

c. **POWER SUPPLY PP-987/U.** (See figure 2-19.)— Input power, 115 volts ac, is obtained through three-conductor plug P-501, one prong of which is grounded. Switch S-501 applies the input power to the primary of T-501 through fuses F-501 and F-502. Pilot light I-501 is connected across the primary and indicates circuit energization. Secondary number 1, with an output of 140 volts ac across terminals 7 and 8, is connected to the selenium rectifiers CR-501 and CR-502. These selenium rectifiers are connected in a full wave rectifier bridge circuit. Since current can travel in only one direction in a selenium rectifier, the ac is rectified into dc. The selenium rectifier decreases in efficiency as it ages, therefore adjustment is provided by the taps on the secondary of the transformer. Output terminals 2, 3, 4, and 5 provide an additional 2.5 volts each in that order, and terminals M and H provide an additional 12.5 volts each in that order. The output of the selenium rectifiers is filtered by L-501, C-501, and C-502. R-501, the bleeder resistor, is connected across the output to improve voltage regulation. The positive side of the

output is connected to terminal number 14 of P-502 and is the ground side of the line. The negative side of the output is connected to terminals number 15 and 16 of P-502 through fuses F-503 and F-504 to provide 115 volts of filtered dc.

Another secondary supplies positive voltage to the teletypewriter set for polar operation. Secondary number 2, with an output of 102 volts each side of the center tap, is rectified by CR-503. The transformer center tap is grounded and the output of the rectifier is filtered by C-503. Bleeder resistor R-502 improves the voltage regulation of the power supply. The voltage output is connected to terminal number 13 on plug P-502 through fuse F-505.

2 Section
Paragraph 2.c.

NAVSHIPS 92378
AN/FGC-38, AN/FGC-38X, AN/FGC-39

**THEORY OF
OPERATION**

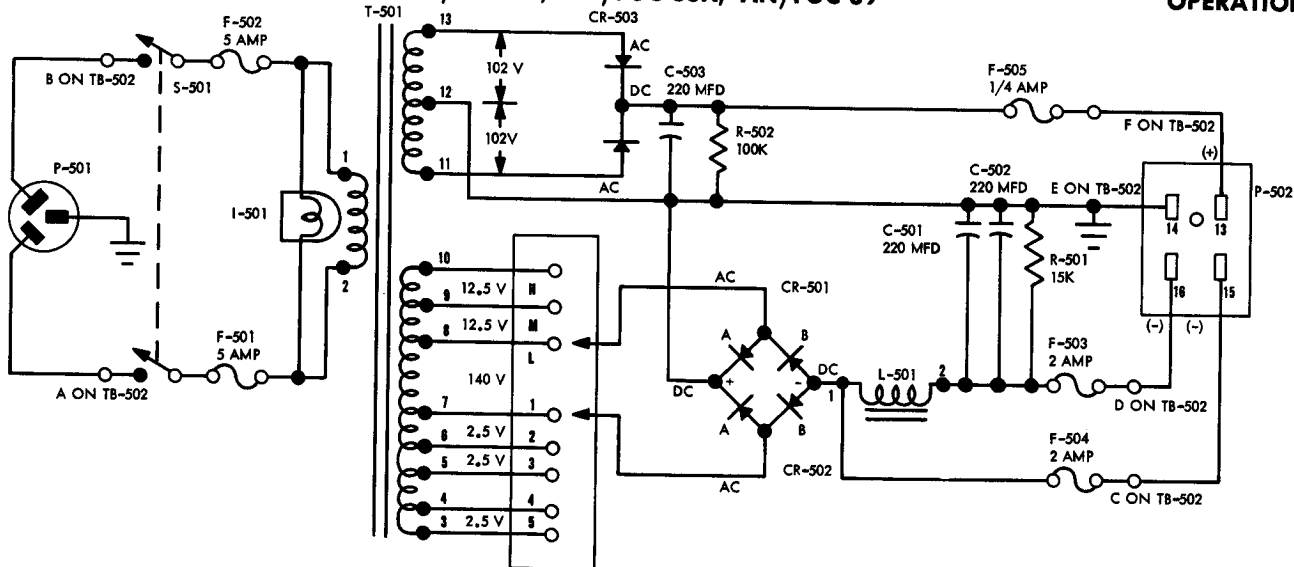


Figure 2-19. Power Supply PP-987/U, Schematic Diagram

TABLE 5-13. FUSE LOCATIONS IN POWER SUPPLY

SYMBOL	LOCATION	PROTECTS	AMPS	VOLTS	NUMBERS
F-501	Front panel	A-C line	5 slo-blow	115	130506
F-502	Front panel	A-C line	5 slo-blow	115	130506
F-503	Front panel	Negative d-c (filtered)	2	115	120166
F-504	Front panel	Negative d-c (unfiltered)	2	115	120166
F-505	Front panel	Positive d-c (polar)	1/4	115	118510

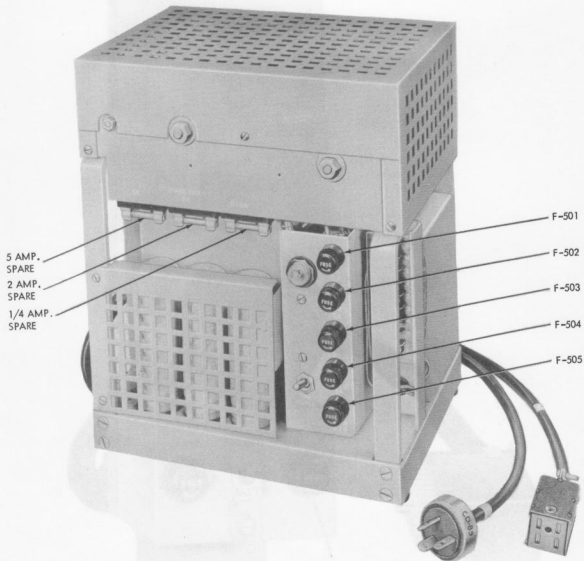


Figure 5-4. Power Supply PP-987/U, Fuse Locations

COMPONENTS	VOLTAGE DROP* (VOLTS DC)	CONDITION
Resistor R-203	111	
Resistor R-204	105	K-201 on marking.
Resistor R-205	60**	K-201 on marking.
Resistor R-207	55**	K-201 on marking.

*Power supply adjusted to 115 volts.

**On polar operation halve these values.

For the above values the control panel should have d-c power, the LONG MESSAGE switch on NORMAL, the NUMBER-DELETE switch on NUMBER, and the line current adjusted to 0.060 ampere for neutral operation or 0.030 ampere for polar operation.

TABLE 7-17. CONTROL PANEL SB-358/FGC RESISTANCE CHART* (K-201 REMOVED)

TERMINAL NUMBER		RESISTANCE (OHMS)
FROM	TO	
1 UPPER	2 UPPER	5,000
	7 LOWER	2,500
	18 LOWER	6,500
	24 LOWER	5,800
2 UPPER	7 LOWER	2,500
	18 LOWER	6,500
	24 LOWER	5,800
4 UPPER	11 LOWER	0
	6 LOWER	0
5 UPPER	6 LOWER	0
6 UPPER	19 UPPER	3,300
7 UPPER	22 UPPER	0
8 UPPER	22 LOWER	0
10 UPPER	24 UPPER	0
14 UPPER	20 LOWER	0
23 UPPER	15 LOWER	0
1 LOWER	3 LOWER	1,750
	9 LOWER	1,000
	10 LOWER	5

*NORMAL-LONG MESSAGE switch on NORMAL, and NUMBER-DELETE switch on NUMBER.

d. Check Power Supply PP-987/U according to the following voltage chart (table 7-18).

TABLE 7-18. POWER SUPPLY PP-987/U VOLTAGE CHART

UNIT	TERMINALS		VOLTAGE
	FROM	TO	
T-501	1	2	115 AC
	3	4	2.5 AC
	4	5	2.5 AC
	5	6	2.5 AC
	6	7	2.5 AC
	7	8	140 AC
	8	9	12.5 AC
	9	10	12.5 AC
	11	12	102 AC
	12	13	102 AC

UNIT	TERMINALS		VOLTAGE
	FROM	TO	
P-502	13(+)	14(-)	115 DC
	14(+)	15(-)	115 DC
	14(+)	16(-)	115 DC

5. ELECTRICAL ADJUSTMENTS.

The electrical adjustments of Teletypewriter Sets AN/FGC-38, 38X, and 39 consist of adjusting the voltage in the power supplies and the line current at the Control Panels SB-358/FGC.

a. POWER SUPPLY ADJUSTMENT. (See figure 7-1.)—The power supply contains rectifiers CR-501 and CR-502 which age and may require adjustment every six months. To check and adjust, proceed with the following steps in order:

(1) Disconnect the a-c input power and remove the d-c output plug from its receptacle.

(2) Connect dummy loads to the d-c output plug according to table 7-19. Use either lamps or resistors between the terminals indicated.

TABLE 7-19. POWER SUPPLY DUMMY LOADS

POWER SUPPLY USED IN	TERMINALS ON OUTPUT PLUG		RESISTOR (OHMS)	LAMPS (WATTS)
	FROM	TO		
Receiver Group	14	16	320 (40 WATTS)	40
	14	15	240 (60 WATTS)	60
Transmitter Group	14	16	255 (50 WATTS)	50
	14	15	150 (85 WATTS)	85

To make up the 50-watt lamp load, use two 25-watt lamps in parallel, and for the 85-watt load, use one 25-watt lamp and one 60-watt lamp in parallel.

CAUTION

Do not exceed rated loads on the power supply or damage may result.

(3) Connect an 0-150 volt d-c voltmeter across terminals 14 and 16 of the output plug.

(4) Energize the power supply through plug P-501 with 115 volts alternating current. Place the switch S-501 in the ON position.

(5) The d-c voltmeter should read 115 volts. To adjust, reposition the taps on TB-501. To find the

proper tap, refer to table 7-20. When it is necessary to use taps 5 and H, replace CR-501 and CR-502.

TABLE 7-20. POWER SUPPLY ADJUSTMENT DATA

DC OUTPUT VOLTAGE CHANGE	TAPS		DC OUTPUT VOLTAGE CHANGE	TAPS	
	FROM	TO		FROM	TO
+12.5	L	M	-12.5	H	M
+12.5	M	H	-12.5	M	L
+2.5	1	2	-2.5	5	4
+2.5	2	3	-2.5	4	3
+2.5	3	4	-2.5	3	2
+2.5	4	5	-2.5	2	1

b. LINE CURRENT ADJUSTMENT. (See figure 7-2.)—Before the initial application of power and be-

fore this adjustment is made, the LINE CURRENT rheostat should be in the minimum current position. To check and adjust transmitting line current on any one line, insert the ammeter plug in the LINE jack on the Control Panel SB-358/FGC for that line and adjust the LINE CURRENT rheostat (R-207) and the slide wire resistor (R-202) as follows:

Note

The slide wire resistor is mounted on the rear of the Control Panel; this resistor is adjusted at the factory and normally should require no further adjustment.

With the line on steady marking (idle line condition), adjust the line current, by means of rheostat R-207, to 0.060 ampere. Adjust resistor (R-202), if nec-



Figure 7-1. Power Supply PP-987/U, Adjustments

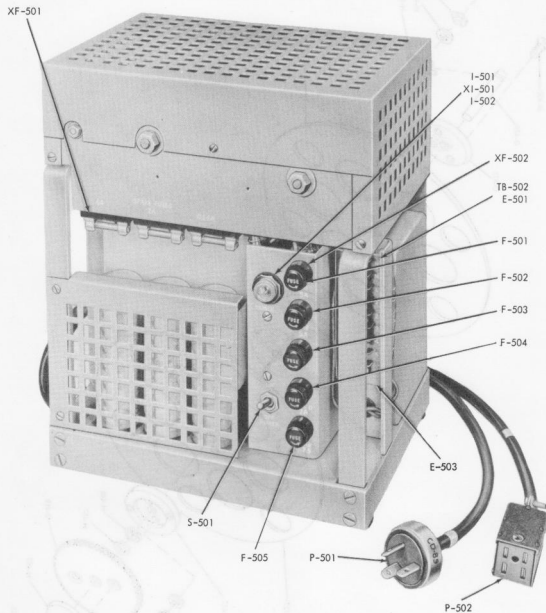


Figure 7-146. Power Supply PP-987/U, Front View

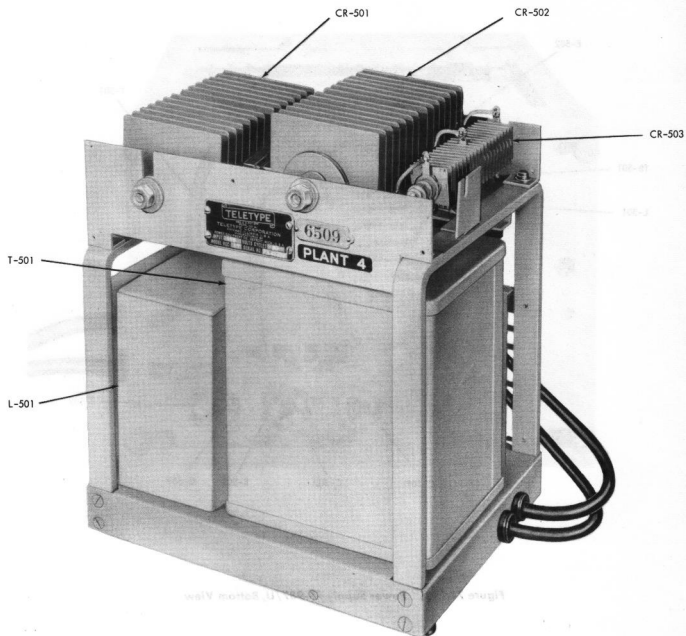


Figure 7-147. Power Supply PP-987/U, Rear View

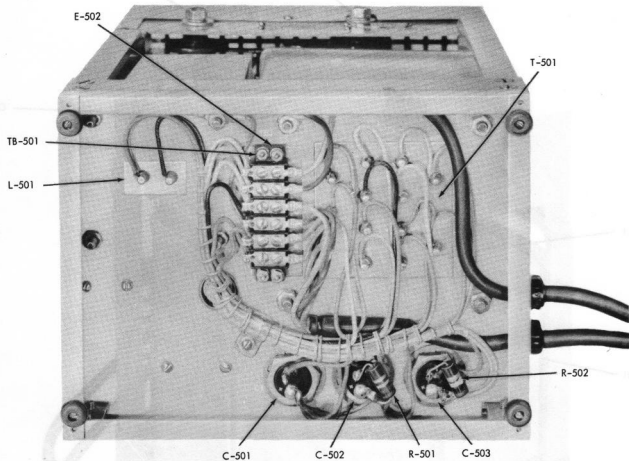
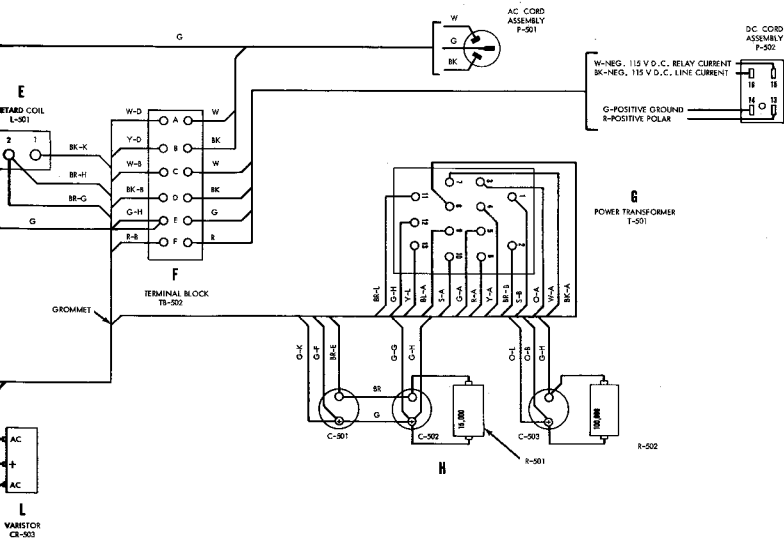


Figure 7-148. Power Supply PP-987/U, Bottom View



ACTUAL WIRING AS VIEWED FROM REAR OF UNIT

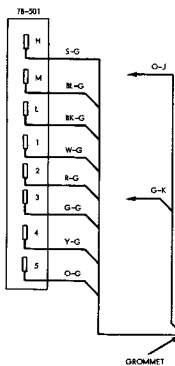
Figure 7-200. Power Supply PP-987/U, Wiring Diagram

CAUTION: DO NOT ATTEMPT TO REPAIR OR REPLACE COMPONENTS BY USE OF FINE POINTED TOOLS. IF OUTPUT IS NOT CORRECT, MOVE FLEXIBLE CONNECTORS TO RESTORE OUTPUT.

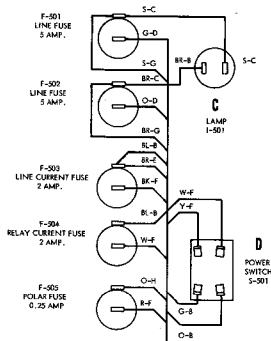
LEADS INDICATE SPADE

REMOVE CONNECTORS FROM SLOT AND

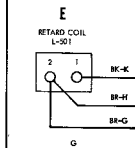
A
TERMINAL BOARD



B
FUSE (5)

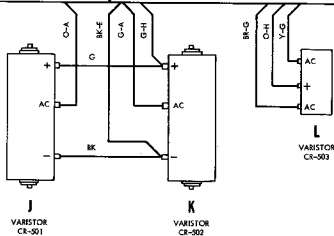


GND, STRIP



GROMMET

GROMMET



J
VARISTOR
CR-501

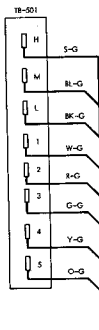
K
VARISTOR
CR-502

L
VARISTOR
CR-503

CORRECTIVE NAVSHIPS 92378
MAINTENANCE AN/FGC-38, AN/FGC-38X, AN/FGC-39

NO.	NOTES
1.	VARISTOR AGEING MAY BE COMPENSATED FOR BY USE OF FINE TAPS 1, 2, 3, 4, 5 AND COARSE TAPS L, M, H. IF OUTPUT VOLTAGE DROPS AFTER LONG PERIODS OF USE, MOVE FLEXIBLE LEADS TO HIGHER TAPS AS REQUIRED TO RESTORE OUTPUT VOLTAGE TO ORIGINAL LEVEL.
2.	ARROWHEADS TERMINATING FLEXIBLE LEADS INDICATE SPADE LUGS.
3.	FEMALE AND MALE CONNECTORS SHOWN FROM SLOT AND PRONG END.

A
 TERMINAL BOARD



ORIGINAL