TECHNICAL MANUAL

OPERATOR, ORGANIZATIONAL, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE MANUAL (INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST)

POWER SUPPLY
PP-4606B/G
(NSN 6130-00-504-0327)

This copy is a reprint which includes current pages from Changes 1. Title was changed as shown above by Change 1.

HEADQUARTERS, DEPARTMENT OF THE ARMY
2 APRIL 1973

CHANGE
NO. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON DC, *22 December 1981*

Operator, Organizational, Direct Support, And Genera! Support Maintenance Manual POWER SUPPLY PP-4606B/G (NSN 6130-00-504-0327)

TM 11-6130-243-14-2, 2 April 1973, is changed as follows:
1. A vertical bar appears opposite changed material.
2. Remove old pages and insert new pages as indicated in the page list below:

Remove	*Insert*
Warnings/Cautions (inside front cover)	A through C (Front of manual)
i and ii	i and ii
1-1 and 1-2	1-1 and 1-2
2-1 through 2-4	2-1 through 2-4
3-1 through 3-3	3-1 through 3-3/(3-4 Blank)
A-1	A-1
C-1 through C-13	None

By Order of the Secretary of the Army:

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

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Brigadier General, United States Army
The Adjutant General

Distribution:
To be distributed in accordance with DA Form 12-31, Operator maintenance requirements for All Fixed & Rotor Wing Aircraft.

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

WARNINGS

DANGEROUS VOLTAGES (220 vac and 440 vac) exist in this equipment. When equipment is operated with covers open or removed, DO NOT touch exposed connections or components. SERIOUS INJURY OR DEATH MAY RESULT. Reenergize the equipment before connecting or disconnecting the battery to be charged, and before performing any maintenance. Follow all precautions listed in TB 385-4.

Avoid personal injury. Power Supply PP-4606B/G weighs 325 pounds; be careful when moving. A mechanical lift is required.

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

CAUTIONS

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

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.

TECHNICAL MANUAL
No.
11-6130-243-14-2

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *2 April 1973*

OPERATOR, ORGANIZATIONAL, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE MANUAL
POWER SUPPLY PP-4606B/G
(FSN 61 30-504-0327)

LIST OF ILLUSTRATIONS

CHAPTER 1
INTRODUCTION

Section I. GENERAL

1-1. Scope

a. This manual covers installation, operation, functioning, and maintenance for Power Suppiy PP--4606B/G (fig. 1-1). It includes instructions for troubleshooting, testing, and repairing the equipment. Detailed functions of the equipment are covered in chapter 4.

NOTE

Appendices B and C are current as of 11 October 1972.

b. For procedures, forms and records, and inspection requirements during administrative storage of the equipment, refer to TM 740-90-1.

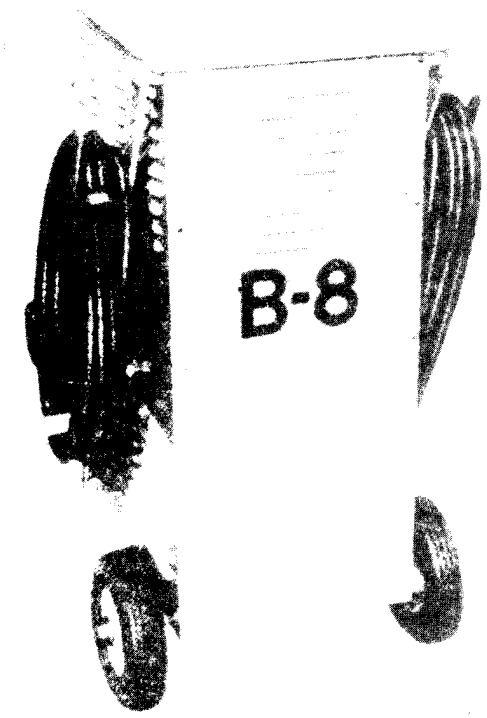


Figure 1-1. Power Supply PP-4606B G.

1-2. Index of Technical Publications

Refer to the latest issue of DA Pam 310-4 to to determine whether there are new editions, changes or additional publications pertaining to the equpment.

1-3. Maintenance Forms, Records and Reports

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

b. Report of Packaging and Handling Deficiencies. Fill out and forward SF 364 (Report of Discrepancy (ROD) as prescribed in AR 735-l1-2/DLAR 4140.55/NAVMATINST 4355.73/AFR 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/NAVSI 4610.33B/AFR 75-18/MCO 4610.19C/DLAR

1-3.1. Reporting Errors and Recommending improvements

You can help improve this manual. If you find any mistake 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-Electronics 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 power supply 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 ewquipment. 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 Arrny Communications-Electronics 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. Disassembly and repacking of equipment for shipment or limited storage are covered in paragraph 7-1 and 7-2.

Section II. DESCRIPTION AND DATA

1-4. Purpose and Use

Power supply PP-4606B/G (power supply) converts 220 or 440 volts alternating current (ac), three-phase power, to 28 volts direct current (dc) power. This power supply is used for ground support of aircraft with 28-volt dc electrical systems.

1-5. Technical Characteristics

Power input:
- Voltage . . . . . 22 or 440 volts ac.
- Frequency . . . . . 60 Hz.
- Phase . . . . . 3-phase.
- Current (full load). . . 20 amperes for 220 volt ac input power, or 10 amperes for 440-volt ac input power.

Power output:
- Voltage . . . . . between 26.5 and 31 volts dc, not less than 26.5 volts dc at full load.
- Current. . . . . 200 amperes (maximum).
- Ripple . . . . . 1.2 volt peak (maximum).
- Regulation . . . . . 9 percent.

1-6. Description

(fig. l-l)

Power Supply PP-4606B/G is a two-wheel mobile unit in a metal cabinet. All operating controls are mounted on the front panel. Louvers on the panels of the cabinet are provided for air circulation. A terminal board with jumpers is installed on top of the transformer of the power supply so that either 220- or 440-volt as input power may be utilized. The four-wire ac input cable consisting of red, white, black, and green wire (green wire is neutral) is 100 feet long. The two-wire dc output cable terminates in a molded and keyed female connector and is 20 feet long.

1-7. List of Components

Quantity	Federal stock No.	Component	Height (in.)	Width (in.)	Depth (in.)	Weight (lb.)
1	6130-504-0327	Power Supply PP-4606B/G	46½	22	26	325

CHAPTER 2
INSTALLATION AND OPERATING INSTRUCTIONS

Section I. SERVICE UPON RECEIPT OF EQUIPMENT

2-1. Unpacking (fig. 2-1)

a. Packaging Data. When packed for shipment, the power supply is placed in protective material and packed in a wooden packing case. A typical wooden packing case and its contents are shown in figure 2-1. The volume is 26 cubic feet and the total weight is 372 pounds.

b. Removing Contents (fig. 2-1)

WARNING

Avoid personal injury. Power Supply PP-4606B/G weighs 325 pounds; be careful when moving. A mechanical lift is required.

(1) Cut and remove the metal straps (4).

(2) Remove the nails that secure the sides of the wooden case (3) to the mounting base (11).

(3) Lift the wooden packing case off the base.

(4) Remove the packing material and lift the power supply from the mounting base.

(5) Stow all loose material in the wooden packing case.

(6) Using the handle and the wheels, wheel the power supply to the area where it is to be used.

2-2. Checking Unpacked Equipment

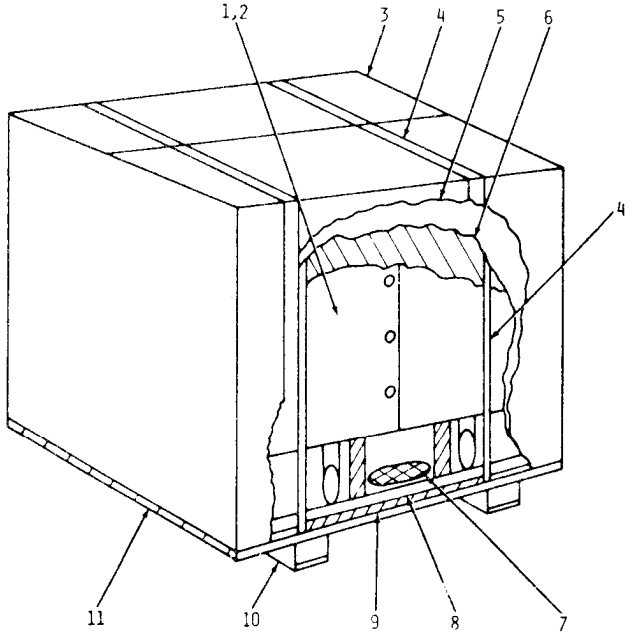
a. Inspect the equipment for damage that may have occurred during shipment. If the equipment has been damaged, fill out and forward SF 364 (para 1-3b).

b. Check to see that the equipment is complete as listed on the packing slip. If a packing slip is not available, check the equipment against the chart in paragraph 1-7. Report all discrepancies in accordance with TM 38-750. The equipment should be placed in service even though a minor assembly or part that does not affect proper functioning is missing.

c. Check to see whether the equipment has been modified. If the equipment has been modified, the MWO number will appear on the front panel, near the nomenclature plate. Check also to see whether all MWO'S current at the time the equipment is placed in use have been applied.

NOTE

Current MWO's applicable to the equipment are listed in DA Pam 310-4.



E' 6130-243-14-2-TM-2

1. Power Supply PP-4606B/G
2. Technical manual
3. Wooden packing case
4. Metal straps
5. Foil bag
6. Cushioning material
7. Desiccant
8. Wooden firring strips
9. Plywood cradle
10. Wooden skid runners
11. Wooden mounting base

Figure 2-1. Packaging diagram.

2-3. Input Power Connections

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.

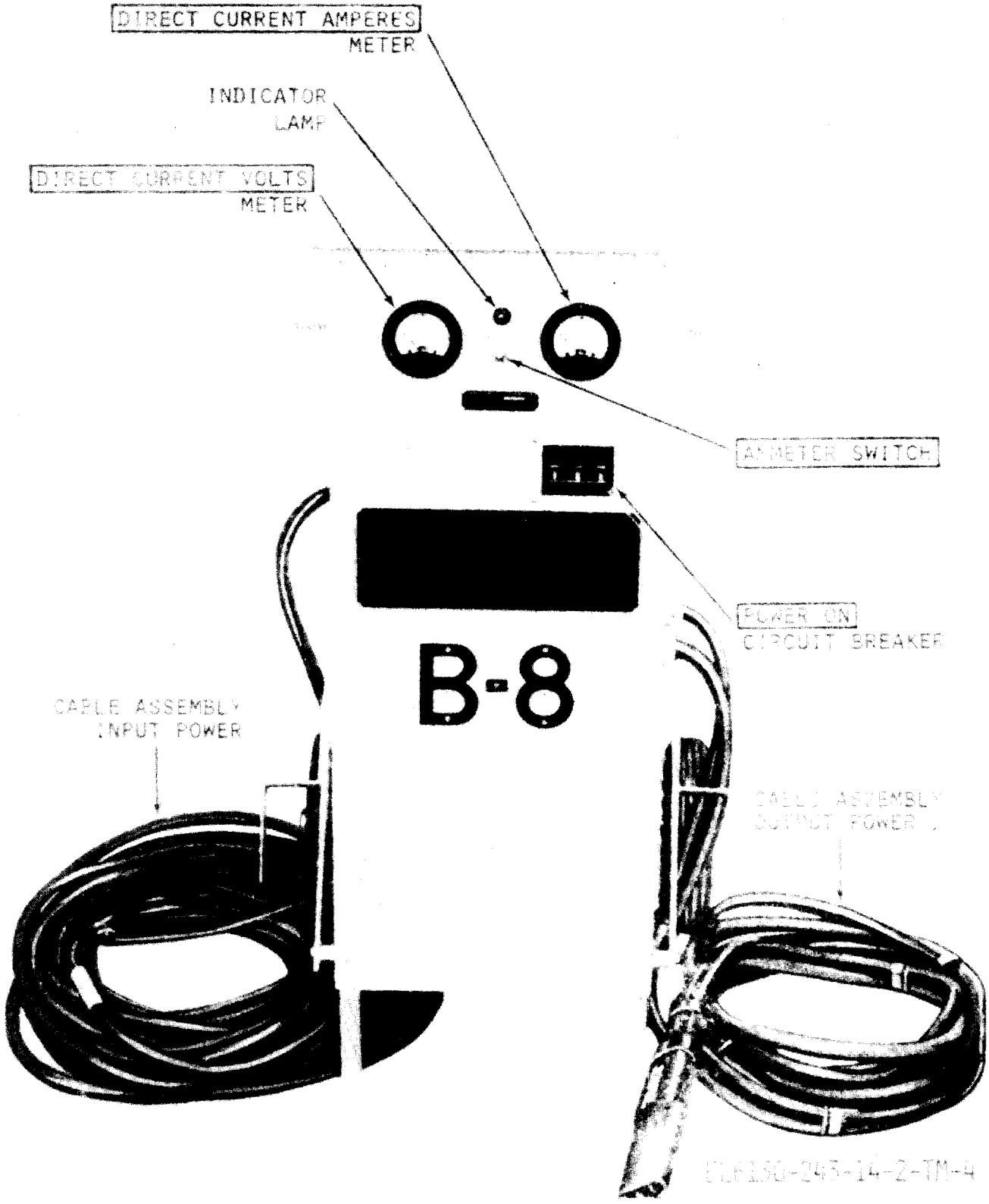


Figure 2-2. Power Supply PP-4606B/G, controls and indicators.

a. 220-Volt, Three-Phase 60 Hz Power Connections (fig. FO-1, B)

(1) Connect lead T1 to terminal 11 of phase A (TB1), and to terminal T1-C of CB1.

(2) Connect lead T2 to terminal 11 of phase B (TB2) and to terminal T2-C of CB1.

(3) Connect lead T3 to terminal 11 of phase C (TB3) and to terminal T3-C CB1.

(4) Using thc six power transformer jumpers that are supplied, connect a jumper between terminal 1 and terminal 7; and a jumper between terminal 5 and terminal 11 of phase A (TB1), phase B (TB2), and phase C (TB3).

(5) Connect terminal 1 of phase A (TB1) to terminal 1 of phase B (TB2) and terminal 1 of phase C (TB3) to terminal 1 of phase B (TB2).

b. 440-Volt, Three-Phase 60Hz Power Connections (fig. FO-1, E)

(1) Connect lead T1 to terminal 11 of phase A (TB1) and to terminal T1-B of CB1.

(2) Connect lead T2 to terminal 11 of phase B (TB2) and to terminal T2-B of CB1.

(3) Connect lead 1-3 to terminal 11 of phase C (TB3) and to terminal T3-B of CB1.

(4} Using the six power transformer jumpers that are supplied, connect a pair of jumpers between terminal 5 and terminal 7 of phase A (TB1), phase B (TB2), and phase C (TB3).

(5) Connct terminal 1 of phase A (TB1) 10 terminal 1 of phase B (TB2) and terminal 1 of phase C (TB3) to terminal 1 of phase B (TB2).

c. Input Power *Cable Connection.* Connect the four-wire input power cable to the ac power input source (green wire is ground).

d. Course Tap Adjustment. The following procedures are provided for input power facilities that vary from standard 220 or 440, three phase, 60 Hz voltages.

(1) 198-volt, three phase, 60 Hz input (fig. FO-1, A).

(a) Connect lead T1 to Terminal 10 of phase A (TB1) and to terminal T1-C of CB1.

(b) Connect lead T2 to terminal 10 of phase B (TB2) and to terminal T2-C of CB1.

(c) Connect lead T3 to terminal 10 of phase C (TB3) and to terminal T3-C of CB1.

(d) Using the six power transformer jumpers that are supplied, connect a jumper between terminal 1 and terminal 7; and a jumper between terminal 4 and terminal 10 of phase A (TB1), phase B (TB2), and phase C (TB3).

(e) Connect terminal 1 of phase A (TB1) to terminal 1 of phase B (TB2) and terminal 1 of phase C (TB3) to terminal of phase B (TB2).

(2) 242-volt, three phase, 60 Hz input (fig. FO-1,C).

(a) Connect lead T1 to terminal 12 of phase A (TB1) and to terminal T1-C of CB1.

(b) Connect lead T2 to terminal 12 of phase B (TB2) and to terminal T2-C of CB1.

(c) Connect lead T3 to terminal 12 of phase C (TB3) and to terminal T3-C of CB1.

(d) Using the six power transformer jumpers that are supplied, connect a jumper between terminal 1 and terminal 7; and a jumper between terminal 6 and terminal 12 of phase A (TB1), phase B (TB2), and phase C (TB3).

(e) Connect terminal 1 of phase A (TB1) to terminal 1 of phase B (TB2) and terminal 1 of phase C (TB3) to terminal 1 of phase B (TB2).

(3) 396-volt, three phase, 60 Hz input (fig. FO-1, D).

(a) Connect lead T1 to terminal 10 of phase A (TB1) and to terminal T1-B of CB1.

(b) Connect lead T-2 to terminal 10 of phase B (TB2) and to terminal T2-B of CB1.

(c) Connect lead T3 to terminal 10 of phase C (T133) and to terminal T3-B of CB1.

(d) Using the six power transformer leads that are supplied, connect a pair of jumpers between terminal 4 and terminal 7 of phase A (TB1), phase B (TB2), and phase C (TB3).

(c) Connect terminal 1 of phase A (TB1) to terminal 1 of phase B (TB2) and terminal 1 of phase C (TB3) to terminal 1 of phase B (TB2).

(4) 484-volt, three phase, 60 Hz input (fig. FO-1, F).

(a) Connect lead T1 to terminal 12 of phase A (TB1) and to terminal T1-B of CB1.

(b) Connect lead T2 to terminal 12 of phase B (TB2) and to terminal T2-B of CB1.

(c) Connect lead T3 to terminal 12 of phase C (TB33) and to terminal T3-B of CB1.

(d) Using the six power transformer leads that are supplied, connect a pair of jumpers between terminal 6 and terminal 7 of phase A (TB1), phase B (TB2), and phase C (TB3).

(e) Connect terminal 1 of phase A (TB1) to terminal 1 of phase B (TB2) and terminal 1 of phase C (TB3) to terminal 1 of phase B (TB2).

e. Fine Tap Adjustment To Raise Output Voltage. If the output voltage is lower than the nominal 28 volts dc and it is necesary to have a higher output voltage, change the taps on TB1, TB2, and TB3 as follows: Move *all* taps connected to the fine tap terminals to the next higher number.

Example.

To raise the output voltage when connected for 198-volt connection as shown in figure FO-1, A; change the fine tap connections as follows:

(1) Move tap connected to terminal 7 of phase A (TB1) to terminal 8 of TB1.

(2) Move tap connected to terminal 7 of phase B

(TB2) to terminal 8 of TB2.

(3) Move tap connected to terminal 7 of phase C (TB3) to terminal 8 of TB3.

(4) Move the two taps connected to terminal 1 of phase A (TB1) to terminal 2 of TB1.

(5) Move the three taps connected to terminal 1 of phase B (TB2) to terminal 2 of TB2.

(6) Move the two taps connected to terminal 1 of phase C (TB3) to terminal 2 of TB3.

NOTE

Further increase of output voltage in the above example can be obtained by again moving all taps connected to the fine tap terminals to the next higher fine tap terminal.

Section II. OPERATION

2-4. Controls and Indicators

(fig. 2-2)

The following chart lists the power supply controls and indicators and their functions:

Control or Indicator	*Function*
POWER ON circuit breaker switch.	Turns power supply on and off manually. Provides overload protection by automatically disconnecting ac input power whenever input current is excessive.
Indicator lamp	When illuminated, indicates that input power is applied to power supply.
AMMETER switch (2-position, springloaded).	When depressed, DIRECT CURRENT AMPERES meter indicates power supply output current.
DIRECT CURRENT VOLTS meter.	Indicates output voltage.
DIRECT CURRENT AMPERES meter.	Indicates output current.

2-5. Operating Procedure

(fig. 2-2)

After performing the input power connection produres given in paragraph 2–3, proceed as follows:

a. Connect the output cable to the equipment to be powered.

b. Energize the Power Supply PP-4606B/G by means of the external disconnect switch.

c. Set the POWER ON circuit breaker switch to ON and the equipment to be powered to on.

d. Depress the AMMETER switch to READ and see that the DIRECT CURRENT AMPERES meter indicates output current (200 amperes maximum).

e. Check to see that the DIRECT CURRENT VOLTS meter indicates between 26.5 and 31 volts.

2-6. Stopping Procedure

Stop the power supply as follows:

a. Set the equipment being powered to off

b. Set the POWER ON circuit breaker swich to the off (down) position.

c. Disconnect the dc output cable from the equipment being powered and rewind the dc output cable on the brackets on the front of the power supply.

WARNING

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

CHAPTER 3
OPERATOR AND ORGANIZATIONAL MAINTENANCE

3-1. Scope of Operator and Organizational Maintenance

The maintenance duties assigned to the operator and organizational repairman are listed below, together with references to the paragraphs covering the specific maintenance functions. The tools and test equipment required are listed in appendix B.

a. Operator's daily preventive maintenance checks and services (para 3-4).

b. Operator's weekly preventive maintenance checks and services (para 3-5).

c. Organizational monthly preventive maintenance checks and services (para 3-6).

d. Organizational quarterly preventive maintenance checks and services (para 3-7).

e. Cleaning (para 3-8).

f. Touchup painting (para 3-9).

g. Troubleshooting (para 3-10).

h. Replacement of indicator lamp (para 3-11).

3-2. Preventive Maintenance

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

a. Systematic Care. The procedures given in paragraphs 3-4 through 3-8 cover routine systematic care and cleaning essential to proper upkeep and operation of the equipment.

b. Preventive Maintenance Checks and Services. The preventive maintenance checks and services charts (para 3-4 through 3-7) outline functions to be performed at specific intervals. These checks and services are to maintain Army electronics 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 what the normal conditions are. The *references* column lists the paragraphs, that contain detailed repair or replacement procedures. If the defect cannot be remedied by the corrective actions listed, higher category of maintenance or repair is required. Records and reports of these checks and services must be made in accordance with the requirements set forth in TM 38-750.

3-3. Preventive Maintenance Checks and Services Periods.

Preventive maintenance checks and services of the equipment are required daily, weekly, monthly, and quarterly.

a. Paragraph 3-4 specifies the checks and services that must be accomplished daily (or at least once each week if the equipment is maintained in standby condition).

b. Paragraphs 3-5, 3-6 and 3-7 specify additional checks and services that must be performed on a weekly, monthly, and quarterly basis respectively.

3-4. Operator's Daily Preventive Maintenance Checks and Services Chart

Time required: 0.6

Sequence No	*Item to be inspected*	*Procedures*	*Work time (M/H)*
1	Completeness.	See that the equipment is complete (para 1-7).	0.1
2	Exterior surfaces	Clean the exterior surfaces, including the panel and meter glasses. Check both meter glasses and indicator lens for cracks (para 3-8).	0.1
3	Connectors.	Check the tightness of all connectors	0.1
4	Controls and indicators	While making the operating checks (items 5 and 6), observe that the mechanical action of each switch is smooth, and free of external or internal binding, and that there is no excessive looseness. Also, check the meters for sticking or bent pointers.	0.1
5	Operation	Operate the equipment. The indicator lamp should glow. The DIRECT CURRENT VOLTS and DIRECT CURRENT AMPERES meters should indicate output voltage and current, respectively.	0.1
6	POWER ON circuit breaker switch	Set to off (down) position. Note that the indicator lamp extinguishes.	0.1

3-5. Operator's Weekly Preventive Maintenance Checks and Services Chart

Time required: 0.2

Sequence No.	Item to inspected	Procedures	Work time (M/H)
1	Cables	Inspect cables for chafed, cracked, or frayed insulation.	0.1
2	Metal surfaces	Inspect exposed metal surfaces for rust and corrosion	0.1

3-6. Organizational Monthly Preventive Maintenance Checks and Services Chart

Time required: 0.5

Sequence No.	Item to be inspected	Procedures	Work time (M/H)
1	Transformer terminals.	Inspect the terminals on the power transformer. AH nuts must be tight. There should be no evidence of dirt or corrosion.	0.1
2	Resistors and capacitors	Inspect resistors and capacitors for cracks, blistering, or other detrimental defects.	0.1
3	Gaskets and insulators	Inspect gaskets, insulators, bushing and sleeves for cracks, chipping and excessive wear,	0.1
4	Terminal	Inspect the terminal board for loose terminals, cracks, and other detrimental defects.	0.1
5	Interior	Clean the interior of the chassis and cabinet	0.1

3-7. Organizational Quarterly Preventive Maintenance Checks and Services Chart

Time required: 0.2

Sequence No.	Item to be inspected	Procedures	Work time (M/H)
1	Publications.	See that all publications are complete, serviceable, and current (DA Pam 310-4).	0.1
2	Modifications	Check DA Pam 310-4 to determine whether new applicable MWO'S have been published (TM 38-750 and DA Pam 310-4). All URGENT MWO'S must be applied immediately. All NORMAL MWO'S must rescheduled.	0.1

3-8. Cleaning

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

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

b. Remove grease, fungus, and ground-in dirt from the case; use a cloth dampened (not wet) with TRICHLOROTRIFLUOROETHANE (NSN 6850-00-105-3084).

c. Remove dust or dirt from plugs and packs with a brush.

CAUTION

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

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

3-9. Touchup Painting Instructions

Remove rust and corrosion from metal surfaces by lightly sanding them with fine sandpaper. Brush two thin costs of paint on the bare metal to protect it from further corrosion. Refer to the applicable cleaning and refinishing practices specified in TB 746-10.

3-10. Organizational Troubleshooting

a. General. The troubleshooting chart *(b)* will help locate trouble in the power supply. Only those corrective measures are given which the unit repairmen can accomplish. If the corrective measure does not restore normal equipment performance, higher category of maintenance is required.

b. Troubleshooting Chart.

Sequence No.	Item to be inspected	Probable trouble	Corrective measures
1	Indicator lamp does not illuminate	Defective indicator lamp, or no power input	Check power input. If correct, higher category maintenance is required.
2	DIRECT CURRENT VOLTS meter does not indicate properly.	Connections to meter faulty or defective.	Check for loose connection in output circuit. Check connections to meter. If meter connections are not faulty, higher category maintenance is required.
3	DIRECT CURRENT AMPERES meter does not indicate properly.	Connections to meter or to AMMETER switch faulty or defective.	Check for loose connections at meter and switch. If connections are not faulty, higher category maintenance is required.
4	With POWER ON circuit breaker switch set to OFF, DIRECT CURRENT VOLTS meter does not indicate 0, and indicator lamp does not extinguish.	Defective circuit breaker switch	Higher category maintenance is required.
5	Overheating	Poor ventilation	Check vent openings for excessive dirt or foreign matter.

3-11. Replacement of Indicator Lamp

a. Turn the red indicator jewel counterclockwise and pull it out to expose the defective lamp.

b. Press in the lamp and turn it counterclockwise to unlock it.

c. Pull the defective lamp out and replace it with a new one. Push the new lamp in and twist it clockwise to lock it.

d. Secure the red indicator jewel in place by turning it clockwise.

CHAPTER 4

FUNCTIONING OF EQUIPMENT

4-1. Input Power

(fig. FO-2)

a. The power supply is designed to operate from either 220- or 440-volt, 60-Hz, 3-phase power mains. Jumpers are used to provide for correct connection of the power mains to the primary windings of input power transformer T1. Figures 4-1 and 4-2 are simplified schematic diagrams that show how the primary windings are wye-connected to the power mains, Refer to the complete schematic diagram (fig. FO-2) while studying the two simplified schematic diagrams.

b. When the power supply is arranged to operate with 220-volt input power, jumpers are connected between specific terminals as shown by the short heavy lines in figure 4-1. The primary windings of transformer T1 are thus parallel-connected into a wye configuration, When the lNPUT POWER circuit breaker switch (CB1) is at ON, input power is routed from the C terminals of the circuit breakers through the jumpers to each parallel-connected pair of primary windings in each leg of the wye.

4-2. Output Circuit

(figs. FO-2 and 4-3)

The output circuit includes the secondary windings of power transformer T1, diode rectifiers CR1 through CR6, rectifier assembly CR7, capacitors C1 and C2, load resistor R2 and filter reactor L1. Secondary windings of T1 are connected in a delta configuration as shown in the simplified schematic diagram (fig. 4-3). The alternating current (ac) output voltage from the secondary windings of T1 is converted to a pulsating direct current (dc) voltage by full-wave rectifiers CR1 through CR6. Rectifier assembly CR7 suppresses transients in the input and output lines thus protecting diode rectifiers CR1 through CR6. The dc pulses are applied to filter reactor L1, load resistor R2, and filter capacitors C1 and C2. Resistor R2 serves a

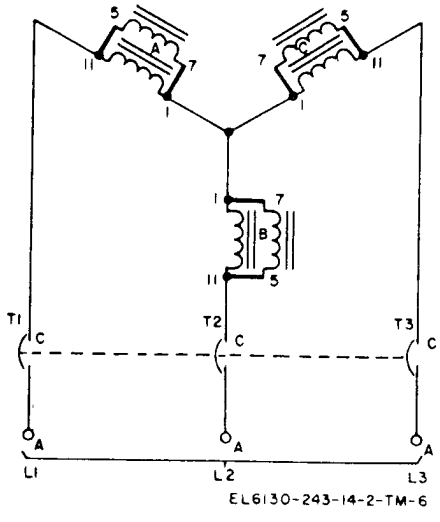


Figure 4–1. Connections to power transformer T1 primary windings for 220-volt input, simplified schematic diagram.

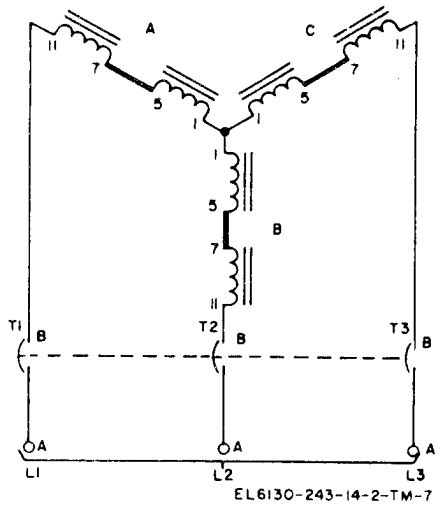


Figure 4–2. Connections to power transformer T1 primary windings for 440-volt input, simplified schematic diagram.

bleeder function to drain the charge from capacitors C1 and C2 when the equipment is inoperative. Resistor R2 is preset at the factory to approximately 5 ohms for a 30.5 volts DC output at no load with nominal input voltage applied. Field adjustment of R2 is not required.

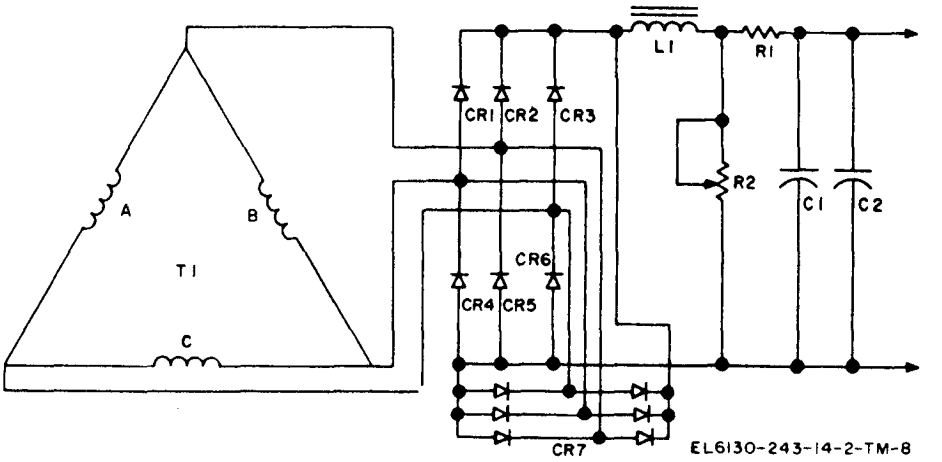


Figure 4–3. Power supply output circuit, simplified schematic diagram.

CHAPTER 5
DIRECT SUPPORT AND GENERAL SUPPORT TROUBLESHOOTING

5-1. General Instructions

Troubleshooting at the direct support and general support maintenance categories includes all the techniques outlined for organizational maintenance and any special *or* additional techniques required to isolate a defective part. Paragraph 5-4d provides the troubleshooting chart to be used by the repairman.

5-2. Organization of Troubleshooting Procedures

a. General. The first step in servicing a defective power supply is to localize the fault, which means tracing the fault to defective circuit responsible for the abnormal indication. The second step is to isolate the fault, which means locating the defective part or parts. Some defective parts, such as burned resistors and shorted transformers, can often be located by sight, smell, and hearing. Most defective parts, however, must be isolated by checking voltages and resistance.

b. Localization and Isolation. The first step in tracing trouble is to locate the circuit or part at fault by the following methods:

(1) *Visual inspection.* The purpose of visual inspection is to locate faults without testing or measuring circuits. All meter indications or other visual signs should be observed and an attempt made to localize the fault to a particular part.

(2) *Operational test.* Operational test frequently indicate the general location of trouble. In many instances, the test will help in determining the exact nature of the fault. The operator's daily preventive chart (para 3-4) contains a good operational test.

(3) *Troubleshooting chart.* The troubleshooting chart (para 5-4d) lists symptoms of common troubles and gives corrective measures (or references). Such a chart cannot include all trouble symptoms that may occur; therefore, the repairman should use this chart as a guide in analyzing symptoms that may be listed.

(4) *Resistor and capacitor color code diagrams.* Color code diagrams for resistors and capacitors (fig. FO-3) provide pertinent resistance, voltage rating, and tolerance information.

5-3. Test Equipment Required

The test equipment required for troubleshooting Power Supply PP-4606B/G is Multimeter TS-352B/U.

5-4. localizing Troubles

a. General. The troubleshooting chart (d) outlines procedures for localizing troubles and for isolating troubles within the various circuits of the power supply (figs. 5-1 through 5-4) for parts location. Refer to the schematic diagram (fig, FO-2) to identify circuit components. Depending on the nature of the operational symptoms, one or more of the localizing procedures will be necessary. When trouble has been localized to a particular circuit. Use voltage and resistance measurements to isolate the trouble to a particular part.

b. Use of Chart. When an abnormal symptom is observed in the equipment, look for a description of the symptom in the Symptom column and perform the corrective measure given in the Corrective meaaures column.

c. Conditions to Test. All checks outlined in the troubleshooting chart are to be conducted with the power supply connected to a 220- or 440-volt power source. The output cables should be connected to a load.

d. Troubleshooting Chart.

Symptom	Probable trouble	Corrective measures
1. Indicator lamp DS1 does not light when POWER ON circuit breaker switch is get to ON.	*a.* No ac power is applied to power supply.	*a.* Check for input voltage.
	b. Defective circuit breaker switch	*b.* Check circuit breaker switch; replace if defective.
	c. Open in output circuit	*c.* Check for loose connections, broken leads, or faulty components.
	d. Open transformer T1	*d.* Replace T1.
2. Low output voltage	*a.* Defective resistor R2	a. Check resistor R2, replace if defective.
	b. Defective rectifier CR1, CR2, CR3, CR4, CR6, CR6, or CR7.	*b.* Replace defective rectifier.
	c. Defective power transformer T1	*c.* Replace defective power transformer.
3. Indication on DIRECT CURRENT VOLTS meter M2 differs from voltage present at output.	Defective meter M2	Replace meter M2.
4. With S1 depressed, no indication on DIRECT CURRENT AMPERES meter M1.	*a.* Power supply not connected to load.	*a.* Check connections to load.
	b. Defective switch S1	*b.* Replace switch S1.
	c. Defective M1	*c.* Replace M1.
5. Indication on meter M1 differs from current present at output.	a. Defective shunt resistor R1	*a.* Replace shunt resistor R1.
	b. Defective meter M1	*b.* Replace meter M1.

5-5. General Parts Replacement Techniques

All power supply parts can be reached and replaced easily without special procedures. Refer to figures 5-1 through 5-4 for the location of all parts.

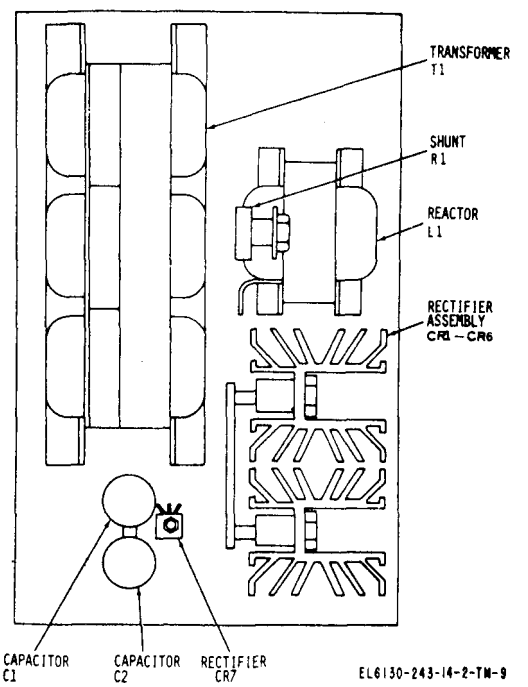
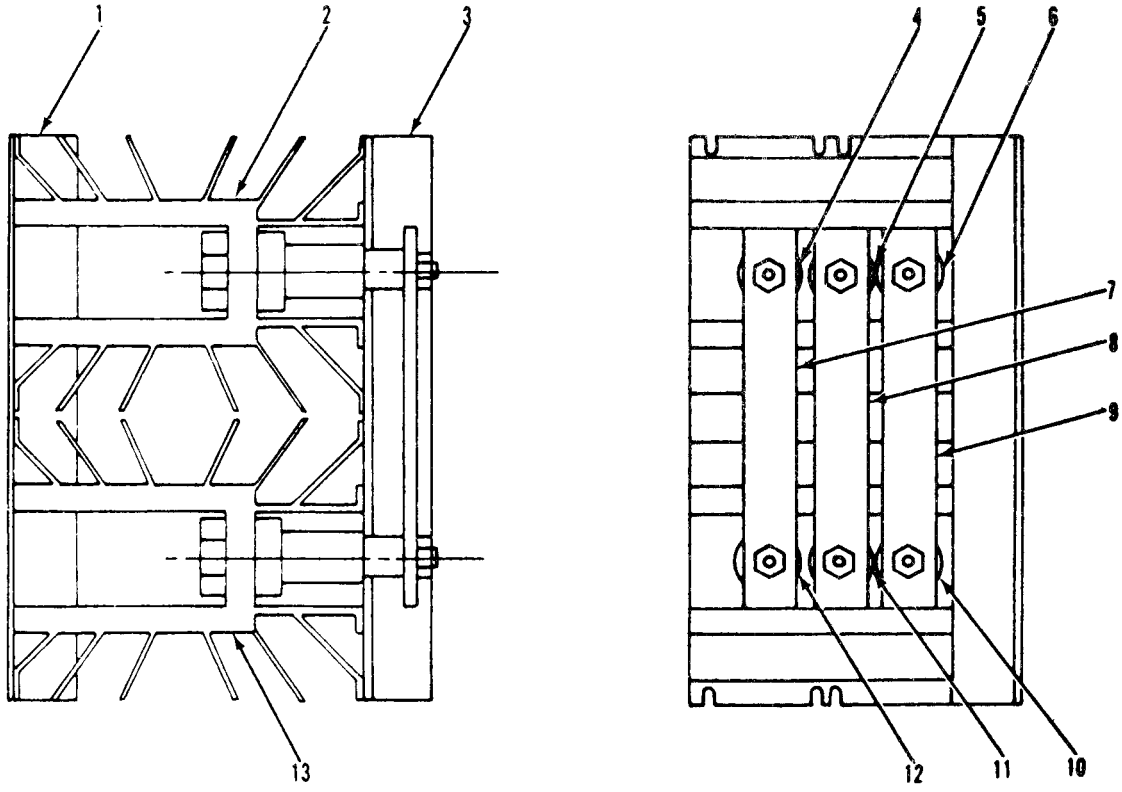
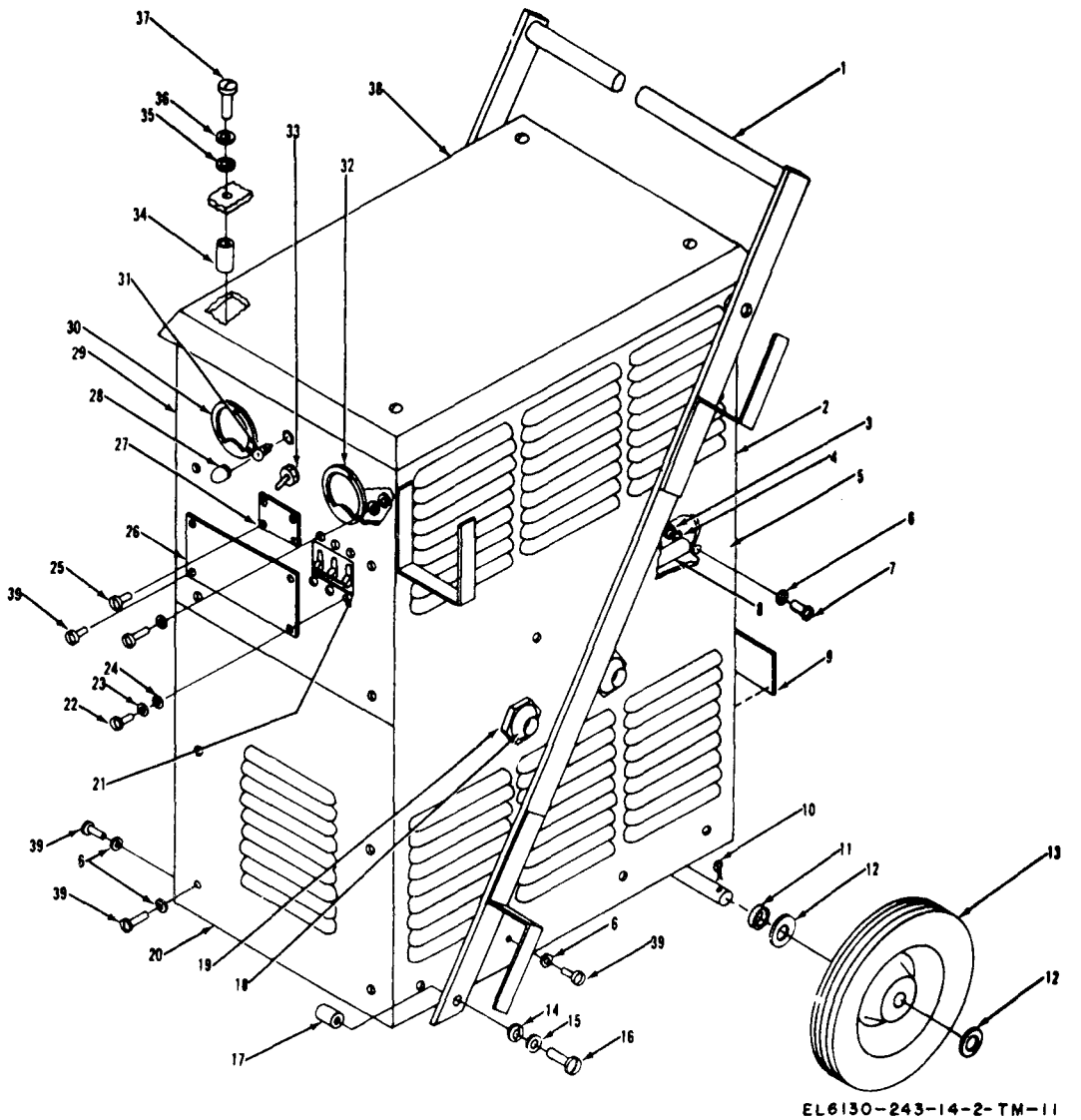


Figure 5–1. Base assembly electrical components.



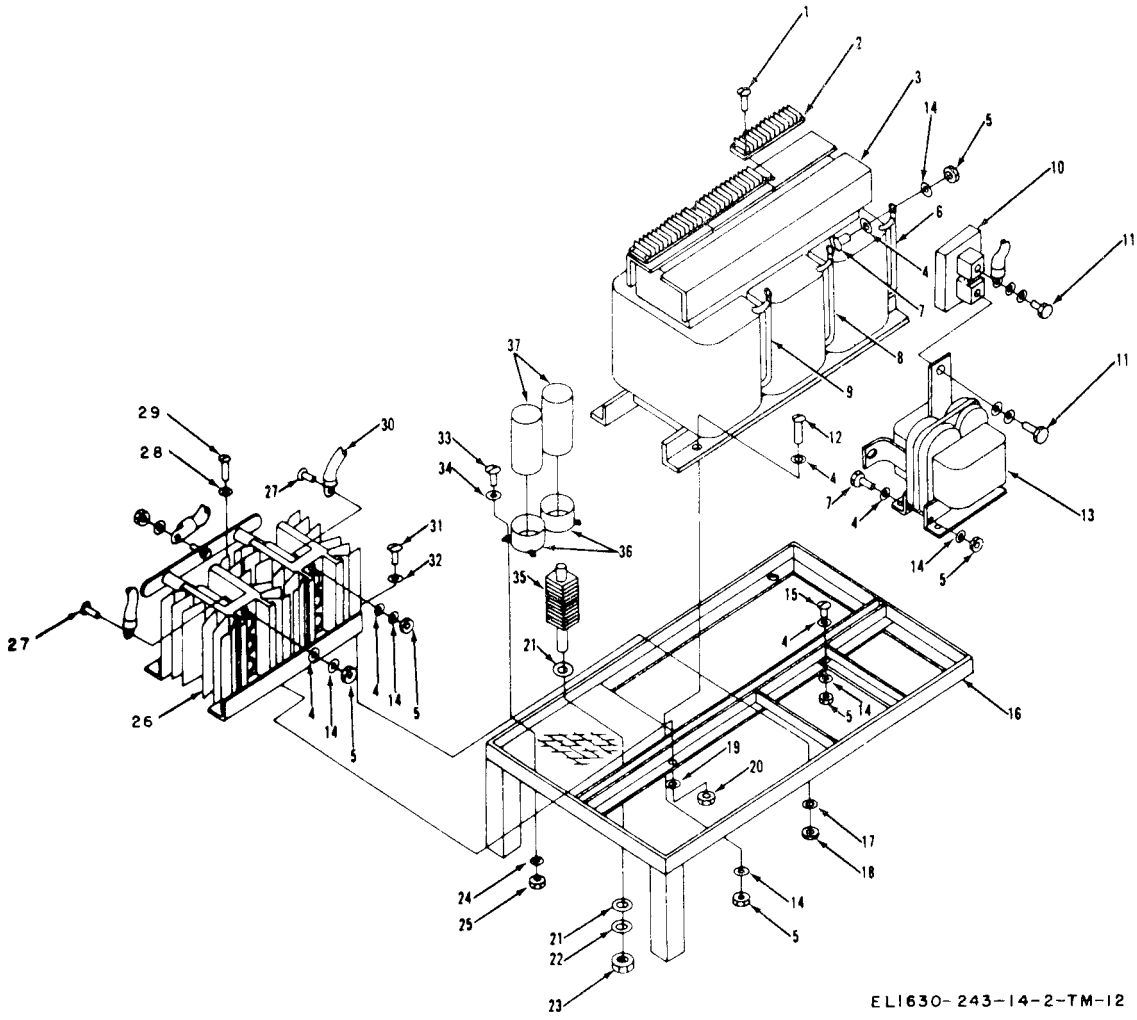
1. Angle, insulation
2. Heat sink
3. Angle, insulation
4. Diode CR4
5. Diode CR5
6. Diode CR6
7. Bus bar
8. Bus bar
9. Bus bar
10. Diode CR3
11. Diode CR2
12. Diode CR1
13. Heat sink

Figure 5-2. Rectifier assembly.



1. Handle assembly
2. Panel, upper rear
3. Nut, plain hexagon
4. Washer, lock
5. Panel, right side
6. Washer, flat
7. Screw, machine
8. Resistor, adjustable (R2)
9. Plate, instruction
10. Pin, cotter
11. Spacer, sleeve
12. Washer, flat
13. Wheel assembly
14. Washer, lock
15. Washer, flat
16. Screw, cap, hexagon head
17. Spacer, sleeve
18. Bushing, electrical conductor
19. Locknut, electrical conduit
20. Panel, bottom
21. Circuit breaker (CB1)
22. Screw, machine
23. Washer, flat
24. Washer, lock
25. Screw, tapping, thread cutting
26. Plate, instruction
27. Plate, identification
28. Lamp, incandescent (DS1)
29. Panel, front, top
30. Voltmeter (M2)
31. Light indicator
32. Ammeter (M1)
33. Switch, toggle (S1)
34. Spacer, sleeve
35. Washer, lock
36. Washer, flat
37. Screw, machine
38. Panel, top
39. Screw, machine

Figure 5–3. Housing assembly, exploded view.



1. Screw, machine
2. Terminal board
3. Transformer, power, step down
4. Washer, flat
5. Nut, plain, hexagon
6. Lead, electrical
7. Screw, machine
8. Lead, electrical
9. Lead, electrical
10. Shunt, instrument (R1)
11. Screw, machine
12. Screw, machine
13. Reactor (L1)
14. Washer, lock
15. Screw, machine
16. Base
17. Washer, lock
18. Nut, plain, hexagon
19. Washer, lock
20. Nut, plain, hexagon
21. Washer, flat
22. Washer, lock
23. Nut, plain, hexagon
24. Washer, lock
25. Nut, plain, hexagon
26. Rectifier assembly (CR1–CR6)
27. Screw, machine
28. Washer, flat
29. Screw, machine
30. Lead, electrical
31. Screw, machine
32. Washer, flat
33. Screw, machine
34. Washer, flat
35. Rectifier, semiconductor device (CR7)
36. Clamp, capacitor
37. Capacitor, fixed, electrolytic (C1 and C2)

Figure 5–4. Base assembly, exploded view.

CHAPTER 6

GENERAL SUPPORT TESTING PROCEDURES

6-1. General Instructions

a. Testing procedures are prepared for use by Signal Field Maintenance Shops and Signal Service Organizations responsible for general support maintenance of electronics equipment to determine the acceptability of repaired equipment. These procedures set forth specific requirements that repaired equipment *must* meet before it is returned to the using organization. These procedures may also be used as a guide for testing equipment that has been repaired at direct support, if the proper tools and test equipments are available. A usmmary of the performance standards is given in paragraph 6-7.

b. Comply with the instructions preceding each chart before proceeding to the chart. Perform each step in sequence. Do not vary the sequence. For each step, perform all the actions required in the *Control settings* column; then perform each specific test procedure and verify it against its performance standard.

6-2. Test Equipment, Tools, und Materials

All test equipment, tools, and materials required to perform the testing procedures given in this chapter are listed in *a, b,* and *c* below.

a. Test Equipment.

Nomenclature	*Federal stock No.*	*Technical manual*
Ammeter ME-65/U.	6625-237-9312	
Multimeter TS-352B/U.	6625-242-5023	TM 11-6625-366-15
Low Voltage Circuit Tester TV-100.	4910–092-9136	None
Voltmeter, Meter ME-30(*)/U.*	6626-669-0742	TM 11-6625–320-12
Ohmmeter ZM-21A/U.	6625-246-6880	TM 11-2050

* Indicates Volmeter, Meter, ME-30A/U or Voltmeter, Electronic, ME-30B/U, ME-30C/U, or ME-30E/U.

b. Tools. All the tools required are included in Tool Kits, Electronic Equipment TK-100/G and TK-105/G.

c. Materials.

Nomenclature	*Federal stock No.*
Resistance element, 0.41-ohm, 3,400-watt (3 required).	5905-259-5909
Wire, electrical stranded; #0 AWG	6145-822-8431
Mating connector (dc output)	5935--236-4640

6-3. Physical Tests and Inspections

a. Test Equipment and Materials. None required.

b. Test Connections and Conditions. No connections are necessary. Remove lower front and upper and lower rear panels.

c. Procedure.

Step No.	*Test equipment*	*Control settings* *Equipment under test*	*Test procedures*	*Performance standard*
1	None	Control may be in any position	*a.* Inspect case and chassis for damage, missing parts, and condition of paint. **NOTE** Touchup painting is recommended instead of refinishing whenever practical: screwheads, binding posts, receptacles, and other plated parts will not be painted or polished with abrasives.	*a.* No damage evident or parts missing. External surfaces intended to be painted will not show bare metal. Panel lettering will be legible.
			b. Inspect control and mechanical assemblies for loose or missing screws, bolts, and nuts.	*b.* Screws, bolts, and nuts will be tight. None missing.
			c. Inspect meters for loose, damaged, or missing parts.	*c.* No loose, damaged, or missing parts.
2	None	Control may be in any position	Operate POWER ON circuit breaker switch.	Circuit breaker switch will operate properly.

6-4. Power Output, Regulation, and Ripple Tests at 220-Volt Input

a. Test Equipment and Materials.

(1) Voltmeter, Meter ME-30(*)/U.

(2) Ammeter ME-65/U.

(3) Multimeter TS-352B/U.

(4) Low Voltage Circuit Tester TV-100.

(5) Resistance element, 0.41-ohm, 3,400-watt; 3 required.

(6) Power cable (as fabricated).

(7) Mating connector (FSN 5935–236-46-40).

b. Test Connection and Condition. Connect the equipment as shown in figure 6-1. (This test is written for operation of the power supply at 220 volts ac.) *Do not* connect the load and the TV-100 to the power supply until instructed to do so in the procedure given in *c* below.

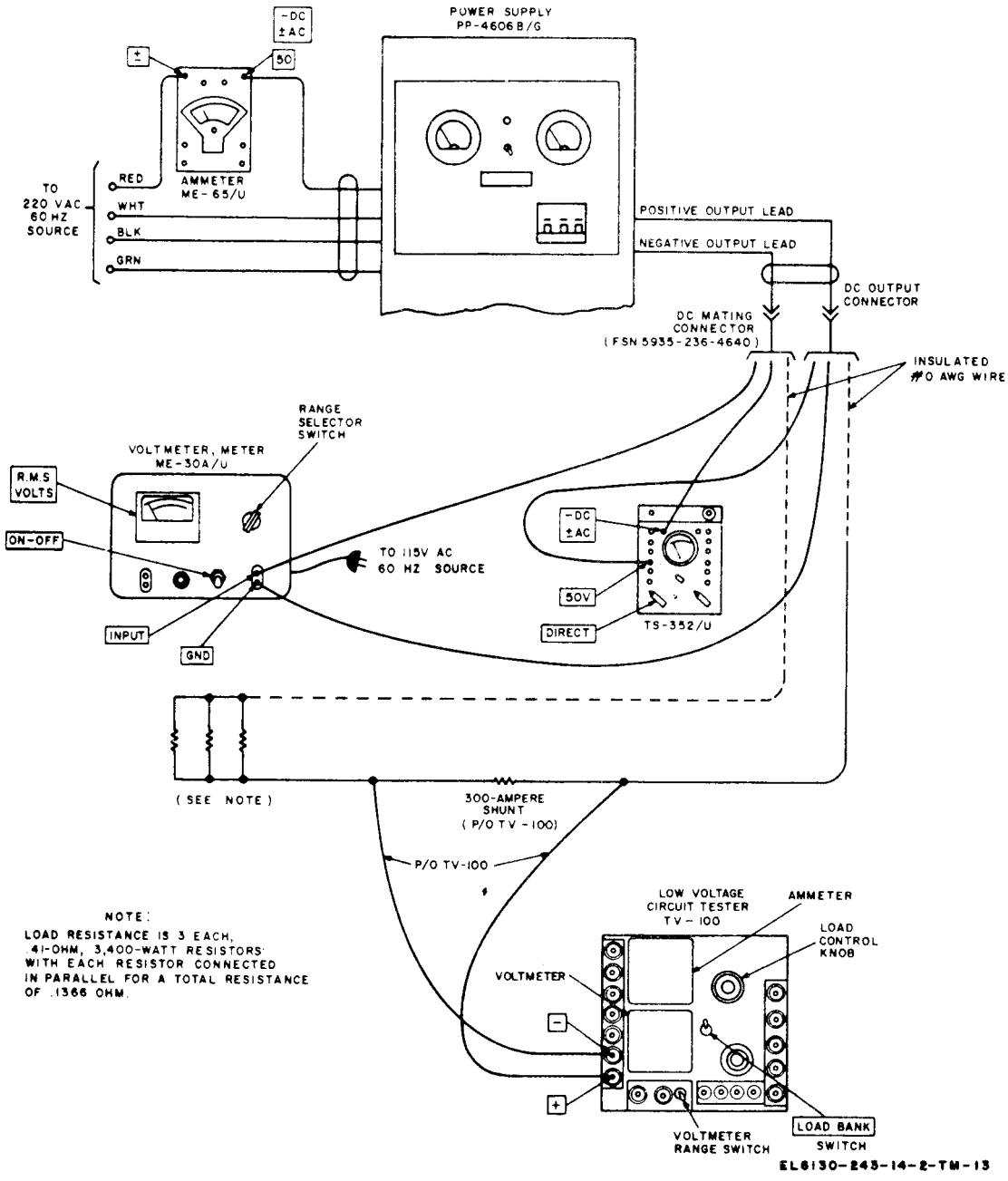


Figure 6–1. Connection diagram for power output, regulation, and ripple test at 220-volt input.

c. Procedure.

Step No.	Test equipment	Control settings: Equipment under test	Test procedures	Performance standard
1	*ME–65/U* Ammeter range: 20 *TS–352B/U* Function: DC VOLTS *ME–30( )/U* ON-OFF switch: ON Range selector switch: 3	INPUT POWER circuit breaker switch: OFF	*a.* Connect PP–4606B/G for 220-volt operation.	*a.* None.
			b. Connect the PP–4606B/G to a 220-volt, 60-cps, 3-phase ac source.	*b.* None.
			NOTE For this step, do not connect the load to the positive and negative output loads.	
			c. Set the PP–4606B/G INPUT POWER circuit breaker switch to ON. Observe the indication on the 0 to 50 scale of the TS–352–B/U.	*c.* Reading is between 26.5 and 31 volts.
			d. Observe PP–4606B/G voltage meter.	*d.* Reading is within ±3 percent of reading obtained in *c* above.
			e. Set PP–4606B/G INPUT POWER circuit breaker switch to off.	*e.* None.
			f. Connect load (three 0.41-ohm, 3400-watt resistors connected in parallel for a total resistance of 0.1366 ohm). Connect TV-100 to measure output current. Set PP–4606B/G INPUT POWER circuit breaker switch to ON. Observe indication on the TS–352B/U.	*f.* Reading is within 10 percent of reading obtained in *c* above.
			g. Observe indication on the TV-100 ammeter.	*g.* Reading is 200 amperes ±20.
			h. Depress PP–4606B/G PUSH TO INDICATE switch and observe indication on CURRENT meter.	*h.* Reading is within ±5 percent of reading obtained in *g* above.
			i. Observe the indication on the 0- to 3-volt scale of the ME–30(*)/U.	*i.* Reading is less than 1.3 volts.
			j. Observe the indication on the ME–65/U.	*j.* Reading is less than 18 amperes.
			k. Set PP–4606B/G INPUT POWER circuit breaker switch to off position and disconnect equipment.	*k.* None.

6-5. Insulation Resistance Test

a. Test Equipment. The only test equipment required is Ohmmeter ZM-21A/U.

b. Test Connection and Conditions. This test is performed with the PP-4606B/G disconnected from the ac power source, and is used to check the insulation resistance of the primary windings of power transformer T1, The test is written for the PP-4606B/G connected for 220-volt ac operation.

c. Procedure.

(1) Connect the ZM-21A/U ground lead to the PP-4606B/G frame.

(2) Connect the ZM-21A/U line lead to any terminal of the primary windings of T1.

(3) Operate the ZM-21A/U and observe the indication on the ZM-21A/U meter. The PP-4606B/G meets the performance standard if the ZM-21A/U meter reading at T1 is greater than 10 megohms.

(4) Disconnect the ZM-21A/U from the PP-4606B/G.

6-6. Output Power Test at 440-Volt Input

a. Materials.

(1) Resistance element, 0.41-ohm, 3,400-watt; 3 each.

(2) Power cable (as fabricated).

(3) Mating connector (FSN 5935-236-46-40).

b. Test Connections and Conditions. Connect the equipment as shown in figure 6-2. (This test is written for operation of the power supply at 440-volt ac.) *Do not* connect the load to the power supply until instructed to do so in the procedure given in *c* below.

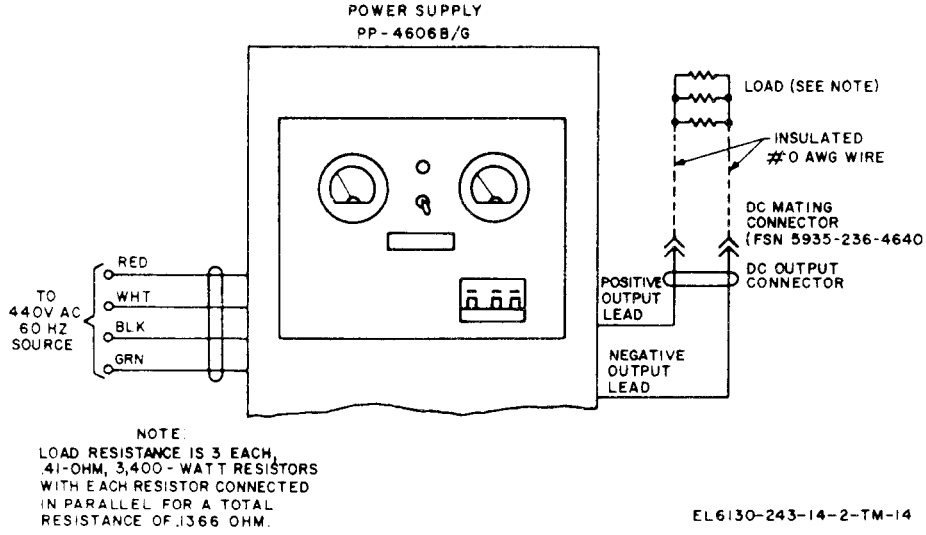


Figure 6-2. Connection diagram for output power test at 440-volt input.

c. Procedure.

Step No.	*Test equipment*	*Control settings* *Equipment under test*	*Test procedures*	*Performance standard*
1	None	INPUT POWER circuit breaker switch: OFF.	*a.* Connect PP–4606B/G for 440-volt operation.	*a.* None.
			b. Connect PP–4606B/G to a 440-volt, 3-phase, ac source. **NOTE** For this step, do not connect the load to the positive and negative output leads.	*b.* None.
			c. Set the PP–4606B/G INPUT POWER circuit breaker switch to ON. Observe the indication on the VOLTAGE meter.	*c.* Reading is between 26.5 and 31 volts.
			d. Connect the load (three 0.41-ohm, 3,400-watt resistors connect in parallel for a total resistance of 0.1366 ohm). Observe the indication on the VOLTAGE meter.	*d.* Reading is not less than 25 volts.
			e. Depress PP–4606B/G PUSH to INDICATE switch and observe indication on CURRENT meter.	*e.* Reading is 200 amperes ±20.
			f. Set PP–4606B/G INPUT POWER circuit breaker switch to off position and disconnect equipment.	*f.* None.

6-7. Test Data Summary

a. Input.

(1) Voltage . . . . . 220 or 440 volts.

(2) Frequency . . . . . 60 Hz.

(3) Phase . . . . . .Three.

(4) Current (one leg at full load) 18 amperes maximum for 220-volt input.

b. Output.

(1) Voltage - - - - - Between 26.5 and 31 volts at no load. Not less than 26 volts at full load.

(2) Current (maximum) 200 amperes ± 20.

(8) Ripple voltage . . . . . 1.2 volts maximum.

(4) Regulation . . . . . 9 percent (maximum),

c. Formulas Used.

$$\% \text{ Regulation} = \frac{E_{NL} - E_L}{E_L} \times 100$$

$$\% \text{ Ripple} = \frac{E_{RMS}}{E_{DC}}$$

Where:

E_{NL} is dc output voltage measured under no-load conditions.

E_L is dc output voltage measured under full-load conditions.

E_{RMS} is the measured ripple voltage.

E_{DC} is the measured dc output voltage.

CHAPTER 7

SHIPMENT, LIMITED STORAGE, AND DEMOLITION TO PREVENT ENEMY USE

Section I. SHIPMENT AND LIMITED STORAGE

7-1. Disassembly and Repacking of Equipment

The information concerning the original packaging (para 2-1) is to be used in repacking.

a. Main Unit. Cushion the main unit on all sides with fillers and pads made up of corrugated, single-face, flexible paper. Secure the cushioning with gummed paper tape. Wrap the cushioned unit with corrugated, single-face, flexible paper and secure the wrap with gummed paper tape.

b. Technical Manual. Wrap the technical manual in waterproof paper and seal the package with pressure-sensitive tape. Fasten the package containing the technical manual to the power supply with pressure-sensitive tape.

7-2. Repackaging

Repackaging of equipment for limited storage normally will be performed at a packaging facility or by a repacking team. Should emergency packaging be required, select the materials from those listed in SB 38-100, used by the Army. Package the equipment in accordance with the original packaging, in so far as possible, with available materials.

Setion II. DEMOLITION TO PREVENT ENEMY USE

7-3. Authority for Demolition

Demolition of the equipment will be accomplished only upon the order of the commander. Use the destruction procedures outlined in paragraph 7-4 to prevent further use of the equipment.

7-4. Methods of Destruction

The tactical situation and time available will determine the method to be used when destruction of equipment is ordered. In most cases, it is preferable to demolish completely some portions of the equipment rather than partially destroy all equipment components.

a. Smash. Smash the cabinet, meters, and controls. Smash the internal components.

b. Cut. Cut the wiring of the power supply.

c. Burn. Burn the technical manual first. Burn as much of the equipment as is flammable.

d. Dispose. Bury or scatter the destroyed parts.

APPENDIX A
REFERENCES

DA Pam 310	Index of Technical Publications.
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 Shellers.
TM 38-750	The Army Maintenance System (TAMMS)
TM 11-2050	Test Set I-48-B and Ohmmeter ZM-21A/U.
TM 11-5043-12	Operator's and Organizational Maintenance Manual for Analyzers ZM-3/U and Z-3A/U.
TM11-6625-203-12	Operator's and Organizational Maintenance Manual: Multimeter AN/URM-105 and AN/URM-105C (Including Multimeter ME-77/U and ME-77C/U).
TM 11-6625-320-12	Operator's and Organizational Maintenance Manual: Voltimeter, Meter, ME-30A/U and Voltmeters, Electronic ME-30B/U, ME-30C/U, and ME-30E/U.
TM11-6625-366-15	Organizational, Direct Support, General Support, and Depot Maintenance Manual: Multimeter TS-352B/U (NSN 6625-00-553-0142).
TM 750-244-2	Procedures for Destruction of Electronics Materiel to Prevent Enemy Use (Electronics Command).

APPENDIX B

MAINTENANCE ALLOCATION CHART

Section I. INTRODUCTION

B-1. General

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

B-2. Maintenance Functions

Maintenance functions will be limited to and defined as follows:

a. Adjust. Maintain within prescribed limits by bringing into proper or exact position, or by setting the operating characteristics to the specified parameters.

b. Align. To adjust specified variable elements of an itern to bring about optimum or desired performance.

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

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

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

f. Overhaul. That maintenance effort (service/action) necessary to restore an item to be completely serviceable/operational condition as prescribed by maintenance standards in pertinent 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.

g. 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 equipment/components.

h. 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 assembly, end item or system.

i. Replace. The act of substituting a serviceable like-type part, subassembly, module (component or assembly) in a manner to allow the proper functioning of an equipment/system.

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

k. 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.

l. Symbols. The uppercase letter placed in the appropriate column indicates the lowest level at

which that particular maintenance function is to be performed.

B-3. Explanation of Format

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, Functional Group. Column 2 lists the noun names of components, assemblies, subassemblies and modules on which maintenance is authorized.

c. Column 9, Maintenance Functions. Column 3 lists the maintenance category at which performance of the specific maintenance function is authorized. Authorization to perform a function at any category also includes authorization to perform that function at higher categories. The codes used represent the various maintenance categories are as follows:

Code	*Maintenance Category*
C	Operator/crew
O	Organizational maintenance
F	Direct support maintenance
H	General support maintenance
D	Depot maintenance

d. Column 4, Tools and Test Equipment. Column 4 specifies, by code, those tools and test equipment required to perform the designated function. The numbers appearing in this column refer to specific tools and test equipment which are identified in table I.

e. Work Measurement Time. Active repair time is the average aggregate time required to restore an item (subassembly, assembly, component, module, end item or system) to a serviceable 'condition under typical field operating conditions. This time includes preparation time, fault isolation/diagnostic time, and QA/QC time in addition to the time required to perform specific maintenance functions identified for the tasks authorized in the maintenance allocation chart, This time is expressed in man-hours and carried to one decimal place "(tenths of hours)".

B-4. Explanation of Format of Table I, Tool and Test Equipment Requirements

The Column in Table I, Tool and Test Equipment Requirements are as follows:

a. Tools and Equipment. The numbers in this column coincide with the numbers used in the tools and equipment column of the applicable tool for the maintenance function.

b. Maintenance Category. The codes in this column indicate the maintenance category normally allocated the facility.

c. Nomenclature. This column lists tools, test and maintenance equipment required to perform the maintenance functions.

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

e. Tool Number. Not used.

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	FUNCTIONAL GROUP	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	POWER SUPPLY PP-4606B/G	C 0.2		C 0.2										Exterior only
		O 0.2											6	
									O 0.3				6	Lamps, power cables and connectors
			O 0.2										3	Output voltage and circuit continuity
			H 0.7										2,4,8,9	All tests except efficiency and transformer winding dielectric
										H 2.0				All repairs
			D 0.8										1,2,4,5,9	All tests
											D 5.0		7	
									F 0.3				7	
										F 2.0			4,5,7,9	

TABLE I . TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOL AND TEST EQUIPMENT REQUIREMENTS				
TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY	NOMENCLATURE	FEDERAL STOCK NUMBER	TOOL NUMBER
		POWER SUPPLY PP-4606B/G		
1	D	AMMETER AN/USM-69	Non-Standard	
2	H,D	AMMETER ME-65( )/U	6625-752-8817	
3	0	MULTIMETER AN/URM-105	6625-581-2036	
4	F,H,D	MULTIMETER TS-352B/U	6625-242-5023	
5	F,H,D	OHMMETER ZM-21( )/U	6625-581-2466	
6	O	TOOLKIT, ELECTRONIC EQUIPMENT TK-101/G	5180-064-5178	
7	F,H,D	TOOLKIT, ELECTRONIC EQUIPMENT TK-105/G	5180-610-8177	
8	H,D	VOLTAGE TEST SE? TV-100	4910-092-9136	
9	F,H,D	VOLTMETER, ME-30( )/U	6625-669-0742	

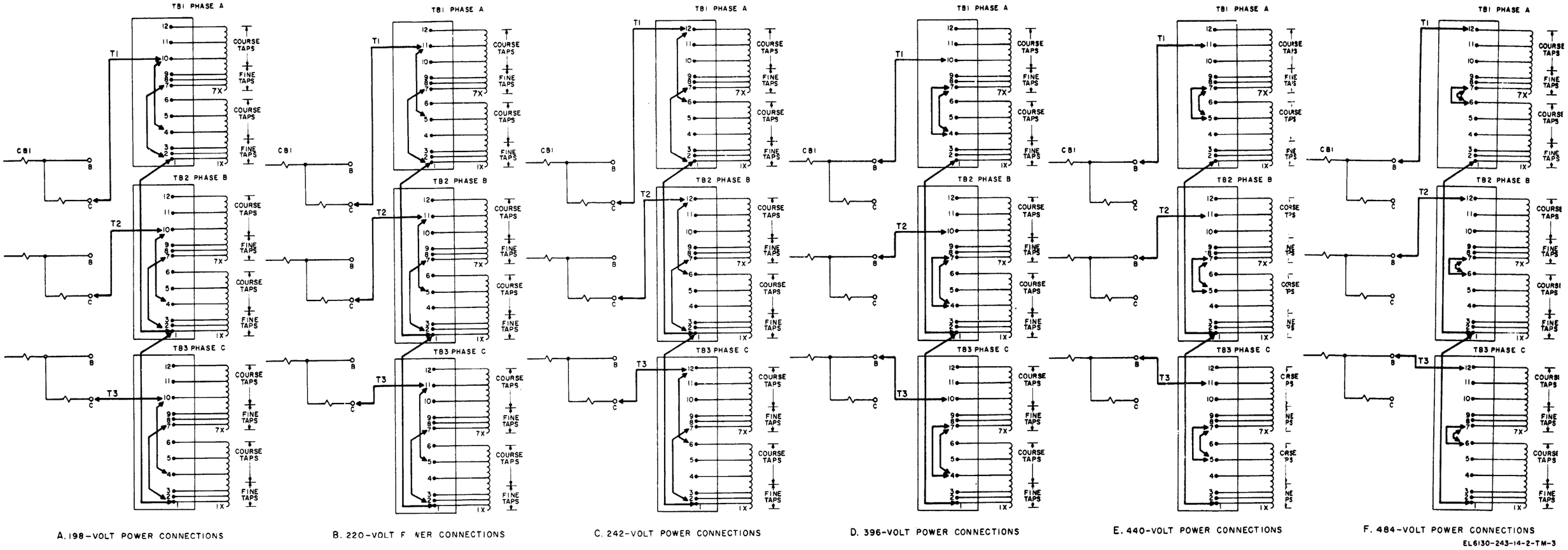


Figure FO-1. Terminal board connections.

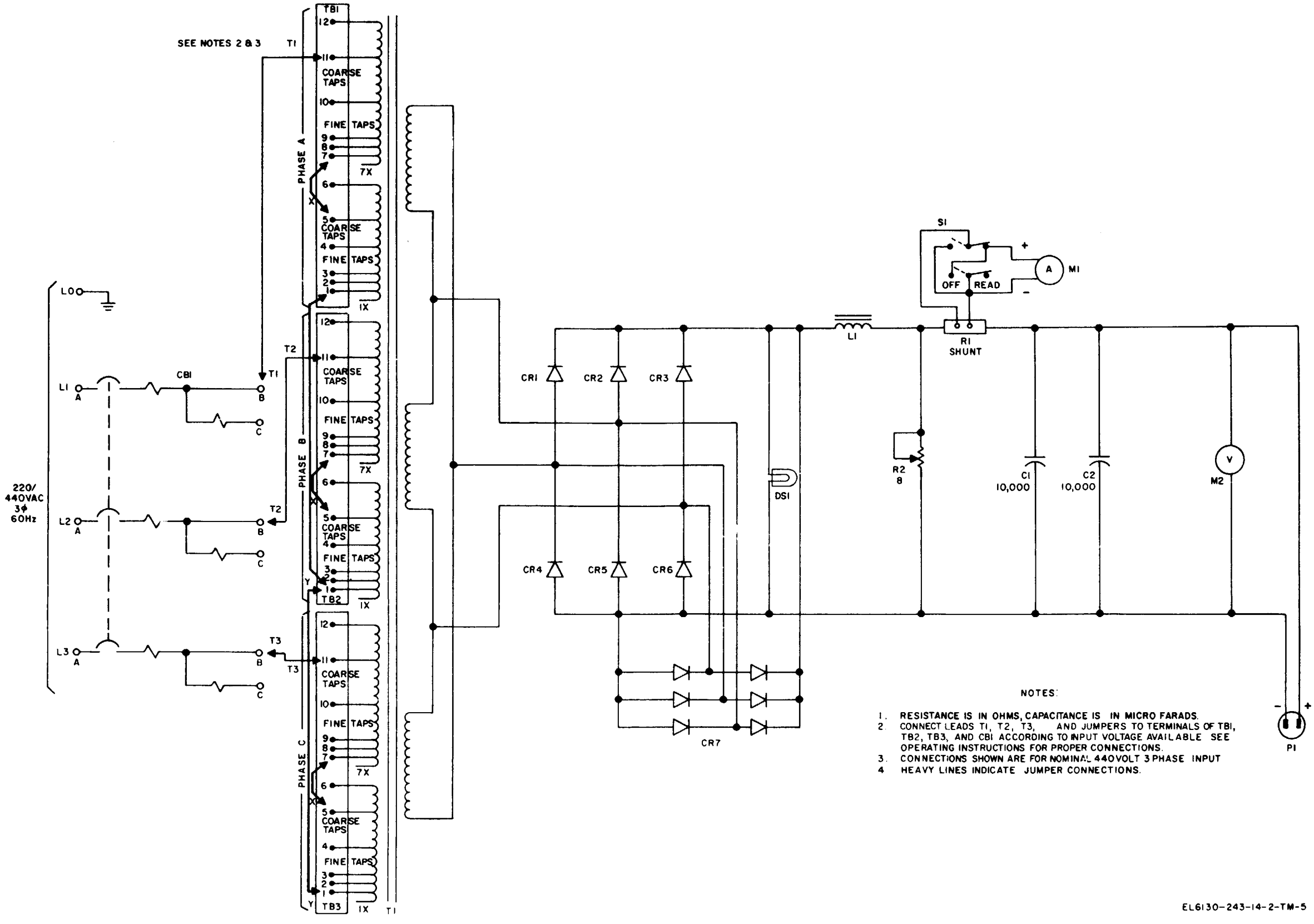
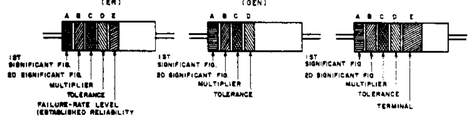


Figure FO-2. Power Supply PP-4606B/G, schematic diagram.



COLOR CODE MARKING FOR COMPOSITION TYPE RESISTORS.

COLOR-CODE MARKING FOR FILM-TYPE RESISTORS.

TABLE I
COLOR CODE FOR COMPOSITION TYPE AND FILM TYPE RESISTORS.

BAND A		BAND B	BAND C		BAND D	BAND E		
COLOR	FIRST SIGNIFICANT FIGURE	SECOND SIGNIFICANT FIGURE	COLOR	MULTIPLIER	COLOR	RESISTANCE TOLERANCE (PERCENT)	COLOR	FAILURE RATE LEVEL	TERM.
BLACK	0	BLACK	BLACK	1			BROWN	M=1.0	
BROWN	1	BROWN	BROWN	10			RED	P=0.1	
RED	2	RED	RED	100			ORANGE	R=0.0	
ORANGE	3	ORANGE	ORANGE	1,000			YELLOW	S=0.00	
YELLOW	4	YELLOW	YELLOW	10,000	SILVER	±10 (COMP. TYPE ONLY)	WHITE		SOLDERABLE
GREEN	5	GREEN	GREEN	100,000	GOLD	±5			
BLUE	6	BLUE	BLUE	1,000,000	RED	±2 (NOT APPLICABLE TO ESTABLISHED RELIABILITY)			
PURPLE (VIOLET)	7	PURPLE (VIOLET)							
GRAY	8	GRAY	SILVER	÷0.01					
WHITE	9	WHITE	GOLD	0.1					

BAND A — THE FIRST SIGNIFICANT FIGURE OF THE RESISTANCE VALUE (BANDS A THRU D SHALL BE OF EQUAL WIDTH.)

BAND B — THE SECOND SIGNIFICANT FIGURE OF THE RESISTANCE VALUE.

BAND C — THE MULTIPLIER (THE MULTIPLIER IS THE FACTOR BY WHICH THE TWO SIGNIFICANT FIGURES ARE MULTIPLIED TO YIELD THE NOMINAL RESISTANCE VALUE.)

BAND D — THE RESISTANCE TOLERANCE.

BAND E — WHEN USED ON COMPOSITION RESISTORS, BAND E INDICATES ESTABLISHED RELIABILITY FAILURE-RATE LEVEL (PERCENT FAILURE PER 1,000 HOURS). ON FILM RESISTORS, THIS BAND SHALL BE APPROXIMATELY 1-1/2 TIMES THE WIDTH OF OTHER BANDS, AND INDICATES TYPE OF TERMINAL.

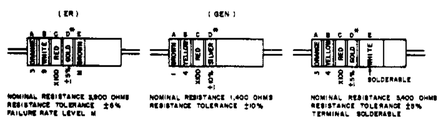
RESISTANCES IDENTIFIED BY NUMBERS AND LETTERS (THESE ARE NOT COLOR CODED.)

SOME RESISTORS ARE IDENTIFIED BY THREE OR FOUR DIGIT ALPHA NUMERIC DESIGNATORS. THE LETTER R IS USED IN PLACE OF A DECIMAL POINT WHEN FRACTIONAL VALUES OF AN OHM ARE EXPRESSED. FOR EXAMPLE:

8R7 = 8.7 OHMS 10R0 = 10.0 OHMS

FOR WIRE-WOUND-TYPE RESISTORS COLOR CODING IS NOT USED. IDENTIFICATION MARKING IS SPECIFIED IN EACH OF THE APPLICABLE SPECIFICATIONS.

EXAMPLES OF COLOR CODING



NOMINAL RESISTANCE 3,900 OHMS
RESISTANCE TOLERANCE ±5%
FAILURE RATE LEVEL M

NOMINAL RESISTANCE 1,400 OHMS
RESISTANCE TOLERANCE ±10%

NOMINAL RESISTANCE 3,400 OHMS
RESISTANCE TOLERANCE 2%
TERMINAL SOLDERABLE

COMPOSITION-TYPE RESISTORS

FILM-TYPE RESISTORS

* IF BAND D IS OMITTED, THE RESISTOR TOLERANCE IS ±20% AND THE RESISTOR IS NOT MIL-STD.

A. COLOR CODE MARKING FOR MILITARY STANDARD RESISTORS.

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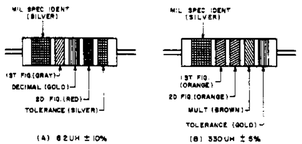


COLOR CODING FOR TUBULAR ENCAPSULATED R.F CHOKES. AT A, AN EXAMPLE OF THE CODING FOR AN 8.2UH CHOKE IS GIVEN. AT B, THE COLOR BANDS FOR A 330UH INDUCTOR ARE ILLUSTRATED.

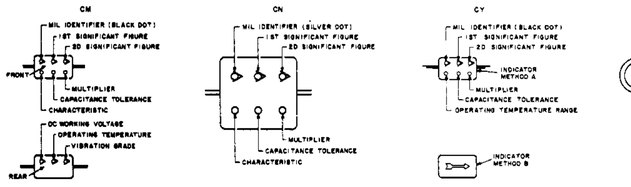
TABLE 2
COLOR CODING FOR TUBULAR ENCAPSULATED R.F CHOKES.

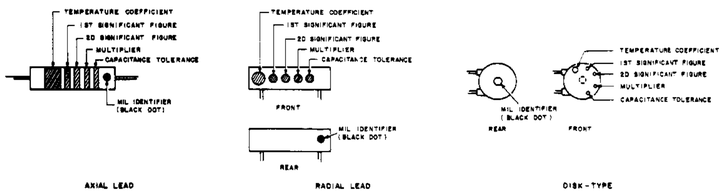
COLOR	SIGNIFICANT FIGURE	MULTIPLIER	INDUCTANCE TOLERANCE (PERCENT)
BLACK	0	1	
BROWN	1	10	1
RED	2	100	2
ORANGE	3	1,000	3
YELLOW	4		
GREEN	5		
BLUE	6		
VIOLET	7		
GRAY	8		
WHITE	9		
NONE			20
SILVER			10
GOLD	DECIMAL POINT		5

MULTIPLIER IS THE FACTOR BY WHICH THE TWO COLOR FIGURES ARE MULTIPLIED TO OBTAIN THE INDUCTANCE VALUE OF THE CHOKE COIL.

B. COLOR CODE MARKING FOR MILITARY STANDARD INDUCTORS.

CAPACITORS, FIXED, VARIOUS-DIELECTRICS, STYLES CM, CN, CY, AND CB.





C. COLOR CODE MARKING FOR MILITARY STANDARD CAPACITORS.

Figure FO-8. Color code marking for resistors, inductors, and capacitors.

TABLE 3 — FOR USE WITH STYLES CM, CN, CY AND CB.

COLOR	MIL ID	1ST SIG FIG	2D SIG FIG	MULTIPLIER	CAPACITANCE TOLERANCE			CHARACTERISTIC			DC WORKING VOLTAGE	OPERATING TEMP RANGE	VIBRATION GRADE
					CM	CN	CY	CB	CM	CN	CB	CM	CY CM	CM
BLACK	CM,CY, CB	0	0	1		±20%	±20%		A				-55°C to +70°C	10-55 Hz
BROWN		1	1	10					B	E	B			
RED		2	2	100	±2%		±2%	±2%	C				-55°C to +85°C	
ORANGE		3	3	1,000	±3%				D		D	300		
YELLOW		4	4	10,000					E				-55°C to +125°C	10-2000 Hz
GREEN		5	5		±5%				F			500		
BLUE		6	6										-55°C to +150°C	
PURPLE (VIOLET)		7	7											
GREY		8	8											
WHITE		9	9											
GOLD				0	±5%	±5%								
SILVER	CN				±10%	±10%	±10%	±10%						

TABLE 4 — TEMPERATURE COMPENSATING, STYLE CC

COLOR	TEMPERATURE COEFFICIENT*	1ST SIG FIG	2D SIG FIG	MULTIPLIER	CAPACITANCE TOLERANCE		MIL ID
					CAPACITANCES OVER 10 UUF	CAPACITANCES 10 UUF OR LESS	
BLACK	0	0	0	1	±20 UUF		CC
BROWN	−30	1		0	±1%		
RED	−80	2	2	100	±2%	±0.25 UUF	
ORANGE	−150	3	3	1,000			
YELLOW	−220	4	4				
GREEN	−330	5	5		±5%	±0.5 UUF	
BLUE	−470	6	6				
PURPLE (VIOLET)	−750	7	7				
GREY		8	8	0.01			
WHITE		9	9	0.1	±10%		
GOLD	+100					±1.0 UUF	
SILVER							

1. THE MULTIPLIER IS THE NUMBER BY WHICH THE TWO SIGNIFICANT (SIG) FIGURES ARE MULTIPLIED TO OBTAIN THE CAPACITANCE IN UUF.
2. LETTERS INDICATE THE CHARACTERISTICS DESIGNATED IN APPLICABLE SPECIFICATIONS: MIL-C-5, MIL-C-28D, MIL-C-11272B, AND MIL-C-10950C RESPECTIVELY.
3. LETTERS INDICATE THE TEMPERATURE RANGE AND VOLTAGE-TEMPERATURE LIMITS DESIGNATED IN MIL-C-11015D.
4. TEMPERATURE COEFFICIENT IN PARTS PER MILLION PER DEGREE CENTIGRADE.

BY Order of the Secretary of the Army:

CREIGHTON W. ABRAMS
General, United States Army
Chief of Staff

Oficial:

VERNE L. BOWERS
Major General, *United States Army*
The Adjutunt General

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