

DC EMER

- Lamp indicator (Red).
- Indicates ac power failure.
- Will light ONLY when emergency dc power source is connected.



The PP-2953B/U does not have an AC indicator light.

EL5DA010

DC EMER

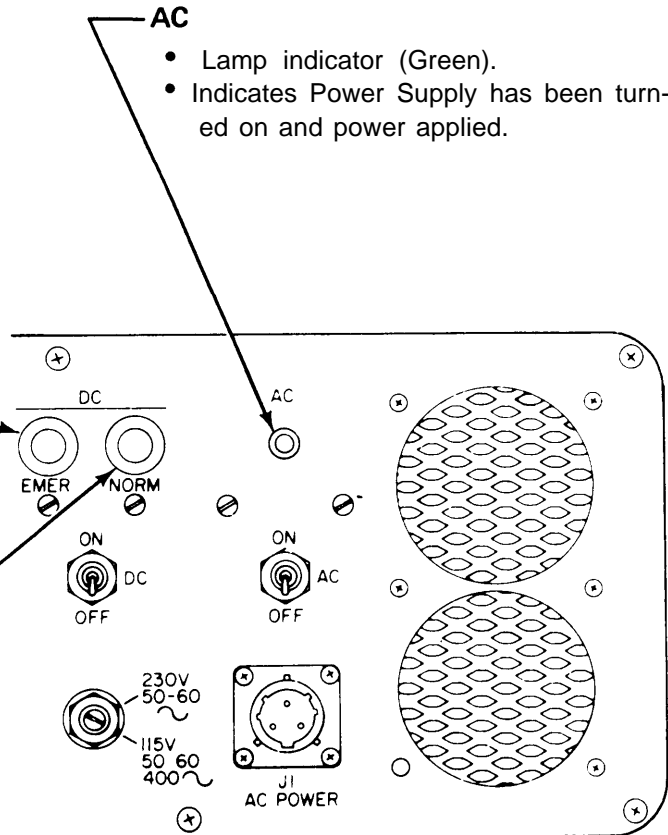
- Lamp indicator (Red).
- Indicate ac power failure.
- Will light ONLY when emergency d power source is connected.

DC NORM

- Lamp indicator (Green).
- Indicates dc output is turned on and available for use.

AC

- Lamp indicator (Green).
- Indicates Power Supply has been turned on and power applied.

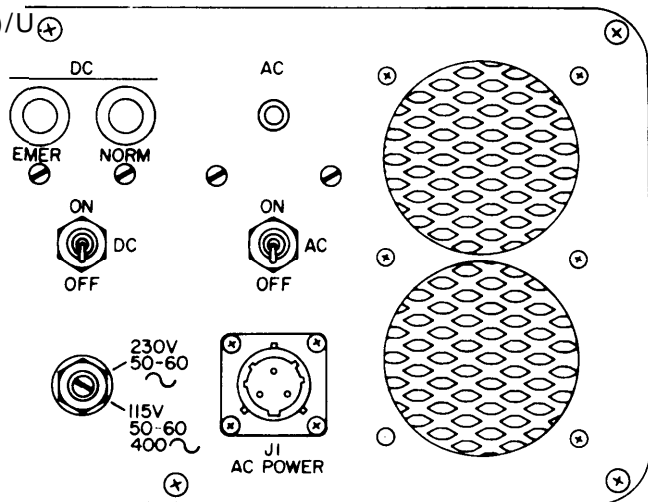


EL5DA011

3-7. RECEPTACLES

J1 AC POWER

- Common to all models of PP-2953(*)/U
- Three pin receptacle.
- Mates with cable assembly CX-4524/U.
- Interconnects Power Supply to ac power source.

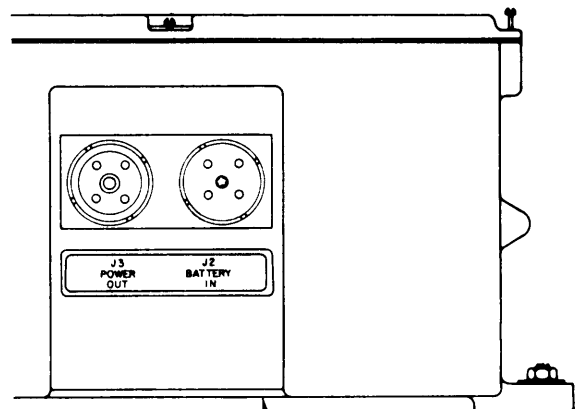


J3 POWER OUT

- Common to all models of PP-2953(*)/U.
- Four hole receptacle.
- Mates with cable assembly CX-4721/VRC.
- Interconnects equipment requiring dc power source.

J2 BATTERY IN

- Common to all models of PP-2953(*)/U.
- Four pin receptacle.
- Mates with cable assembly CX-4720/VRC.
- Interconnects Power Supply to external dc power source.



REAR OF PP-2953(*)/U

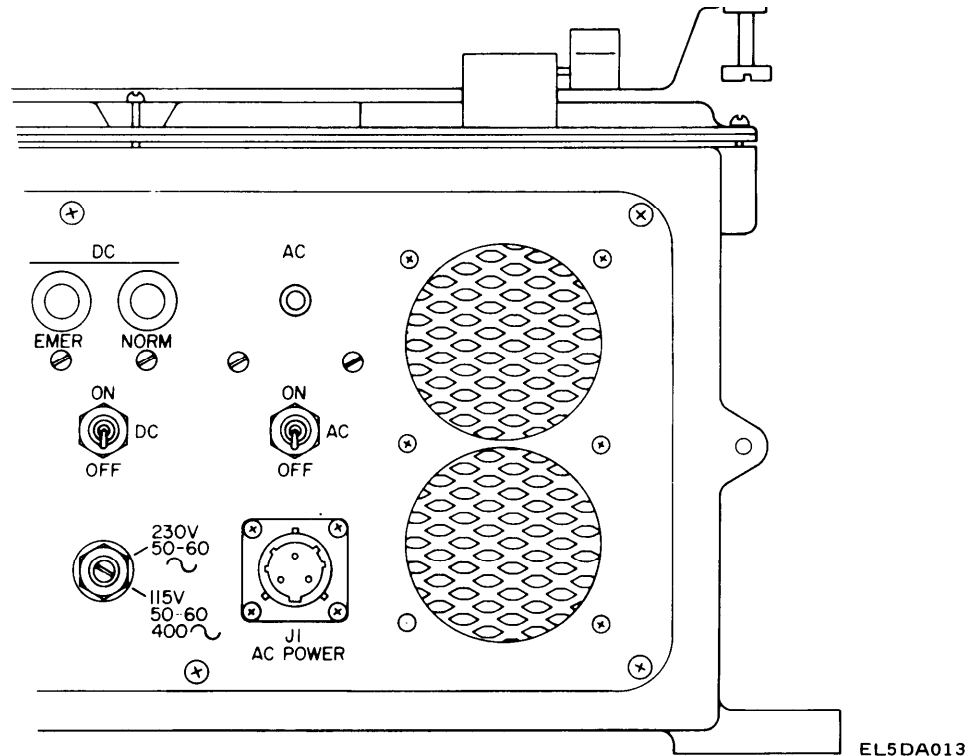
EL5DA012

Section II. DAMAGE FROM IMPROPER SETTINGS

WARNING

230 volts ac operating voltage applied with the VOLTAGE SELECTOR switch in the 115V 50-60, 400Hz position may result in serious injury to operating personnel or serious damage to the power supply.

- Do not connect the power supply to a power source until the following checks have been made and verified to be correct:
 1. Place all switches in the OFF position,
 2. Determine the ac power source available for operation.
 3. Set the VOLTAGE SELECTOR switch to match the ac line voltage being planned for operation.



- VOLTAGE SELECTOR switch position must match the line voltage applied for operation, in order for the power supply to operate.

NOTE

Power supply will not operate with the VOLTAGE SELECTOR switch set at 230V, 50-60 Hz position and 115 volts ac applied as operating voltage.

Section III. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

3-8. GENERAL

Operator's Preventive Maintenance Checks and Services (PMCS) are the required daily and weekly inspection and care of your equipment necessary to keep it in good operating condition.

3-9. PREVENTIVE MAINTENANCE CHECKS AND SERVICES PROCEDURES

NOTE

If your power supply must be in use ALL THE TIME, check and service those items that can be checked and serviced without stopping its operation. Make COMPLETE checks and services ONLY when the power supply is finally SHUT DOWN.

a. Routine checks

Routine checks like equipment inventory, cleaning, dusting, washing, checking for frayed cables, stowing items not in use, covering unused receptacles, and checking for loose nuts and bolts are not listed as PMCS checks. They are things that you should do anytime you see they must be done. If you find a routine check like one of those listed in your PMCS, it was listed because other operators reported problems with this item.

b. Explanation of INTERVAL column of PMCS chart

NOTE

Always keep in mind all CAUTIONS and WARNINGS when PMCS are performed.

BEFORE OPERATION - Do your Before (B) PMCS to be sure the power supply PP-2953(*)/U is ready to use.

DURING OPERATION - Do your During (D) PMCS while you operate your power supply PP-2953(*)/U, to help spot small problems before they become big problems.

WEEKLY OPERATION - Do your Weekly (W) PMCS to insure that the power supply PP-2953(*)/U is functioning properly after a week of operation.

NOTE

ALL PMCS must be done as regularly scheduled and also under the following conditions:

- Before the power supply is used on a mission.
- When the power supply is first installed.
- When the power supply is reinstalled after being removed for any reason.

c. Explanation of EQUIPMENT IS NOT READY/AVAILABLE IF: column of PMCS chart,

- This column tells why your equipment cannot be used for its assigned mission.

d. Explanation of PROCEDURE column of PMCS chart.

- This column tells you how to perform the required checks and services. Carefully follow these instructions. If tools are needed, or the chart instructions tell you, get organizational maintenance to do the necessary work.

NOTE

If any portion of your power supply fails to operate, refer to Chapter 4 under Troubleshooting for possible problems. Report any malfunctions of failures on the proper DA Form 2404 or refer to DA Pam 738-750.

DA FORM 2404, EQUIPMENT INSPECTION AND MAINTENANCE WORKSHEET.

EQUIPMENT INSPECTION AND MAINTENANCE WORKSHEET				
For use of this form see TM 38-750 the proponent agency is the Office of the Deputy Chief of Staff for Logistics				
1. ORGANIZATION			2. NOMENCLATURE AND MODEL	
3. REGISTRATION/SERIAL/FSN	4a. MILES	b. HOURS	c. ROUNDS FIRED	d. HOT STARTS
				5. DATE
6. TYPE INSPECTION				
7. APPLICABLE REFERENCE				
TM NUMBER		TM DATE	TM NUMBER	
INSTRUCTIONS - Perform each check listed in the TM applicable to the inspection performed. Following the sequence listed in pertinent TM, complete form as follows:				
COLUMN a - Enter TM item number.			COLUMN d - Show corrective action for deficiency or shortcoming listed in Column c.	
COLUMN b - Enter the applicable condition status symbol.			COLUMN e - Individual ascertaining completed corrective action initial in this column.	
COLUMN c - Enter deficiencies and shortcomings.				
ALL INSPECTIONS AND EQUIPMENT CONDITIONS RECORDED ON THIS FORM HAVE BEEN DETERMINED IN ACCORDANCE WITH DIAGNOSTIC PROCEDURES AND STANDARDS IN THE TM CITED HEREON.				
9a. SIGNATURE (Person(s) performing inspection)		9b. TIME	9a. SIGNATURE (Maintenance Supervisor)	
			9b. TIME	
			10. MANHOURS REQUIRED	
TM ITEM NO.	STATUS	DEFICIENCIES AND SHORTCOMINGS	CORRECTIVE ACTION	INITIAL WHEN CORRECTED
a	b	c	d	e

USE
PMCS
ITEM
NO

PREVENTIVE MAINTENANCE CHECKS AND SERVICES

B- BEFORE OPERATION

D- DURING OPERATION

A- AFTER OPERATION

ITEM NO.	INTERVAL			ITEM TO BE INSPECTED	PROCEDURE	EQUIPMENT IS NOT READY/AVAILABLE IF:
	B	D	A			
1	*			Overall operation	Perform the operating procedures of paragraphs 3-10 through 3-15.	Equipment cannot be operated or abnormal indication is noted.

* Perform prior to deployment to a mission location for the purpose of determining and correcting equipment malfunctions prior to actual mission operation.

Section IV. OPERATION UNDER USUAL CONDITIONS

NOTE

If any abnormal indications are observed during the starting procedures, refer to your troubleshooting chart in Chapter 4 for corrective measures.

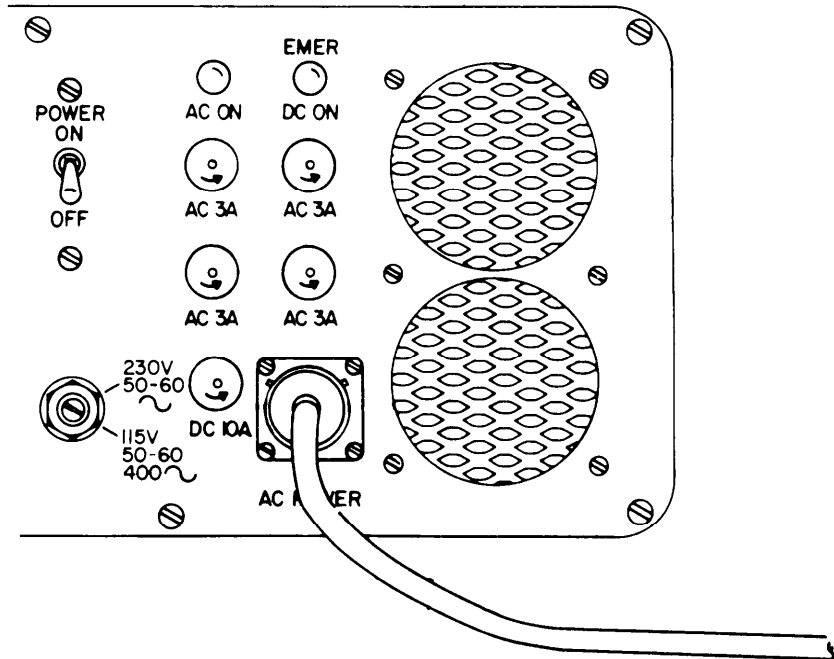
3-10. STARTING PROCEDURES

CAUTION

To avoid damaging this equipment, insure that the VOLTAGE SELECTOR switch position matches the line voltage being used to operate the power supply, before applying power.

TURN ON FOR PP-2953/U AND PP-2953A/U

- Turn POWER ON/OFF switch to the ON position.
- AC ON indicator will light.
- Allow 10 minutes for warmup.



EL5DA028

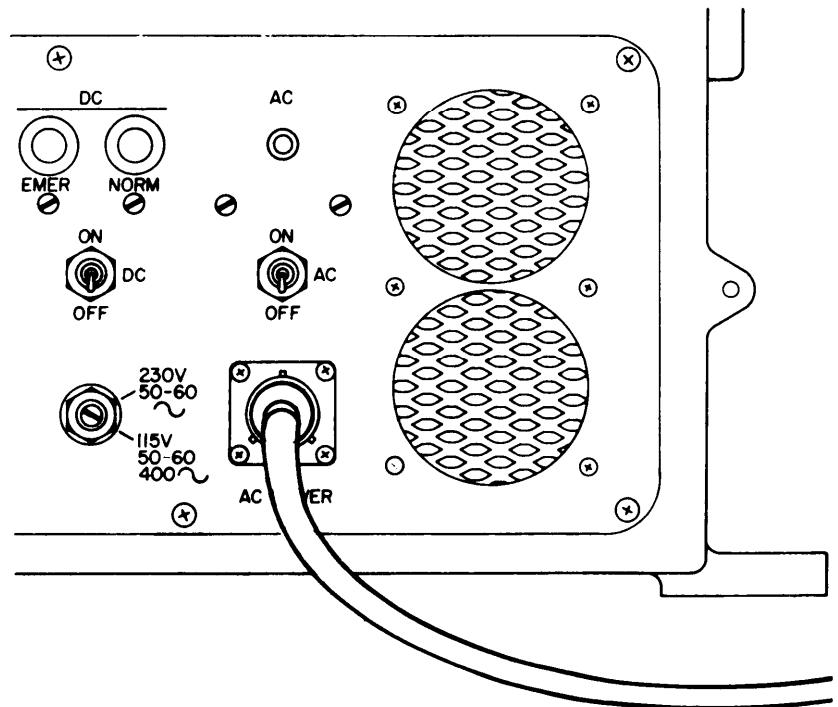
TURN ON FOR PP-2953B/U AND PP-2953/U

- Turn the AC ON/OFF switch to the ON position.
- AC indicator lamp will light (PP-2953 C/U only).

NOTE

PP-2953B/U has no AC indicator lamp.

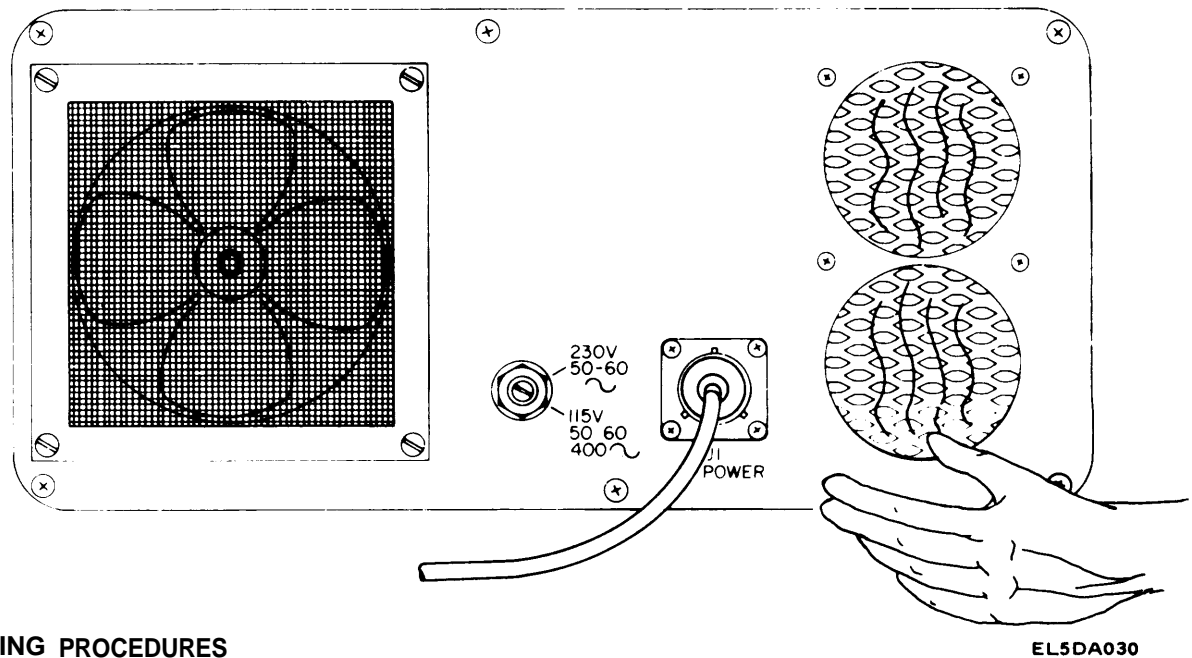
- Turn the DC ON/OFF switch to the ON position.
- NORM indicator lamp will light.



EL5DA029

ALL MODELS

Blower will automatically start to operate when ac power is applied.



3-11. STOPPING PROCEDURES

TURN OFF FOR PP-2953/U AND PP-2953A/U

- Turn POWER ON/OFF switch to the OFF position.

TURN OFF FOR PP-2953B/U AND PP-2953C/U

- Turn DC ON/OFF switch to the OFF position.
- Turn AC ON/OFF switch to the OFF position.

3-12. EMERGENCY STOPPING PROCEDURES

To turn power supply off in an emergency, place all switches in the OFF position.

If unable to turn switches OFF, disconnect cable assembly CX-4524/U from the ac power source.

Locate and turn OFF the main circuit breaker in the building where you are operating.

NOTE

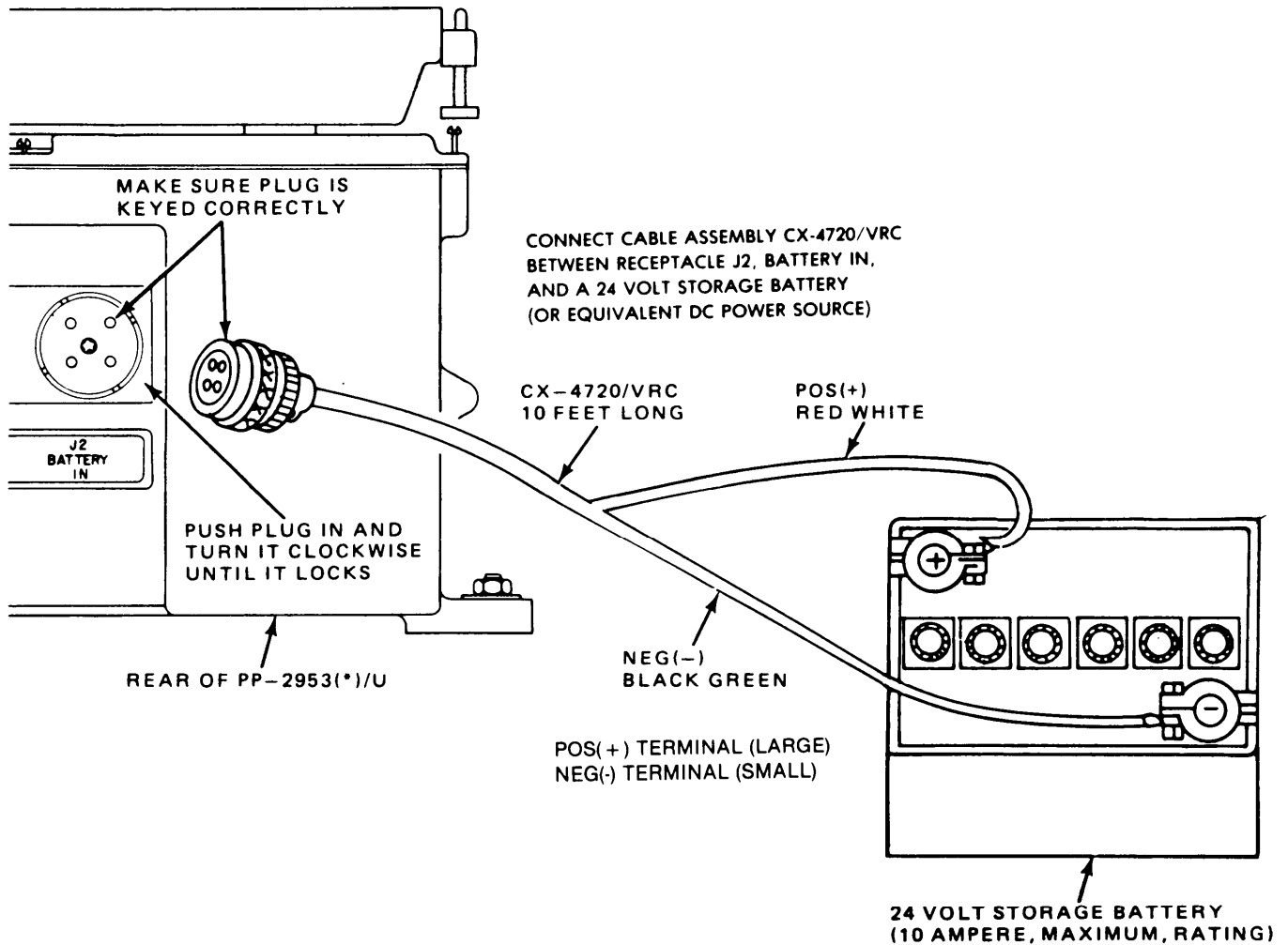
If the power supply is turned off by the use of emergency stopping procedures, MAKE SURE all circuit breakers and power switches on the PP-2953(*)/U are in the OFF position before attempting to restart the power supply.

Section V. OPERATION UNDER UNUSUAL CONDITIONS

3-13. EMERGENCY OPERATION

In a situation where the ac power source is likely to fail, operation with a stand-by battery is necessary for continuous operation.

Follow the procedures below for emergency operating conditions:



EL5DA014

- Organizational maintenance will prepare cable for use, before any operation requiring use.
- Cable assembly CX-4720/VRC is authorized for the support of Power Supply PP-2953(*)/U, Refer to Appendix C for additional information.

NOTE

If tools are required for the above installation get organizational maintenance to do the work.

3-14. EMERGENCY CONDITIONS

An emergency condition is indicated by the ON/OFF combination of the front panel indicator lamps.

The following chart lists various combinations which indicate a different type of emergency condition:

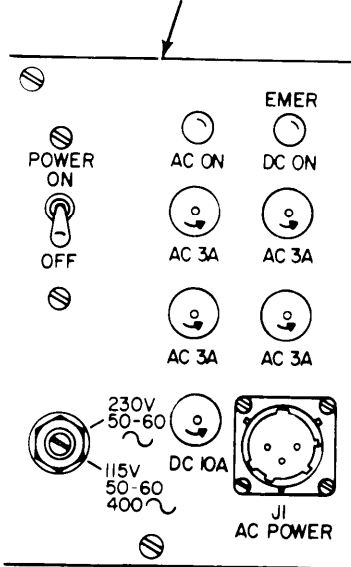
EMERGENCY CONDITION	EMER DC ON/DC EMER Indicator Lamp	AC Indicator Lamp	DC NORM Indicator Lamp
115 volt ac input voltage falls below 80 volts.	LIGHTS	GOES OUT	GOES OUT
230 volt ac input voltage falls below 130 volts.	LIGHTS	GOES OUT	GOES OUT
Surges in ac input voltage. *	LIGHTS	GOES OUT	GOES OUT
Complete failure of ac input voltage.	LIGHTS	GOES OUT	GOES OUT

*This condition trips the ac circuit breaker (or blows the 3A fuses on PP-2953/U and PP-2953A/U). The breaker (or fuses) must be reset or replaced manually before the load is transferred back to the power supply.

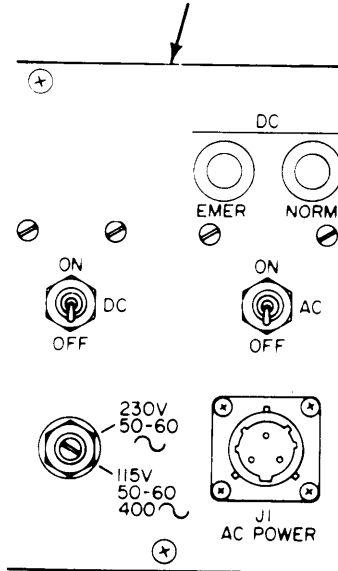
NOTE

PP-2953/U and PP-2953A/U do not have a DC NORM indicator lamp.

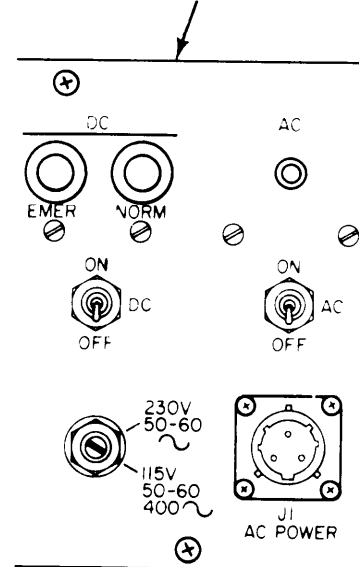
PP-2953/U AND PP-2953A/U



PP-2953B/U



PP-2953C/U



EL5DA007

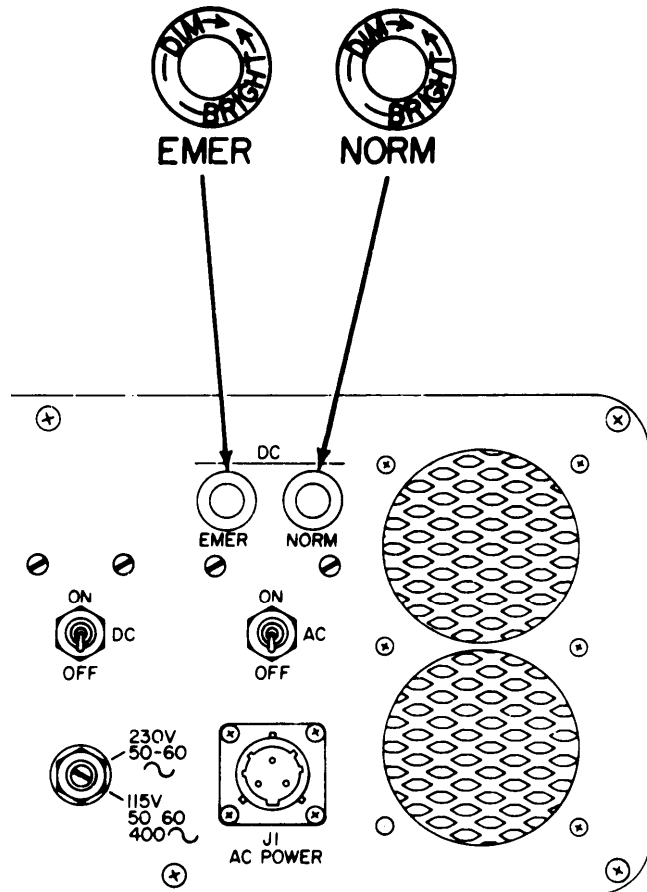
3-15. BLACKOUT OPERATION

Power Supply PP-2953B/U is capable of complete blackout operation.

Adjustable dimout covers on PP-2953B/U and PP-2953C/U control the amount of visible light.

NOTE

PP-2953C/U AC indicator does not have a adjustable dimout cover.



EL5DA031

CHAPTER 4
OPERATOR MAINTENANCE

	Page
Section I General	4-1
Section II Troubleshooting Procedures	4-1
Section III Maintenance Procedures	4-4

Section I. GENERAL

No lubrication required for this equipment.

4-1. OPERATOR’S MAINTENANCE CONSISTS OF THE FOLLOWING:

- **CLEANING**
Exterior of power supply
- **PREVENTIVE MAINTENANCE CHECKS AND SERVICES**
Instructions are given in Section III of Chapter 3.
- **TROUBLESHOOTING**
Instructions and procedures are given in Section II of this chapter.

Section II. TROUBLESHOOTING

4-2. TROUBLESHOOTING PROCEDURES

<u>WARNING</u>
Before removing or replacing any part in this equipment, make sure your equipment is turned OFF. A shock hazard exists with any electronic equipment. BE CAREFUL; DON'T TAKE CHANCES.

Table 4-1, OPERATOR’S TROUBLESHOOTING, tells you some of the troubles you may find during the operations or maintenance of the power supply. You should perform the tests, inspections and corrective actions in the order listed.

This manual cannot cover all the troubles that may occur, nor all the tests or inspections and corrective actions. if a trouble is not listed or it cannot be corrected by performing the corrective actions, notify organizational maintenance.

Table 4-1. OPERATOR'S TROUBLESHOOTING

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

1. BLOWER DOES NOT OPERATE, AC INDICATOR LAMP FAILS TO LIGHT, WHEN POWER IS APPLIED.

Step 1. For all models.

Check the position of the VOLTAGE SELECTOR switch in accordance with Chapter 3, Section II, Damage from Improper Settings.

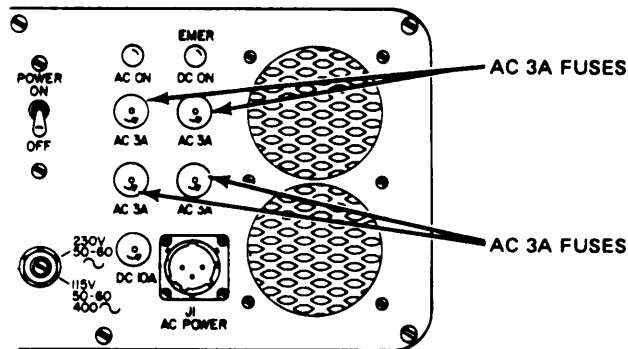
Set VOLTAGE SELECTOR switch to proper position,

If VOLTAGE SELECTOR position is correct and no power is indicated by your equipment, continue troubleshooting.

Step 2. For models PP-2953/U and PP-2953A/U.

Remove and inspect all AC 3A line fuses.

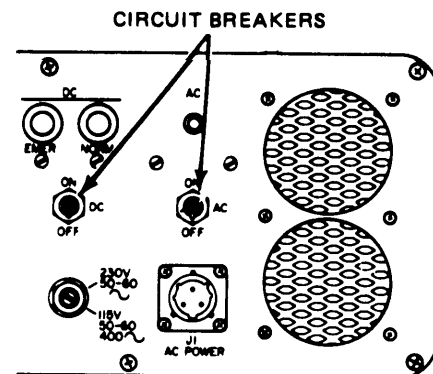
Replace defective fuses. Refer to Paragraph 4-4 for procedure.



For models PP-2953B/U and PP-2953C/U.

Check to see if the circuit breakers have been tripped.

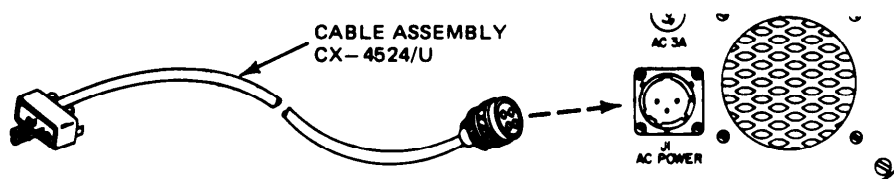
Reset tripped circuit breakers.



Step 3. For all models.

Disconnect cable assembly CX-4524/U from between the ac power source and J1 AC POWER receptacle. Refer to Section III for procedure.

Replace defective cable assembly.



EL5DA015

Table 4-1. OPERATOR'S TROUBLESHOOTING (continued)

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

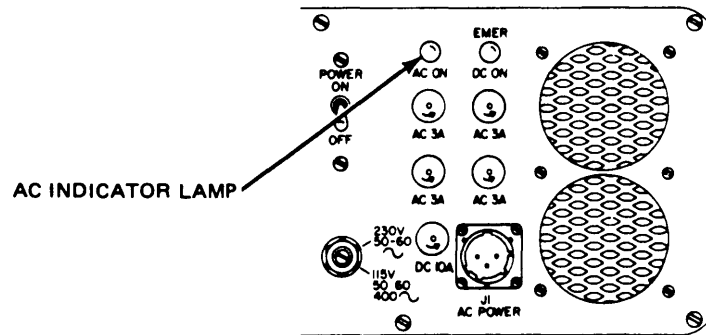
2. BLOWER OPERATES, BUT AC INDICATOR FAILS TO LIGHT, WHEN POWER IS APPLIED.

CAUTION

Do not attempt to remove AC indicator lamp from PP-2953C/U. No operator maintenance is required for this indicator lamp. If it fails to light, notify organizational maintenance.

Remove and inspect indicator lamp. Refer to Paragraph 4-6 for procedure.

Replace lamp with one known to be good.



NOTE

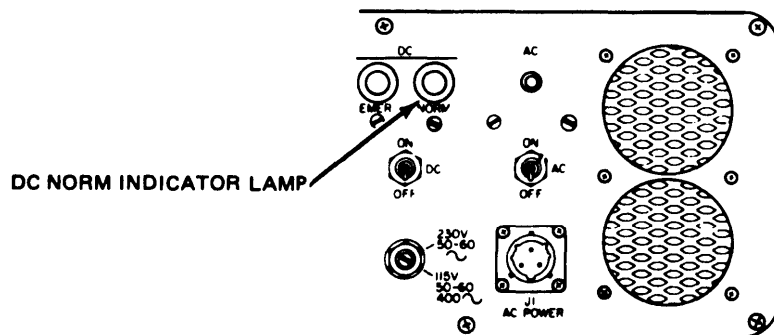
PP-2953B/U has no AC indicator lamp.

If the DC10A fuse is defective, the AC ON indicator lamp will not light.

3. POWER SUPPLY OPERATES, BUT DC NORM INDICATOR LAMP FAILS TO LIGHT; OUTPUT IS AVAILABLE.

Remove and inspect DC NORM indicator lamp. Refer to Paragraph 4-6 for procedure.

Replace lamp with one known to be good.



EL5DA016

Table 4-1. OPERATOR'S TROUBLESHOOTING (continued)

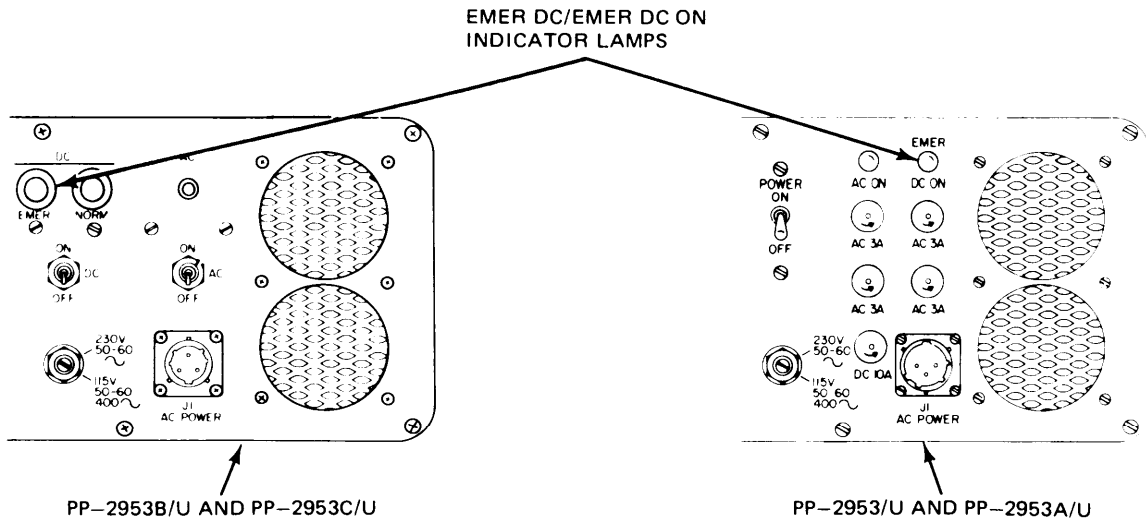
MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

4. OPERATING FROM EMERGENCY DC POWER, EMER DC/EMER DC ON INDICATOR LAMP FAILS TO LIGHT.

Remove and inspect EMER DC/EMER DC ON indicator lamp. Refer to paragraph 4-6 for the procedure. Replace lamp with one known to be good.



EL5DA017

Section III. MAINTENANCE PROCEDURES

4-3. CLEANING

- Inspect the exterior of the power supply. The exterior surfaces should be clean, and free of dust, dirt, grease, and fungus.
 - Remove dust and loose dirt with a clean soft cloth.

WARNING

Cleaning compound is flammable and its fumes are toxic. Provide adequate ventilation and do not use near flames.

- Remove grease, fungus, and ground-in dirt from the exterior surfaces; use a cloth dampened (not wet) with cleaning compound (item 1, appx E).
- Remove dust and dirt from plugs and jacks with a brush (item 5, appx E).
- Clean the front panel, indicator lenses, and control knobs; use a soft clean cloth. If dirt is difficult to remove, dampen the cloth with water. Use a mild soap if necessary.

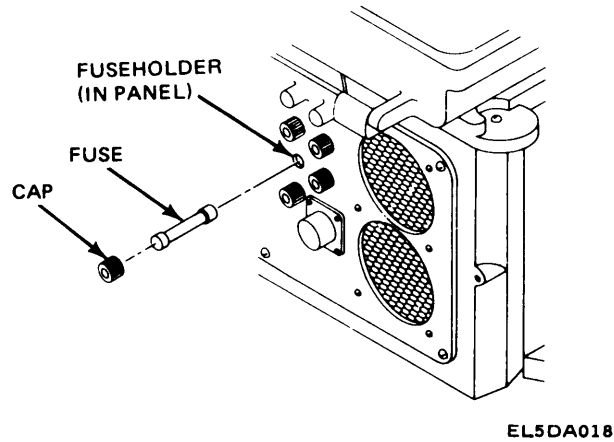
4-4. FUSE REPLACEMENT PROCEDURE

TM 11-6130-233-12

- Place POWER ON/OFF switch in the OFF position.
- Push in cap of fuseholder and turn counterclockwise.
- Remove cap and fuse. If fuse is blown, replace with one from spares.
- Reinsert fuse and cap in fuseholder and turn clockwise.

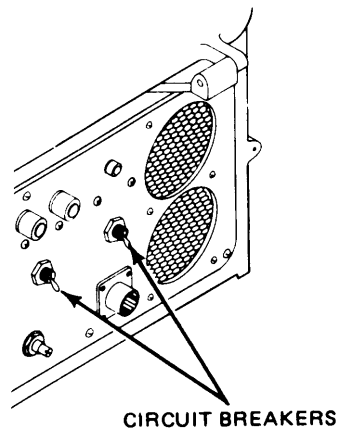
NOTE

Always replace fuse with one of the same rating.



4-5. PROCEDURE FOR RESETTING CIRCUIT BREAKERS

- Turn switch to OFF position.
- Wait 10 seconds.
- Turn switch to ON position.



EL5DA019

CAUTION

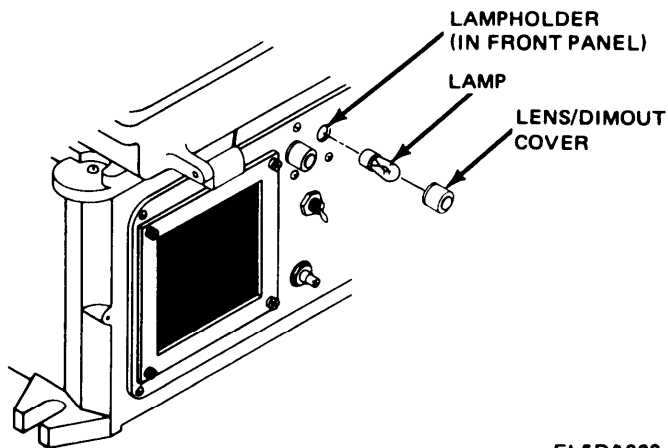
If circuit breaker trips again, DO NOT RESET. Notify organizational maintenance.

4-6. INDICATOR LAMP REPLACEMENT PROCEDURE

- Place POWER ON/OFF switch in the OFF position.
- Unscrew indicator lens (dimout cover on later models) by turning counterclockwise.
- Pull lamp and lens straight out from lampholder.
- Inspect lamp for broken filament. If filament is broken, pull lamp out of lens and replace with one known to be good.
- Insert lens and lamp into lampholder and turn clockwise to tighten.
- Place POWER ON/OFF switch in the ON position and check for proper functioning of indicator lamp.

NOTE

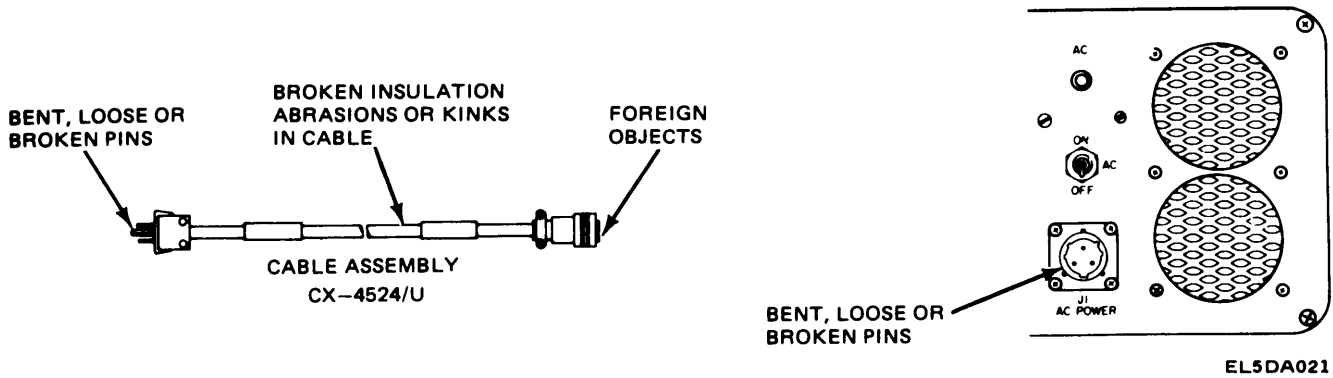
On PP-2953/U and PP-2953A/U the AC ON indicator lamp will not light if the DC 10A fuse is defective. Refer to paragraph 4-4 for procedure for checking this fuse.



EL5DA020

4-7. INSPECTION PROCEDURE FOR CABLE ASSEMBLY CX4524/U

- Disconnect cable assembly CX-4524/U from between ac power source and J1 AC POWER IN receptacle.
- Visually inspect cable assembly and J1 for the following:



- Replace cable assembly if defective.

NOTE

If J1 AC POWER IN is defective, notify organizational maintenance.

CHAPTER 5

ORGANIZATIONAL MAINTENANCE

	Page
Section I Repair Parts, Tools and Equipment..	5-1
Section II Principles of Operation	5-2
Section III Preventive Maintenance Checks and Services.	5-3
Section IV Troubleshooting	5-3
Section V Maintenance Procedures	5-6
Section VI Preparation for Storage and Shipment.	5-14

Section I. REPAIR PARTS, TOOLS AND EQUIPMENT

5-1. TOOLS AND TEST EQUIPMENT

Tools and test equipment required for organizational maintenance are listed in Appendix D Maintenance Allocation Chart (MAC) for this equipment.

5-2. SPECIAL TOOLS AND TEST EQUIPMENT

No special tools or test equipment are required for organizational maintenance on this equipment.

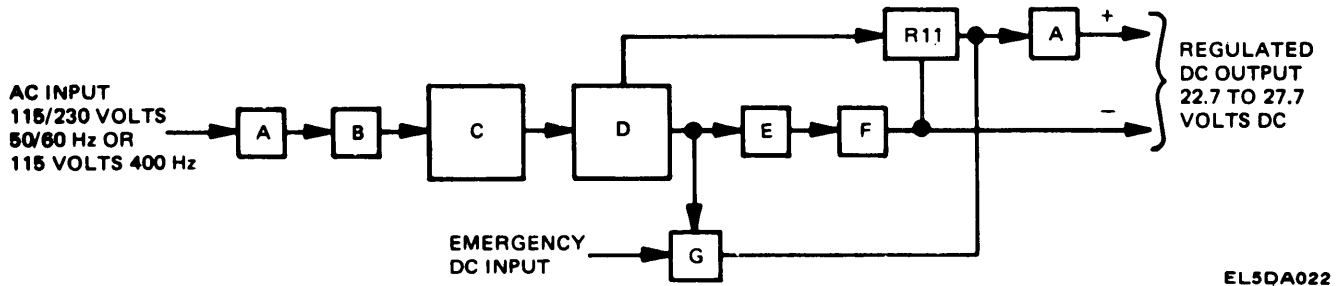
5-3. REPAIR PARTS

Repair parts may be found in TM 11-6130-233-24p which lists all repair parts for all categories of maintenance for this equipment.

Section II. PRINCIPLES OF OPERATION

5-4. EQUIPMENT FUNCTION

Converts applied ac line voltages of either 115/230 volts 50/60 Hz, or 115 volts 400 Hz into a regulated 22.7 to 27.7 volts dc power source for operating electronic equipment.



BLOCK DIAGRAM DESCRIPTION

- (A) FUSES OR CIRCUIT BREAKERS Provide overload protection for both input and output voltages.
- (B) VOLTAGE SELECTOR Additional safety feature routes applied voltage to primary of power transformer.
- (C) POWER TRANSFORMER Transforms applied voltage into acceptable working voltage and supplies it to associated components.
- (D) RECTIFIER Converts supplied voltage into pulsating dc voltage.
Positive side. is applied directly to the load.
- (E) INDUCTOR Filters negative side of rectifier voltage into usable dc voltage.
- (F) REGULATOR Provides means of controlling current and voltage output.
R11 - potentiometer used for adjusting output to within specifications desired.
- (G) RELAY K1 Provides automatic changeover to standby dc power source in case failure or undervoltage condition occurs in ac power source. (DC power source must be connected)

Section III. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

5-5. GENERAL

- Organizational preventive maintenance consists of performing regular preventive maintenance checks and services (PMCS) and routine checks. Keep in mind all WARNINGS and CAUTIONS while performing PMCS and routine checks.
- A table of preventive maintenance checks and services is provided in this section, listing those checks which are to be performed on a monthly basis. In addition single interval checks are to be performed when equipment is reported down, or not ready.

5-6. ROUTINE CHECKS

- Routine checks are not listed in a PMCS Table. They are checks such as:
 - Cleaning
 - Dusting
 - Washing
 - Checking for frayed cables
 - Storing items not in use
 - Covering unused receptacles
 - Checking for loose nuts, bolts and screws
- Routine checks are things that you should do anytime you see that they must be done.
- If you find any damage during PMCS, refer to the Troubleshooting Table (Table 5-1) or the maintenance procedures in Section V of this chapter for instructions on how to correct it. If instructions are not there, notify your supervisor. A higher category of maintenance may be required.

Section IV. TROUBLESHOOTING

5-7. GENERAL

- Troubleshooting at the organizational maintenance level requires you to locate the trouble as quickly as possible.
- Procedures described in this section include all the techniques outlined for operator's troubleshooting and any special or additional techniques required to locate problems or trouble with your equipment. The procedures are not complete in themselves but supplement the procedures outlined for operator's troubleshooting.
- Once the trouble is located, repair or replace the part, if you are authorized to do so, or determine if a higher category of maintenance is required. Repairs by organizational maintenance are limited by tools, test equipment and replacement parts allocated to that category.

NOTE

Before using the Troubleshooting Table (Table 5-1), check your work order and talk to the operator, if possible, for a description of symptoms if the trouble occurred while the equipment was in operation.

5-8. USE OF PMCS TABLE

- The PMCS Table in this Chapter, Section III, may be used in troubleshooting the power supply, or in reestablishing service after a shutdown.

PREVENTIVE MAINTENANCE CHECKS AND SERVICES
M - Monthly

ITEM NO.	INTERVAL	ITEM TO BE INSPECTED	PROCEDURES
1	•	Blower screen	Wipe screen with a damp cloth.
2	•	Intake blower motor screen	Remove screen and clean.
3	•	Blower blades	Inspect blower blades. Blades should rotate freely.
4	•	24.2 vdc output voltage level	See paragraph 5-12.
5	•	Interior	Remove top cover of PP-2953(*)/U and use cloth dampened with cleaning compound (NSN 7930-00-395-9542) to remove dust, grit, dirt, etc.

NOTE

Numerous differences exist between the models of PP-2953(*)/U. Take care to observe the differences in many of the instructions given in the troubleshooting chart.

WARNING

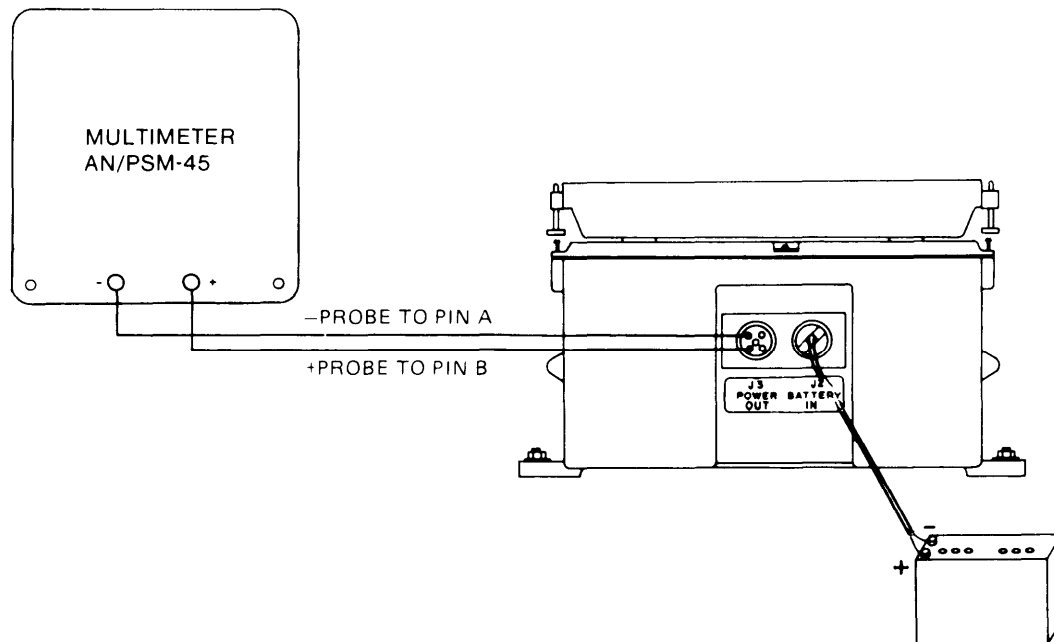
You may be required to remove the top cover of the power supply during the following procedures. Be sure the equipment is OFF before performing any procedures which require disassembly or removal of any part. Follow instructions given.

5-9. TEST CONDITIONS

- Power supply must be connected for operation as shown below.
- Work area should be clear of obstructions.

Connect multimeter AN/PSM-45 between pins A and B of receptacle J3 POWER OUT.

Refer to Section V of this chapter, (operational check) for more information.



EL5DA023 ■

Connect a 24 volt dc 10 amp maximum rating storage battery to J2 BATTERY IN.

Refer to Section V of this Chapter for additional information.

- Cable assembly CX-4524/U must be connected between J1 AC POWER and an ac power source.
- Refer to Chapter 3, Section IV, for operating instructions.

Table 5-1. ORGANIZATIONAL MAINTENANCE TROUBLESHOOTING

MALFUNCTION

TEST OR INSPECTION

CORRECTIVE ACTION

1. AC INDICATOR FAILS TO LIGHT, BUT EMERGENCY DC INDICATOR DOES, WHEN AC POWER IS APPLIED.

For PP-2953/U and PP-2953A/U.

Remove and check continuity of all 3A fuses.

Replace defective fuses.

Step 1. For all models.

Disconnect and check continuity of Cable Assembly CX-4524/U.

Replace defective cable.

Step 2. Check ac distribution circuits of building where power supply is operating.

Reset tripped circuit breakers; replace blown fuses.

2. AC INDICATOR FAILS TO LIGHT FOR PP-2953/U AND PP-2953A/U, AND EMERGENCY DC INDICATOR DOES NOT LIGHT, NO DC OUTPUT AVAILABLE.

Step 1. Remove and check continuity of DC 10A fuse.

Replace defective fuse; if fuse blows again, go to step 2.

Step 2. Check dc output voltage level, using test connections shown on previous page,

Adjust voltage if either too high or too low (see para 5-14).

3. AC INDICATOR LIGHTS FOR PP-2953B/U AND PP-2953C/U, EMERGENCY INDICATOR DOES NOT LIGHT WHEN AC POWER IS APPLIED, NORM INDICATOR DOES NOT LIGHT, NO DC OUTPUT AVAILABLE.

Step 1. Check dc circuit breaker and reset if tripped. If it trips again go to step 2.

Step 2. Check dc output voltage as instructed in MALFUNCTION 2 above.

Adjust output voltage (see para 5-14).

4. AC INDICATOR DOES NOT LIGHT, EMERGENCY DC INDICATOR DOES NOT LIGHT, WHEN AC AND DC POWER ARE APPLIED, NO OUTPUT VOLTAGE AVAILABLE.

Step 1. Check ac distribution circuits as instructed in MALFUNCTION 1 above.

Reset tripped circuit breakers; replace blown fuses.

Step 2. Check cable connections to standby battery or other emergency dc power source.

Tighten connections or clean terminals; make sure battery has sufficient charge (refer to battery maintenance manual).

Section V. MAINTENANCE PROCEDURES

5-10. GENERAL

Organizational maintenance for power supply PP-2953(*)/U is limited to:

- SERVICING
Cable assembly CX-47201VRC
- OPERATIONAL CHECK
Output voltage check
- REMOVAL
Blower screen and top cover
- ADJUSTMENT
Output voltage adjustment
- CLEANING
Exterior and interior, blower screen
- REPAIR AND REPLACEMENT
Indicator assemblies
- PAINTING
Metal surfaces

5-11. SERVICING

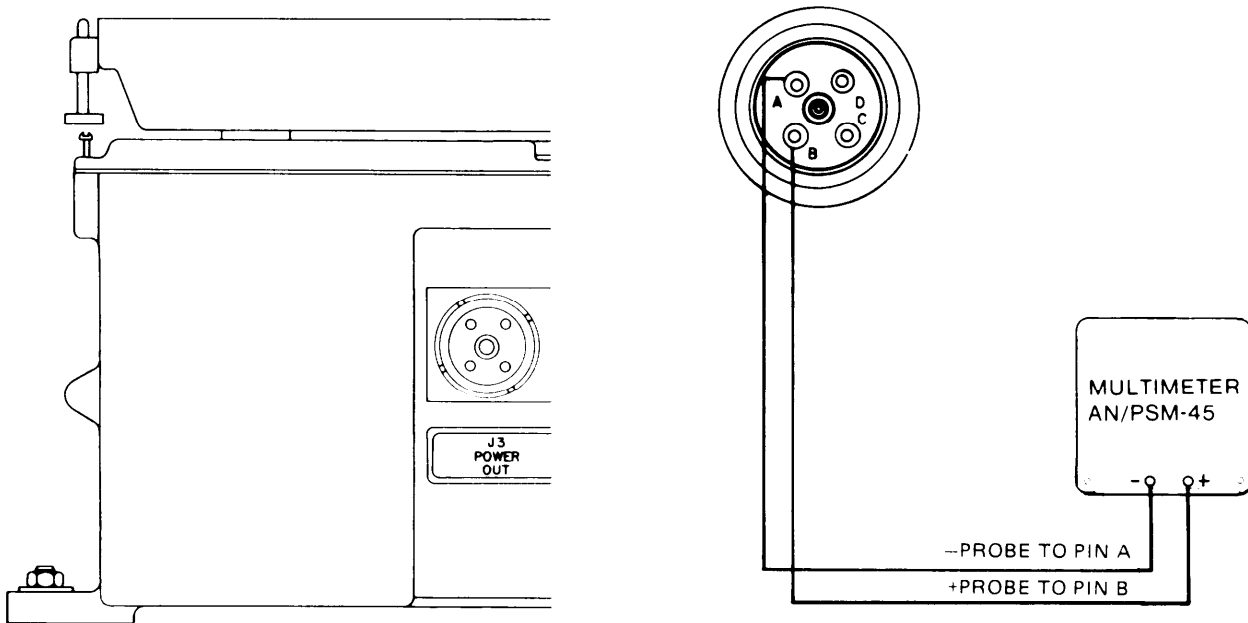
- Cable assembly CX-47201VRC requires the following service upon receipt.
- Organizational maintenance will insure that cable is prepared for emergency use.
- Follow procedures given below:
 - With multi meter AN/ PSM-45, identify lead to pin continuity.
 - Solder or splice terminals to the cable leads.
PIN A - NEGATIVE
PIN B - POSITIVE

5-12. OPERATIONAL CHECK

NOTE

When the power supply is to be used with Receiver Transmitter RT-524/VRC and Nestor Communications System TSEC/KY-38, organizational maintenance personnel will insure that the power supply output is between 23 and 24 volts dc. If the output is over 24 volts dc, the combined load of RT-524/VRC and TSEC/KY-38 may cause the power supply dc output to fail.

- Connect cable assembly CX-4524/U between receptacle J1 AC POWER and an ac power source of either 115 or 230 volts.
- Set the VOLTAGE SELECTOR switch to match ac voltage being used.
- Turn power ON.
- Check output voltage using test setup shown below.



REAR OF PP-2953(*)/U

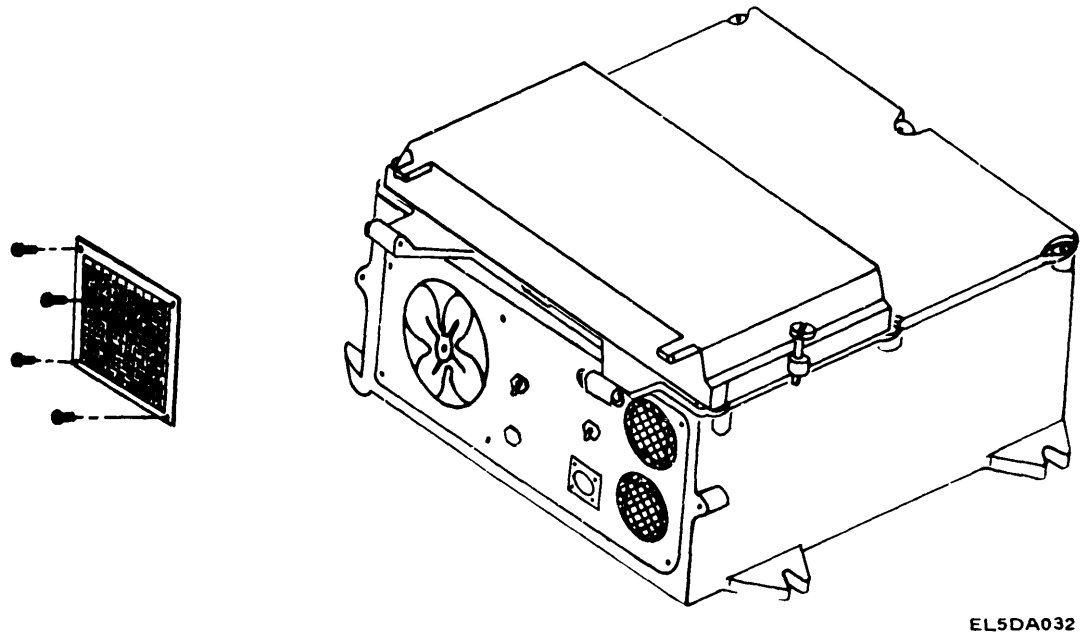
EL5DA024

- Indication on AN/PSM-45 must be between 22.7 and 27.7 volts dc.
- If indication is either too high or too low, refer to adjustment instructions in para 5-14.
- Turn power OFF, and disconnect test equipment.

5-13. REMOVAL AND REPLACEMENT

REMOVAL OF BLOWER SCREEN

- Turn POWER OFF
- FOR MODELS PP-2953/U AND PP-2953A/U
 - Locate and remove the four screws from the outer edge of the screen.
- FOR MODELS PP-2953B/U AND PP-2953C/U
 - Locate and loosen the four QUICK RELEASE fasteners. When loosening QUICK RELEASE fasteners, they will loosen to a certain point and then seem to tighten back up. When they seem to tighten up, they are loose enough to remove the screen. DO NOT FORCE SCREWS OUT.
- Remove blower screen.



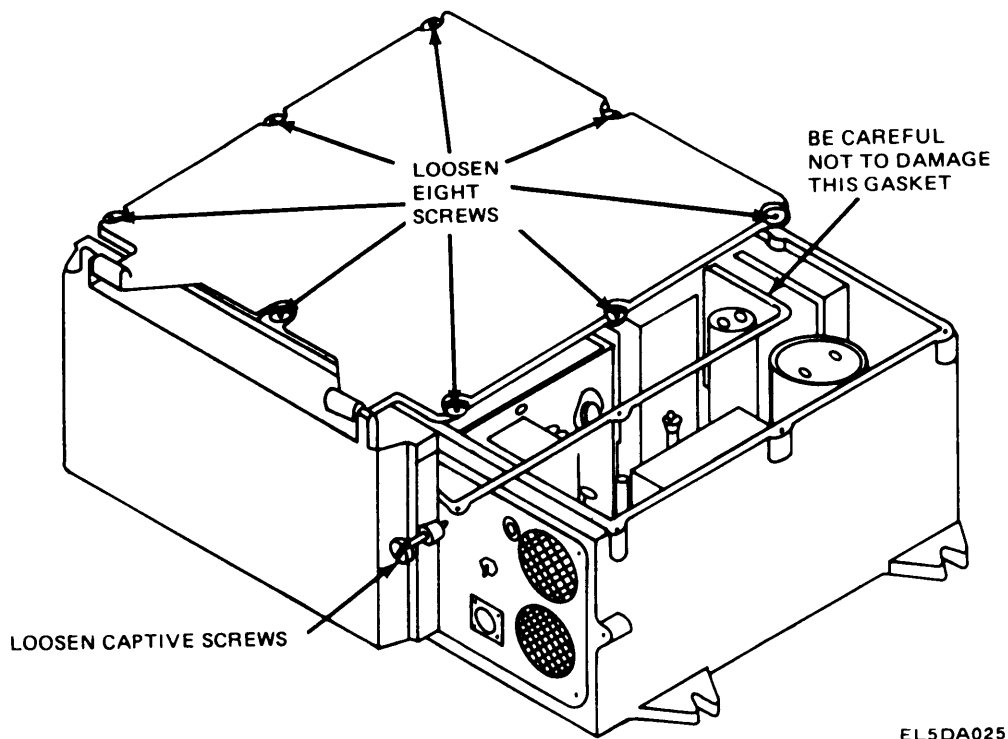
EL5DA032

REPLACEMENT OF BLOWER SCREEN

- Line up holes on outer edge of screen.
- Replace screws, or retighten quick release fasteners.

REMOVAL OF TOP COVER

- Turn POWER OFF.
- Locate and remove eight QUICK RELEASE fasteners. When loosening QUICK RELEASE fasteners, they will loosen to a certain point and then seem to tighten back up. When they seem to tighten up, they are loose enough to remove the top cover. DO NOT FORCE SCREWS OUT.
- Remove top cover.



REPLACEMENT OF TOP COVER

- Line up the eight holes on the outer edge. Be careful not to damage the gasket.
- Tighten down the eight screws.

5-14. OUTPUT VOLTAGE ADJUSTMENT

WARNING

When adjusting the power supply, be extremely careful of the ac powerline voltages (either 115 or 230 volts). Serious injury or death may result from contact with these terminals.

NOTE

The following procedure is performed by organizational maintenance personnel, or equivalent, anytime required.

Follow the below procedures for output voltage adjustment:

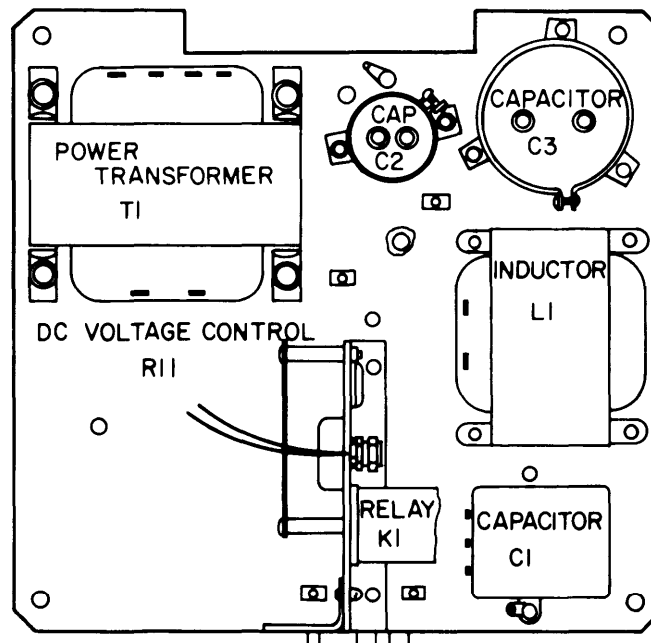
- Turn power OFF.
- Remove the top cover.

WARNING

Maintenance personnel will be exposed to dangerous voltages while performing adjustment procedures.

Review of the cautions and warnings listed in the front of this manual is advised.

Do not lay or place tools within the housing assembly while performing these adjustment procedures.

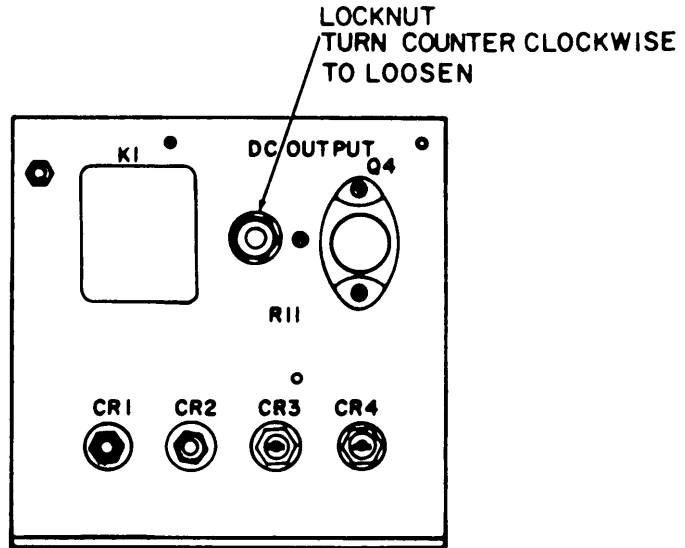


POWER SUPPLY PP-2953(*)/U
TOP COVER REMOVED

EL5DA033

- Connect multi meter AN/PSM-45 as shown for output voltage check in para 5-12.

- Loosen locknut on R11.
- Turn power ON.
- Rotate R11 in either direction until multimeter indicates 24.5 volts dc.
- Retighten locknut, being sure to keep R11 from rotating.
- Replace top cover.
- Disconnect test equipment.



REGULATOR ASSEMBLY

EL5DA034

5-15. CLEANING

The following instructions are provided to help meet serviceability requirements during organizational maintenance and should be performed whenever needed.

WARNING

Cleaning compound is flammable and its fumes are toxic. Provide adequate ventilation and do not use near flames or extreme heat.

5-16. EXTERIOR SURFACES

- Using air jet, blow dust and loose dirt from the exterior surface, holes, and recesses.
- Remove ground-in dirt or grease using lint-free cloth dampened (not wet) with Cleaning Compound (Item 1, Appendix E).
- Remove loose dirt and dust from cable assemblies, switches, and the front panel indicator lenses and control knobs, using air jet and/or soft clean cloth (Item 2, Appendix E).
- For stubborn ground-in dirt, prepare bath solution consisting of 2 ounces of mild detergent to 1 gallon of water. Scrub dirty areas until clean. Use soft bristled non-metallic brush (Item 5, Appendix E) to apply solution into holes and recesses.
- Rinse the cleaned areas with clean water and allow to dry.

5-17. BLOWER SCREEN AND FAN

Follow the procedures below for cleaning the blower screen and fan. The screen and fan should be cleaned monthly.

- Remove blower screen (refer to paragraph 5-13 for procedure).
 - Wash screen and filter in a mild detergent solution. Dry thoroughly.
 - Remove dust and dirt from fan using a soft-bristled nonmetallic brush (Item 5, Appendix E), moistened with cleaning compound (Item 1, Appendix E). Allow to dry thoroughly before proceeding.
- Apply a light coat of filter coat compound (Item 6, Appendix E) to filter.
 Remove all loose dust particles from fan area with air jet and/or clean lint-free cloth (Item 2, Appendix E).
 Install blower screen (refer to paragraph 5-13 for procedure).

5-18. INTERIOR SURFACES

Using air jet, blow dust and loose dirt from interior surface, holes and recesses. Remove ground-in dirt or grease using lint-free cloth dampened (not wet) with cleaning compound (Item 1, Appendix E). Dry surfaces immediately with clean lint-free cloth (Item 2, Appendix E).

5-19. REPAIR AND REPLACEMENT

- Replace defective indicator assemblies with one of the same type.

CAUTION

PP-2953C/U AC indicator lamp is not replaceable at organizational maintenance level. DO NOT attempt to remove this indicator assembly.

- Replace defective blower screen. Refer to paragraph 5-13 for procedure.

5-20. PAINTING AND REFINISHING

Refinishing processes should restore equipment surfaces to original appearance and as-new standards. Minor damage to finishes, such as small scratches, require touchup painting to the affected areas only.

- Touchup Procedures:
 - Remove all rust and corrosion by lightly sanding the affected areas with fine sandpaper (Item 3, Appendix E). Clean with solvent and allow to dry.
 - Brush two coats of paint on the bare metal to protect it from further corrosion.
 - Refer to the applicable cleaning and refinishing practices specified in TM 43-0139.

5-21. FINAL INSPECTION PROCEDURE

The final inspection procedures make sure that all maintenance functions contained in this technical manual have been complied with before the equipment is returned to service.

- Modification - Be sure that all MWO's listed in DA Pam 310-1 have been accomplished.
- PMCS - Insure that the PMCS in section III has been accomplished.
- Completeness - Inspect the power supply for completeness. Refer to Appendix B for a list of components and accessories.
 - Be sure all items listed in the basic issue items list are on hand.
 - Check to see that each item is correctly stock-numbered.
 - Be sure that the correct quantity is available.
- **Final Performance Check**
 - The power supply should meet all requirements of Section V, Chapter 5 before operating, packaging, or storage. If the operational check, PMCS, cannot be performed satisfactorily, contact the next category of maintenance (direct support).

5-22. PLACING IN SERVICE

- If equipment is repairable by organizational maintenance capabilities, organizational maintenance personnel will insure that the power supply is in serviceable operating condition before turning the equipment over to operating personnel. Replacement parts will be requisitioned through normal channels.

Section VI. PREPARATION FOR STORAGE AND SHIPMENT

5-23. DISASSEMBLY OF EQUIPMENT

Use the procedures below when placing PP-2953(*)/U in storage or moving it to a different location.

- Turn all switches to their OFF position.
- Disconnect all cables.
- Secure front cover in position by tightening the two captive screws.

5-24. REPACKING FOR SHIPMENT OR STORAGE

Repackage PP-2953(*)/U in accordance with the original packaging, as far as possible with the available material. If original material is unavailable, or unusable, select materials from those listed in SB 38-100.

5-25. TYPES OF STORAGE

- Short Term (administrative storage)= 1 to 45 days. Administrative storage covers storage of equipment which can be readied for mission performance within 24 hours. Administrative Storage of equipment issued to and used by Army activities will have preventive maintenance performed in accordance with the PMCS charts before storing. When removing the equipment from administrative storage the PMCS should be performed to assure operational readiness. Disassembly and repacking of equipment for shipment or limited storage are covered in paragraphs 5-23 and 5-24. The administrative storage site should provide required protection from the elements and allow access for visual inspection and exercising when applicable,
- Intermediate = 46 to 180 days.
- Long Term or Flyable Storage = No time limit.

APPENDIX A

REFERENCES

A-1. SCOPE

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

A-2. FORMS

Recommended Changes to Equipment Technical Publications DA Form 2028-2
 Equipment Inspection and Maintenance Worksheet DA Form 2404
 Report of Discrepancy SF 364
 Discrepancy in Shipment Report. SF 361
 Quality Deficiency ReportSF 368

A-3. FIELD MANUALS

First Aid Manual FM 21-11

A-4. TECHNICAL MANUALS

Painting instructions for Field Use TM 43-0139
 Hand Receipt Covering Contents of End Item (COEI), Basic Issue Items (BI), and
 Additional Authorization List (AAL) for Power Supply PP-2953/U, PP-2953A/U,
 PP-2953B/U and PP-2953C/U(NSN 6130-00-985-7899) TM 11-6130-223-12-HR
 Operator's, Organizational, Direct Support, and General Support Main-
 tenance Manual for Multimeter, Digital AN/PSM-45 TM 11-6625-3052-14
 Procedures for Destruction of Electronics Materiel to Prevent Enemy Use
 (Electronics Command) TM 750-244-2

A-5. MISCELLANEOUS PUBLICATIONS

Consolidated Index of Army Publications and Blank Forms DA Pam 310-1
 The Army Maintenance Management Systems (TAMMS) DA Pam 738-750
 Painting and Preservation Supplies Available for Field Use for Electronics
 Command Equipment SB 11-573
 Preservation, Packaging, Packing and Marking Materials, Supplies and
 Equipment Used by the Army. SB 38-100

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APPENDIX B

COMPONENTS OF END ITEM LIST

Section I. INTRODUCTION

B-1. SCOPE

This appendix lists integral components of and basic issue items for the Power Supply PP-2953(*)/U to help you inventory items required for safe and efficient operation.

B-2. GENERAL

The Components of End Item List is divided into the following sections:

a. Section II. INTEGRAL COMPONENTS OF THE END ITEM. These items, when assembled, comprise the Power Supply PP-2953(*)/U and must accompany it whenever it is transferred or turned in. The illustrations will help you identify these items.

b. Section III. BASIC ISSUE ITEMS. These are the minimum essential items required to place the Power Supply in operation, to operate it, and to perform emergency repairs. Although shipped separately packed they must accompany the Power Supply PP-2953(*)/U during operation and whenever it is transferred between accountable officers. The illustrations will assist you with hard-to-identify items. This manual is your authority to requisition replacement B11, based on TOE/MTOE authorization of the end item.

B-3. EXPLANATION OF COLUMNS

a. **Item Number.** The number in this column identifies the item called out in the illustration.

b. **National Stock Number.** Indicates the national stock number assigned to the item and which will be used for requisitioning.

c. **Description.** Indicates the Federal item name and, if required, a minimum description to identify the item. The part number indicates the primary number used by the manufacturer, which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items. Following the part number, the Federal Supply Code for Manufacturers (FSCM) is shown in parentheses.

d. Usable on Code. "USABLE ON" codes are included to help you identify which component items are used on the different models. Identification of the codes used in these lists are:

CODE	USED ON
2WG	PP-2953/U
4JD	PP-2953A/U
4JE	PP-2953B/U
CQ2	PP-2953C/U

e. Unit of Measure (U/M). This column indicates the unit of measure for each item.

f. Quantity Required (Qty Reqd). This column lists the quantity of each item required for a complete major item.

APPENDIX C

ADDITIONAL AUTHORIZATION LIST

Section I. INTRODUCTION

C-1. SCOPE

This appendix lists additional items you are authorized for the support of the Power Supply PP-2953(*)/U.

C-2. GENERAL

This list identifies items that do not have to accompany the Power Supply PP-2953(*)/U and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

C-3. EXPLANATION OF LISTING

National stock numbers, descriptions, and quantities are provided to help you identify and request the additional items you require to support this equipment. The items are listed in alphabetical sequence by item name under the type document (i.e., CTA, MTOE, TDA, or JTA) which authorizes the item(s) to you. If the item you require differs between serial numbers of the **same** model, effective serial numbers are shown in the last line of the description. If item required differs for different models of this equipment, the model is shown under the "Usable on" heading in the description column. These codes are identified as:

CODE	USED ON
2WG	PP-2953/U
4JD	PP-2953A/U
4JE	PP-2953B/U
CQ2	PP-2953C/U

Section II. ADDITIONAL AUTHORIZATION LIST

(1) ILLUS NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION (FSCM) AND PART NUMBER	(4) U/M	(5) QTY REQD
	5995-00-823-2726	Cable Assembly: Power Electrical CX-4720/VRC 10 ft Length (80058)	2WG,4JD, 4JE,CQ2 ea	1
	5995-00-823-2770	Cable Assembly: Power Electrical CX-4721 NRC 3 ft Length (81349)	2WG,4JD, 4JE,CQ2 ea	1

APPENDIX D

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

D-1. GENERAL

This appendix provides a summary of the maintenance operations for PP-2953(*)/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.

D-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, grinding, riveting, straightening, facing, remachining, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

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

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

D-3. COLUMN ENTRIES

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

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

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

d. Column 4, Maintenance Category. Column 4 specifies, by the listing of a "work time" figure in the appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number of 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.

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

D-4. TOOL AND TEST EQUIPMENT REQUIREMENTS (Sect. III)

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

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

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

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

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

D-5. REMARKS

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

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

**Section II. MAINTENANCE ALLOCATION CHART
FOR
POWER SUPPLIES PP-2953/U, PP-2953A/U, PP-2953B/U, PP-2953C/U**

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIP	(6) REMARKS
			UNIT		INTERMEDIATE		DEPOT		
			C	O	F	H	D		
00	Power Supply PP-2953()/U	Inspect	0.2						A
		Inspect		0.5				1	
		Test		0.5				2	B
		Test			1.0			2, 4, 5	
		Service	0.1						A
		Service		0.2					
		Repair	0.1						C
		Repair		0.2				1,2	D
01	Base Plate Assembly (A1)	Repair			2.0			2, 4, 5	
		Repair			1.0			2, 4, 5	
0101	Rectifier and Regulator As- sembly(A1A1)	Test			1.0			2, 4, 5	
		Repair			0.5			2, 4, 5	
010101	Circuit Board Assembly (A1A1A1)	Test			1.0			2, 4, 5	
		Replace			0.5			4	
		Repair			0.5			2,4, 5	
010102	Electronic Component As- sembly(A1A1A2)	Test			1.0			2, 4, 5	
		Replace			0.5			4	
		Repair			0.5			2, 4, 5	
		Adjust		0.5				1,2	
02	Front Cover Assembly (A2)	Replace			0.2			4	
		Repair			0.2			4	
03	Front Panel Assembly (A3)	Test			0.5			2	
		Replace			1.0			4	
		Repair			1.0			2, 4	
		Repair		0.5				1	E
04	Housing Assembly (A4)	Replace			0.2			4	
		Repair			0.5			4	
05	Top Cover Assembly (A5)	Replace			0.2			4	
		Repair			0.2			4	
06	Wiring Harness	Test			1.0			2, 4, 5	F
		Test					1.0	2, 4, 5	
		Repair			1.0			2, 4, 5	F
		Repair					1.0	2, 4, 5	

**Section III. TOOL AND TEST EQUIPMENT REQUIREMENTS
FOR
POWER SUPPLY PP-2953/U, PP-2953A/U, PP-2953B/U, PP-2953C/U**

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	O	Tool Kit, Electronic Equipment TK-101/G	5180-00-064-5174	
2	O, F, D, H	Multimeter AN/PSM-45	6625-01-139-2512	
3	D	Oscilloscope OS-261 C/U	6625-01-145-7314	
4	F, D, H	Tool Kit, Electronic Equipment TK-105/G	5180-00-610-8177	
5	F, D, H	Transistor Tester TS-1836/U	6625-00-138-7320	
6	D	Frequency Meter AN/TSM-16	6625-00-542-2666	
7	D	Digital Multimeter AN/USM-486	6625-01-145-2430	
8	D	Transformer, Variable TF-218	--	
9	D	Load Bank 2 to 10 amperes	--	

Section IV. REMARKS
POWER SUPPLY PP-2953(*)/U

REFERENCE CODE	REMARKS
A	Inspect and clean external parts.
B	Output voltage and cables tests.
C	Replacement of fuses (plain and A models) and incandescent lamps.
D	Replacement of lenses for incandescent lamps and the power cables.
E	Replacement of blower screen.
F	Repair of B model only.

APPENDIX E

EXPENDABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

E-1 . SCOPE

This appendix lists expendable supplies and materials you will need to operate and maintain the PP-2953(*)/U. These items are authorized to you by CTA 50-970, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

E-2. EXPLANATION OF COLUMNS

a. Column 1 - Item number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "Use 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
- O - Organizational Maintenance/Aviation Unit Maintenance
- F - Direct Support Maintenance/Aviation Intermediate Maintenance
- H - General Support Maintenance

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

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

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

Section II. EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
1	C	7930-00-395-9542	Cleaning Compound	QT
2	C	8305-00-267-3015	Cleaning Cloth	YD
3	O		Sandpaper#	EA
4	O		Paint, OD	QT
5	O	8020-00-245-4509	Camel's Hair Brush	EA
6	O	4130-00-860-0042	Filter Coat Compound	EA

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By Order of the Secretary of the Army:

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

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ROBERT M. JOYCE
Major General, United States Army
The Adjutant General

DISTRIBUTION:

To be distributed in accordance with DA Form 12-51, Operator's Maintenance requirements for AN/VRC-12, AN/VRC-43 thru 49; R-442/VRC and RT-246/VRC, RT-524/VRC.

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS



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

SOMETHING WRONG WITH THIS PUBLICATION?

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DATE SENT
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BE EXACT PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO
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		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 for the TRANS POWER FAULT indicator calls for a 3 db (500 watts) adjustment to light the TRANS POWER FAULT indicator.

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

REASON: To replace the cover plate.

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

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

ORATED LINE

TEAR AL

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

SIGN HERE

DA FORM 2028-2
 1 JUL 79

PREVIOUS EDITIONS ARE OBSOLETE.

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

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS



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

SOMETHING WRONG WITH PUBLICATION

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)

DATE SENT

PUBLICATION NUMBER

PUBLICATION DATE

PUBLICATION TITLE

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.

TEAR ALONG PERFORATED LINE

PRINTED NAME, GRADE OR TITLE AND TELEPHONE NUMBER

SIGN HERE

