N3 CARRIER TELEPHONE SYSTEM
CARRIER FREQUENCY SUPPLY
POWER SUPPLY UNIT
TESTS AND ADJUSTMENTS

The purposes of the tests in this section are as follows:

(a) to adjust the output voltage of the −21 volt power supply unit

(b) to measure the output ripple voltage of the power supply unit

(c) to adjust the upper and lower threshold limits of the power supply alarm sensing circuits.

This section is reissued to add procedures of checking the power supply unit when the switching and alarm circuit is modified to inhibit combining the two −21 volt distribution circuits. This section supplements Section 362-901-500 which provides general maintenance considerations that apply to the J87245A power supply unit used in the N3 carrier frequency supply, and Section 362-903-501 which provides test and adjustment procedures for the power supply unit when used in the N3 carrier terminal. Since the revision is of a general nature, arrows ordinarily used to indicate changes have been omitted. This reissue affects the Equipment Test List.

The N3 primary carrier frequency supply provides means for maintaining, in an operating condition, two J87245A power supply units. One unit, designated regular, powers the regular 4-kHz generator and all regular dual and doubler amplifier units. The other unit, designated alternate, powers the alternate 4-kHz generator and all alternate dual and doubler amplifier units. The outputs of the regular and alternate power supply units are monitored by built-in sensing circuits. If either voltage output is not within predetermined limits, a relay within the unit releases and causes an office alarm. The J99300AU N3 switching set is required for adjusting the power supply unit, both in performing preliminary voltage and alarm checks and when installed in the carrier frequency supply. The tests in this section are based on the carrier frequency supply being fully equipped with regular and alternate power supply units, 4-kHz generators, and doubler and dual amplifier plug-in units.

Switching and alarm panels of early manufacture are equipped with pin-type jacks for testing (see Fig. 1A). The N3 switching set is connected to these jacks by means of an external test cord. Power for the switching set must be obtained from the test power jack on the combining and switching unit at the N3 carrier terminal bay. Two microswitches are provided at the rear of the power supply shelf. When either of the two power supplies is removed from the shelf for maintenance, the associated microswitch will operate and combine the two −21 volt distribution circuits. Positioning of the power supply switching key is dependent upon the number of power supplies and positions equipped in the carrier frequency supply. When two power supplies are provided, the power supply switching key should be set to the NORM (normal) position. Some panels may not have the NORM position designated on the panel faceplate. For these panels, the arrow on the switching key should be set to the vertical position. This will correspond to the NORM position on designated panels.

Switching and alarm panels of later manufacture are furnished with a power test jack (see Fig. 1B). The plug on the N3 switching set mates with the power test jack on the switching panel. The preliminary tests and adjustments of the power supply unit can be made at the carrier frequency supply bay. Combined operation of the −21 volt distribution circuits is provided in the same manner as in panels of earlier manufacture. Positioning of the power supply switching key still is dependent upon the number of power supplies and positions equipped in the carrier frequency supply. When two power supplies are provided, the power supply switching key should be set to the NORM position.

However, with either arrangement, the possibility exists that should either of the two distribution circuits experience an accidental ground and the failed power supply be removed for maintenance, the good power supply would be transferred to the grounded distribution circuit and total failure of the carrier frequency supply would result. To eliminate this condition, a modification can be made to inhibit combining the two −21 volt distribution circuits when either of the two microswitches are operated. Current manufacture of the carrier frequency supply includes this modification and eliminates the two microswitches and the power supply switching key. See Note, Fig. 2.

CHART **PAGE**

CHART 1

PRELIMINARY VOLTAGE TESTS AND ADJUSTMENTS

The J99300AU N3 switching set provides means for testing and adjusting the J87245A power supply unit before it is installed in the carrier frequency supply shelf.

The purpose of this procedure is to adjust the power supply voltage output, measure the ripple voltage, and adjust the high and low voltage alarm limits prior to installing the power supply unit.

APPARATUS:

1—J99300AU N3 Switching Set

1—Hewlett-Packard 400-Type Vacuum Tube Voltmeter (VTVM) or Equivalent

1—W2FP Cord

Spare Fuses—Type MTH 5 Ampere (Replaces Type AGC 3)

CHART 1 (Cont)

STEP	PROCEDURE
	Voltage Test
1	Energize the VTVM and set the range selector switch to the VOLTS .03 position.
2	Set switches on the N3 switching set to the following positions: (a) LOAD switch to REGULAR (b) ALT switch to TEST (c) VM & RIPPLE switch to ALTERNATE
3	If the switching and alarm panel is equipped with a power test (PWR TST) jack, connect the switching set P2 power cord to the PWR TST jack (see Fig. 3). If the panel is not equipped with a power test jack, remove one of the two shorting plugs from the TEST POWER jacks of the combining and switching (COMB & SW) plug-in unit at the carrier terminal bay. Connect the switching set P2 power cord to the vacant jack. (See Fig. 4). ***Caution: Removal of both shorting plugs will cause service interruption to a working system.***
4	Connect the meter end of the W2FP cord to the VTVM INPUT jacks. ***Caution: Observe meter polarity in making test connections.***
5	At the switching set, connect the black plug of the W2FP cord to the G jack and the red plug to the −21V jack.
6	Set controls on the power supply unit (Fig. 5) as follows: (a) ADJ VOLTS—fully counterclockwise (b) HV ALM—midrange (c) LV ALM—midrange
7	Check that a 5-ampere (Type AGC 3 or MTH) fuse is installed in the PROTECTION fuse holder and the fuse is not blown.
8	Remove the plastic pin guard from the power supply unit and carefully insert the unit into the switching set. ***Note:*** If the N3 switching set is connected to the switching and alarm panel, circuit transients may cause the MINOR ALM indicating lamp to light and the office audible alarm to sound. If this occurs, depress and release the MINOR ALM RST pushbutton. The MINOR ALM indicating lamp will extinguish and the audible alarm will silence.

CHART 1 (Cont)

STEP	PROCEDURE
9	On the power supply unit, slowly rotate the ADJ VOLTS control clockwise until the switching set VOLTS meter indicates 21 volts (red line on meter scale). ***Caution: A voltage indication in excess of 23 volts may cause operation of the high voltage protection circuit and PROTECTION fuse. If this occurs, set the ADJ VOLTS control fully counterclockwise, replace the fuse, and repeat the adjustment.***
10	If the power supply output voltage can be set at 21 volts, proceed to Step 11. If it cannot be set, remove the power supply from the switching set, obtain a replacement unit, and repeat Steps 7 through 9.
	Ripple Voltage Test
11	Read the power supply output ripple voltage on the VTVM. ***Requirement:*** Between 0 and .012 volts
12	If the requirement of Step 11 is met, proceed to Step 16. If it is not met, disconnect the red plug from the −21V jack and connect it to the −48V jack.
13	Set the VTVM range selector switch to the VOLTS .3 scale.
14	Read the input ripple voltage on the VTVM. ***Requirement:*** Between 0 and .3 volts
15	If the requirement of Step 14 is met, the power supply unit is defective and should be replaced. Remove the power supply from the switching set, obtain a replacement unit, and repeat Steps 6 through 12. If it is not met, the −48 volt battery supply should be investigated for excessive ripple voltage. In particular, the fuse and alarm panel (SD-99735-01) and bay wiring should be checked for loose or missing ground leads. When the requirement of Step 11 is met, proceed to Step 16.
16	Disconnect the W2FP cord from the switching set and VTVM.
	Overvoltage Protection Test
17	At the switching set, operate the load switch to the NO LOAD position and read the VOLTS meter indication. ***Requirement:*** Between 0 and 5.0 volts, indicating that the high voltage protection circuit in the power supply is functioning.
18	If the requirement of Step 17 is met, proceed to Step 19. If it is not met, the automatic protection circuit is not functioning and the unit is not suitable for service. Remove the power supply from the switching set, obtain a replacement unit, and repeat Steps 6 through 17.

CHART 1 (Cont)

STEP	PROCEDURE
19	Release the load switch to the QTR LOAD position, then remove and reinsert the power supply unit.
20	Remove the PROTECTION fuse and visually inspect the fuse to determine if it has blown. If it has blown, replace it wiith a good 5-ampere fuse.
	Alarm Limit Test
21	Operate the load switch on the switching set to the FULL LOAD position. Hold the switch in this position for Steps 22 through 25.
22	On the power supply unit, slowly rotate the ADJ VOLTS control clockwise until the switching set VOLTS meter indicates 21.8 volts.
23	Observe the ALM TST lamp on the switching set. If the lamp is lighted, slowly rotate the HV ALM control (Fig. 5) clockwise until the lamp just extinguishes. If the lamp is not lighted, slowly rotate the HV ALM control counterclockwise until the lamp just lights. This completes the high voltage alarm adjustment.
24	Slowly rotate the ADJ VOLTS control counterclockwise until the switching set VOLTS meter indicates 20.2 volts.
25	Observe the ALM TST lamp on the switching test set. If the lamp is lighted, slowly rotate the LV ALM control (Fig. 5) counterclockwise until the lamp just extinguishes. If the lamp is not lighted, slowly rotate the LV ALM control clockwise until the lamp just lights. This completes the low voltage alarm adjustment.
26	If the adjustments in Steps 23 or 25 cannot be made, the power supply alarm circuitry is defective and the unit should be replaced. Remove the power supply from the switching set, obtain a replacement unit, and repeat Steps 6 through 25.
27	With the load switch held to the FULL LOAD position, slowly rotate the ADJ VOLTS control clockwise until the ALM TST lamp extinguishes and then just comes on. Read the switching set VOLTS meter indication. ***Requirement:*** Between 21.7 and 21.9 volts
28	With the load switch held to the FULL LOAD position, slowly rotate the ADJ VOLTS control counterclockwise until the ALM TST lamp extinguishes and then just comes on. Read the switching set VOLTS meter indication. ***Requirement:*** Between 20.1 and 20.3 volts
29	If the requirements of Steps 27 and 28 are met, proceed to Step 30. If they are not met, repeat Steps 24 through 26 until the requirements of Steps 27 and 28 are met.

CHART 1 (Cont)

STEP	PROCEDURE
30	With the load switch held to the FULL LOAD position, slowly rotate the ADJ VOLTS control clockwise until the switching set VOLTS meter reads exactly 21 volts. Release the load switch.
31	Remove the power supply unit from the switching set. The unit is now ready for installation in the carrier frequency supply shelf.
32	Repeat Steps 6 through 31 as required for other power supply units to be tested.
33	Disconnect the test equipment. If the switching set was connected to a combining and switching unit, insert a shorting plug in the vacant TEST POWER jack.

CHART 2

MAINTENANCE TESTS AND ADJUSTMENTS—SWITCHING AND ALARM PANEL WITHOUT POWER TEST JACK

The purpose of this procedure is to measure and, if necessary, adjust the output voltage of the regular and alternate −21 volt power supply units under in-service load conditions. The output ripple voltage of each unit is also measured. This procedure is based on the following conditions.

(a) The power supply units have been tested and adjusted in accordance with Chart 1 prior to installation in the carrier frequency supply.

(b) The switching and alarm panel is not equipped with a power test jack.

(c) The switching and alarm panel is designated J99300S-1 List 1 or List 1 & WA. List WA denotes panels field-modified to inhibit combining of the −21 volt distribution circuits.

This is an in-service test.

APPARATUS:

1—J99300AU N3 Switching Set

1—Hewlett-Packard 400-Type Vacuum Tube Voltmeter (VTVM) or Equivalent

1—P2DR Cord

1—W2FP Cord

1—W2DW Cord with Alligator Clips (for trouble test)

CHART 2 (Cont)

STEP	PROCEDURE
	Voltage Test—Regular Power Supply Unit
1	Set switches on the N3 switching set to the following positions: (a) LOAD switch to REGULAR (b) ALT switch to TEST (c) VM & RIPPLE switch to REGULAR
2	Connect the black plug of the P2DR cord to the switching set G jack and the red plug to the −21V jack (see Fig. 6).
3	At the switching and alarm panel, connect the black plug of the P2DR cord to the GRD jack and the red plug to the −21V IN REG jack.
4	Check that all regular and alternate dual and doubler amplifier and 4 KC generator positions are equipped with plug-in units and that the associated REG and ALT alarm indicating lamps are not lighted.
5	Set the PWR SUP key switch to NORM and all other panel key switches to the REG position. ***Note:*** If the NORM position is not designated on the switching and alarm panel, set the arrow on the PWR SUP key switch to the vertical position. This will correspond to the NORM position on designated panels.
6	Read the power supply output voltage on the switching set VOLTS meter. ***Requirement:*** Between 20.9 and 21.1 volts
7	If the requirement of Step 6 is met, proceed to Step 8. If it is not met, slowly rotate the regular power supply ADJ VOLTS control clockwise to increase or counterclockwise to decrease the output voltage. Adjust the control for an indication of 21 volts (red line on meter scale). If the power supply unit can not be adjusted to 21 volts, the unit is defective and should be replaced. ***Note:*** See Section 362-901-504 for in-service replacement procedures and Chart 1 of this section for initial tests and adjustments.
	Voltage Test—Alternate Power Supply Unit
8	At the switching and alarm panel, disconnect the red plug of the P2DR cord from the −21V IN REG jack and connect it to the −21V IN ALT jack.
9	Repeat Steps 6 and 7 for the alternate power supply unit.

CHART 2 (Cont)

STEP	PROCEDURE
10	Disconnect the P2DR cord from the switching and alarm panel and the switching set.
	Ripple Voltage Test—Regular Power Supply Unit
11	Energize the VTVM and set the range selector switch to the VOLTS .03 position.
12	Plug the meter end of the W2FP cord into the INPUT jacks of the VTVM (see Fig. 7).
	Caution: Observe meter polarity when making test connections.
13	At the switching and alarm panel, connect the red plug of the W2FP cord to the −21V IN REG jack and the black plug to the GRD jack.
14	Read the power supply output ripple voltage on the VTVM.
	Requirement: Between 0 and 0.012 volts
15	If the requirement of Step 14 is met, proceed to Step 23. If it is not met, proceed to Step 16 and check the −48 volt input ripple voltage to the power supply unit.
16	Set the VTVM range selector switch to the VOLTS .3 scale.
17	Disconnect the W2FP cord from the switching and alarm panel and the VTVM.
18	Plug the meter end of the W2DW cord into the INPUT jacks of the VTVM.
	Caution: Observe meter polarity when making test connections.
19	At the fuse and alarm panel, remove the cover from terminal block TB1 (see Fig. 8).
20	Connect the black alligator clip to terminal 36 and the red clip to terminal 39 of TB1.
	Caution: Do not short the terminals to adjacent terminals or to ground.
21	Read the ripple voltage on the VTVM.
	Requirement: Between 0 and .3 volts
22	If the requirement of Step 21 is met, the power supply unit is defective and should be replaced (see Note, Step 7). If it is not met, the −48 volt battery supply should be investigated for excessive ripple voltage. In particular, the fuse and alarm panel and bay wiring should be checked for loose or missing ground leads. When the requirement of Step 14 is met, proceed to Step 23.

CHART 2 (Cont)

STEP	PROCEDURE
	Ripple Voltage Test—Alternate Power Supply Unit
23	Disconnect the red plug of the W2FP cord from the −21V IN REG jack and connect it to the −21V IN ALT jack.
24	Repeat Steps 14 through 22 as required for the alternate power supply unit.
25	Disconnect the W2FP cord from the switching and alarm panel and the VTVM.

CHART 3

MAINTENANCE TESTS AND ADJUSTMENTS—SWITCHING AND ALARM PANEL WITH POWER TEST JACK AND POWER SUPPLY SWITCHING KEY

The purpose of this procedure is to measure and, if necessary, adjust the output voltage of the regular and alternate −21 volt power supply units under in-service load conditions. The output ripple voltage of each unit is also measured. This procedure is based on the following conditions.

(a) The power supply units have been tested and adjusted in accordance with Chart 1 prior to installation in the carrier frequency supply.

(b) The switching and alarm panel is equipped with a power test jack and power supply switching key.

(c) The switching and alarm panel is designated in accordance with one of the following equipment specification codes:

SPECIFICATION	LIST
J99300S-1	1 & A
J99300S-1	2
J9900BP-1	1 & A

Note: Switching and alarm panels stamped with List WA denotes field modification to inhibit combining the −21 volt distribution circuits. See Chart 4 for test procedure covering modified panels.

This is an in-service test.

CHART 3 (Cont)

STEP	PROCEDURE

APPARATUS:

1—J99300AU N3 Switching Set

1—Hewlett-Packard 400-Type Vacuum Tube Voltmeter (VTVM) or Equivalent

1—W2FP Cord

STEP	PROCEDURE

Voltage Test—Regular Power Supply Unit

1 Set switches on the N3 switching set to the following positions:

(a) LOAD switch to REGULAR

(b) ALT switch to TEST

(c) VM & RIPPLE switch to REGULAR

2 At the switching and alarm panel, connect the switching set P2 cord to the PWR TST jack (see Fig. 3).

3 Energize the VTVM and set the range selector switch to the VOLTS .03 position

4 Plug the meter end of the W2FP cord into the VTVM INPUT jacks.

Caution: Observe correct polarity when making test connections

5 At the switching set, connect the red plug of the W2FP cord to the −21V jack and the black plug to the G jack.

6 Check that all regular and alternate dual and doubler amplifier and 4 KC generator positions are equipped with plug-in units and that the associated REG and ALT alarm indicating lamps are not lighted.

7 Set the PWR SUP key switch to NORM and all other panel key switches to the REG position.

Note: If the NORM position is not designated on the switching and alarm panel, set the arrow on the PWR SUP key switch to the vertical position. This will correspond to the NORM position on designated panels.

CHART 3 (Cont)

STEP	PROCEDURE
8	Read the power supply output voltage on the switching set VOLTS meter. ***Requirement:*** Between 20.9 and 21.1 volts
9	If the requirement of Step 8 is met, proceed to Step 10. If it is not met, slowly rotate the regular power supply ADJ VOLTS control clockwise to increase or counterclockwise to decrease the output voltage. Adjust the control for an indication of 21 volts (red line on meter scale). If the power supply cannot be adjusted to 21 volts, the unit is defective and should be replaced. ***Note:*** See Chart 1 of this section for initial tests and adjustments and Section 362-901-504 for in-service replacement procedure.
10	Read the power supply output ripple voltage on the VTVM. ***Requirement:*** Between 0 and .012 volts
11	If the requirement of Step 10 is met, proceed to Step 16. If it is not met, proceed to Step 12 and measure the input ripple voltage to the power supply unit.
12	Set the VTVM range selector switch to the VOLTS .3 position.
13	At the switching set, disconnect the red plug of the W2FP cord from the −21V jack and connect it to the −48V jack.
14	Read the input ripple voltage on the VTVM. ***Requirement:*** Between 0 and .3 volts
15	If the requirement of Step 14 is met, the power supply unit is defective and should be replaced. (See Note, Step 9). If it is not met, the −48 volt battery supply should be investigated for excessive ripple voltage. In particular, the fuse and alarm panel (SD-99735-01) and bay wiring should be checked for loose or missing ground leads. When the requirement of Step 10 is met, proceed to Step 16.
	Voltage Test—Alternate Power Supply Unit
16	At the carrier frequency supply shelf, remove the alternate power supply unit (Fig. 3). Set the PWR SUP switching key to REG and observe the MAJOR ALM indicating lamp. ***Requirement:*** The lamp is lighted and the office audible alarm is sounding.
17	Depress and release the MAJOR ALM RST pushbutton. ***Requirement:*** The MAJOR ALM indicating lamp is extinguished and the audible alarm is silenced.

CHART 3 (Cont)

STEP	PROCEDURE
18	Install the alternate power supply unit in the switching set. ***Note:*** Due to circuit transients, the MAJOR and/or MINOR ALM indicating lamp(s) may light and the audible alarm(s) will sound. If this occurrs, depress and release the MAJOR and/or MINOR ALM RST pushbutton(s). The alarm indicating lamp(s) will extinguish and the audible alarm(s) will silence.
19	At the switching set, operate the VM & RIPPLE switch to ALTERNATE.
20	Repeat Steps 8 through 15, as required, for the alternate power supply unit.
21	Remove the power supply unit from the switching set and install the unit in the alternate power supply position of the carrier frequency supply shelf (see Note, Step 18).
22	Set the PWR SUP key switch to NORM.
23	Disconnect the W2FP cord from the switching set and the VTVM.
24	Disconnect the switching set P2 cord from the PWR TST jack.

CHART 4

MAINTENANCE TESTS AND ADJUSTMENTS—SWITCHING AND ALARM PANEL WITH POWER TEST JACK AND WITHOUT POWER SUPPLY SWITCHING KEY

This procedure applies to switching and alarm panels manufactured without the power supply switching key. It will also apply to panels modified in the field to inhibit combining the −21 volt distribution circuits.

The purpose of this procedure is to measure and, if necessary, adjust the output voltage of the regular and alternate −21 power supply units under in-service load conditions. The output ripple voltage of each unit is also measured. This procedure is based on the following conditions.

(a) The power supply units have been tested and adjusted in accordance with Chart 1 prior to installation in the carrier frequency supply.

(b) The switching and alarm panel is equipped with a power test jack.

CHART 4 (Cont)

STEP	PROCEDURE

(c) The switching and alarm panel is designated in accordance with one of the following equipment specification codes:

SPECIFICATION	LIST
J99300S-1	1, A, & WA
J99300S-1	2 & WA
J99300BP-1	1 & A
J99300BP-1	1, A, & WA

Note: Switching and alarm panels stamped with List WA denotes field modification to inhibit combining the −21 volt distribution circuits. These panels will contain the power supply switching key; however, on modified panels the key is nonfunctional.

This is an in-service test.

APPARATUS:

1—J99300AU N3 Switching Set

1—Hewlett-Packard 400-Type Vacuum Tube Voltmeter (VTVM) or Equivalent

1—W2FP Cord

STEP	PROCEDURE

Voltage Test—Regular Power Supply Unit

1 Set switches on the N3 switching set to the following positions:

(a) LOAD switch to REGULAR

(b) ALT switch to TEST

(c) VM & RIPPLE switch to REGULAR

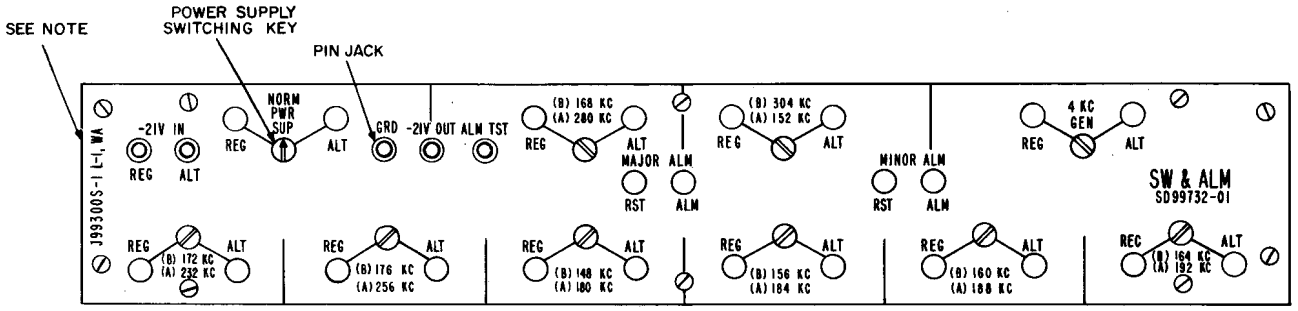
2 At the switching and alarm panel, connect the switching set P2 cord to the PWR TST jack (see Fig. 3).

CHART 4 (Cont)

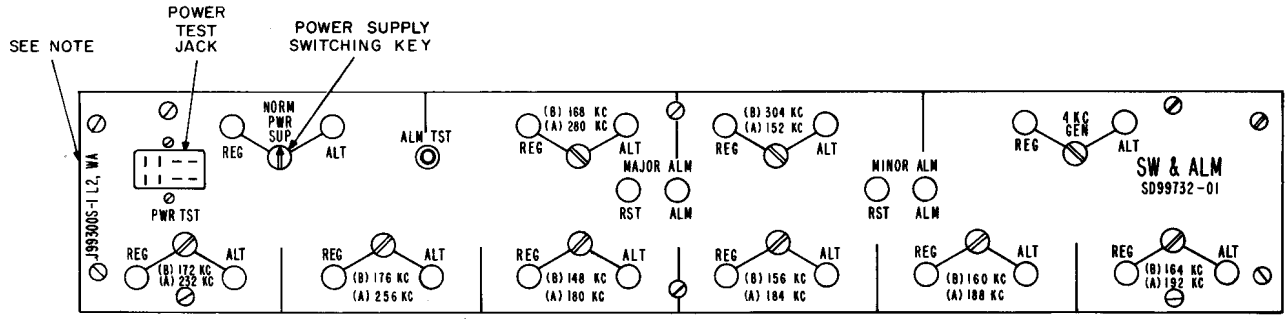
STEP	PROCEDURE
3	Energize the VTVM and set the range selector switch to the VOLTS .03 position.
4	Plug the meter end of the W2FP cord into the VTVM INPUT jacks.
	Caution: Observe meter polarity when making test connections
5	At the N3 switching set, connect the red plug of the W2FP cord to the −21V jack and the black plug to the G jack.
6	Check that all regular and alternate dual and doubler amplifier and 4 KC generator positions are equipped with plug-in units and that associated REG and ALT alarm indicating lamps are not lighted.
7	The PWR SUP key switch (if provided) should be set in the NORM position. Set all other panel key switches to the REG position.
	Note: If the NORM position is not designated on the switching and alarm panel, the arrow on the PWR SUP key switch should be set to the vertical position. This will correspond to the NORM position on designated panels.
8	Read the power supply output voltage on the switching set VOLTS meter.
	Requirement: Between 20.9 and 21.1 volts
9	If the requirement of Step 8 is met, proceed to Step 10. If it is not met, slowly rotate the regular power supply (Fig. 3) ADJ VOLTS control clockwise to increase or counterclockwise to decrease the output voltage. Set the control for an indication of 21 volts (red line on meter scale). If the power supply can not be adjusted to 21 volts, the unit is defective and should be replaced.
	Note: See Chart 1 of this section for initial tests and adjustments and Section 362-901-504 for in-service replacement procedure.
10	Read the ripple voltage on the VTVM.
	Requirement: Between 0 and .012 volts
11	If the requirement of Step 10 is met, proceed to Step 16. If it is not met, proceed to Step 12 and measure the input ripple voltage to the power supply unit.
12	Set the VTVM range selector switch to the VOLTS .3 position.
13	At the switching set, disconnect the red plug of the W2FP cord from the −21V jack and connect it to the −48V jack.

CHART 4 (Cont)

STEP	PROCEDURE
14	Read the ripple voltage on the VTVM. ***Requirement:*** Between 0 and .3 volts
15	If the requirement of Step 14 is met, the power supply unit is defective and should be replaced (see Note, Step 9). If it is not met, the −48 volt battery supply should be investigated for excessive ripple voltage. In particular, the fuse and alarm panel (SD-99735-01) and bay wiring should be checked for loose or missing ground leads. When the requirement of Step 10 is met, proceed to Step 16.
	Voltage Test—Alternate Power Supply Unit
16	At the carrier frequency supply shelf, remove the alternate power supply unit (Fig. 3). Observe the MAJOR ALM indicating lamp. ***Requirement:*** The lamp is lighted and the office audible alarm is sounding.
17	Depress and release the MAJOR ALM RST pushbutton. ***Requirement:*** The MAJOR ALM indicating lamp is extinguished and the audible alarm is silenced.
18	Insert the power supply unit into the switching set. ***Note 1:*** Due to circuit transients, the MAJOR and/or MINOR ALM indicating lamp(s) may light and the audible alarm(s) sound. If this indication occurs, depress and release the MAJOR ALM and/or MINOR ALM RST pushbutton(s). The alarm indicating lamp(s) will extinguish and the audible alarm(s) will silence. ***Note 2:*** In carrier supplies equipped with J99300BA List 2 4-kHz generator units, the 4 KC GEN ALT lamp may light. The lamp will extinguish when the oven temperature stabilizes.
19	On the switching set, operate the VM & RIPPLE switch to ALTERNATE.
20	Repeat Steps 8 through 15 as required for the alternate power supply unit.
21	Remove the power supply unit from the switching set and reinsert the unit in the alternate power supply slot of the carrier frequency supply shelf. See Notes 1 and 2, Step 18.
22	Disconnect the W2FP cord from the switching set and VTVM.
23	Disconnect the switching set P2 cord from the PWR TST jack.



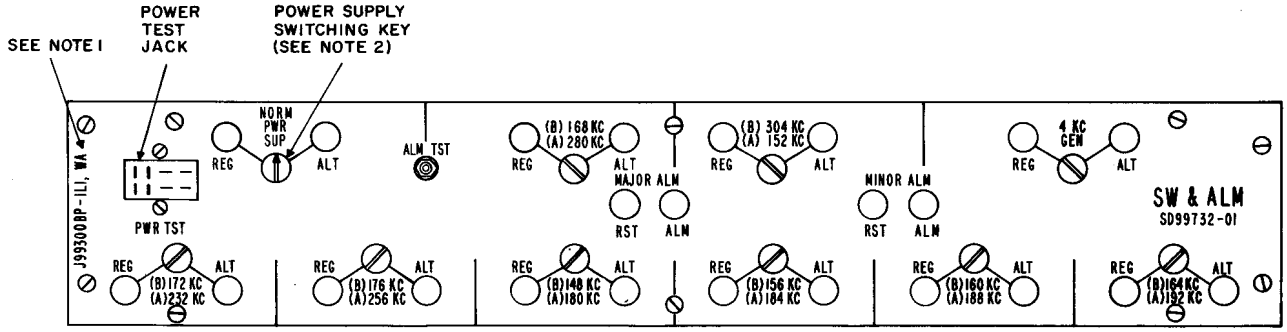
A. LIST 1 - WITHOUT POWER TEST JACK



B. LIST 1 & A OR LIST 2 - WITH POWER TEST JACK

NOTE:
1. LIST WA STAMPING DENOTES PANELS FIELD MODIFIED TO INHIBIT COMBINING THE -21 VOLT DISTRIBUTION CIRCUITS.

Fig. 1—J99300S Switching and Alarm Panel



NOTES:
1. LIST WA STAMPING DENOTES PANELS FIELD MODIFIED TO INHIBIT COMBINING THE -21 VOLT DISTRIBUTION CIRCUITS.
2. PANELS OF CURRENT MANUFACTURE WILL HAVE AN APPARATUS BLANK IN THIS POSITION.

Fig. 2—J99300BP Switching and Alarm Panel

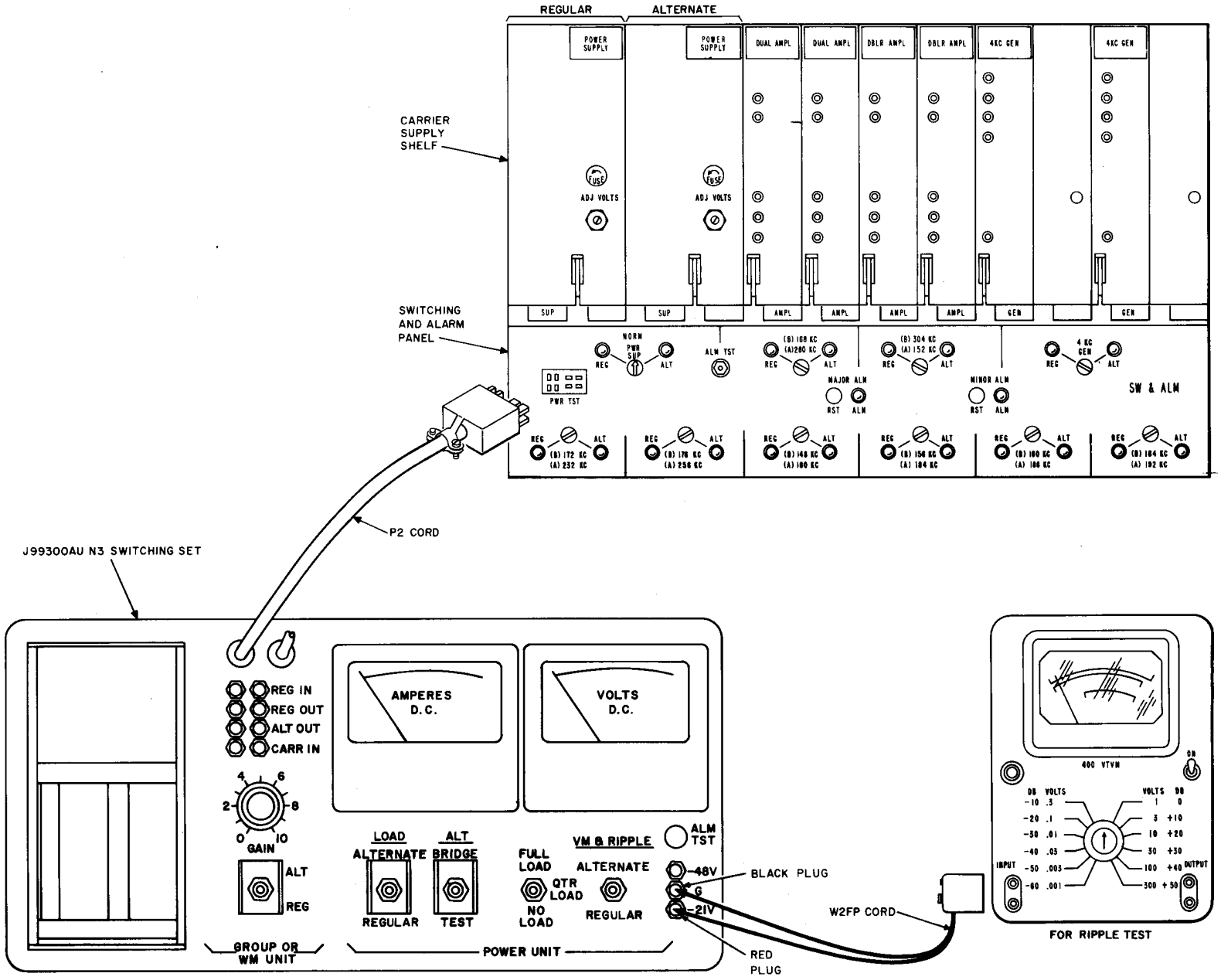


Fig. 3—Switching and Alarm Panel With Power Test Jack—Output and Ripple Voltage Measurements

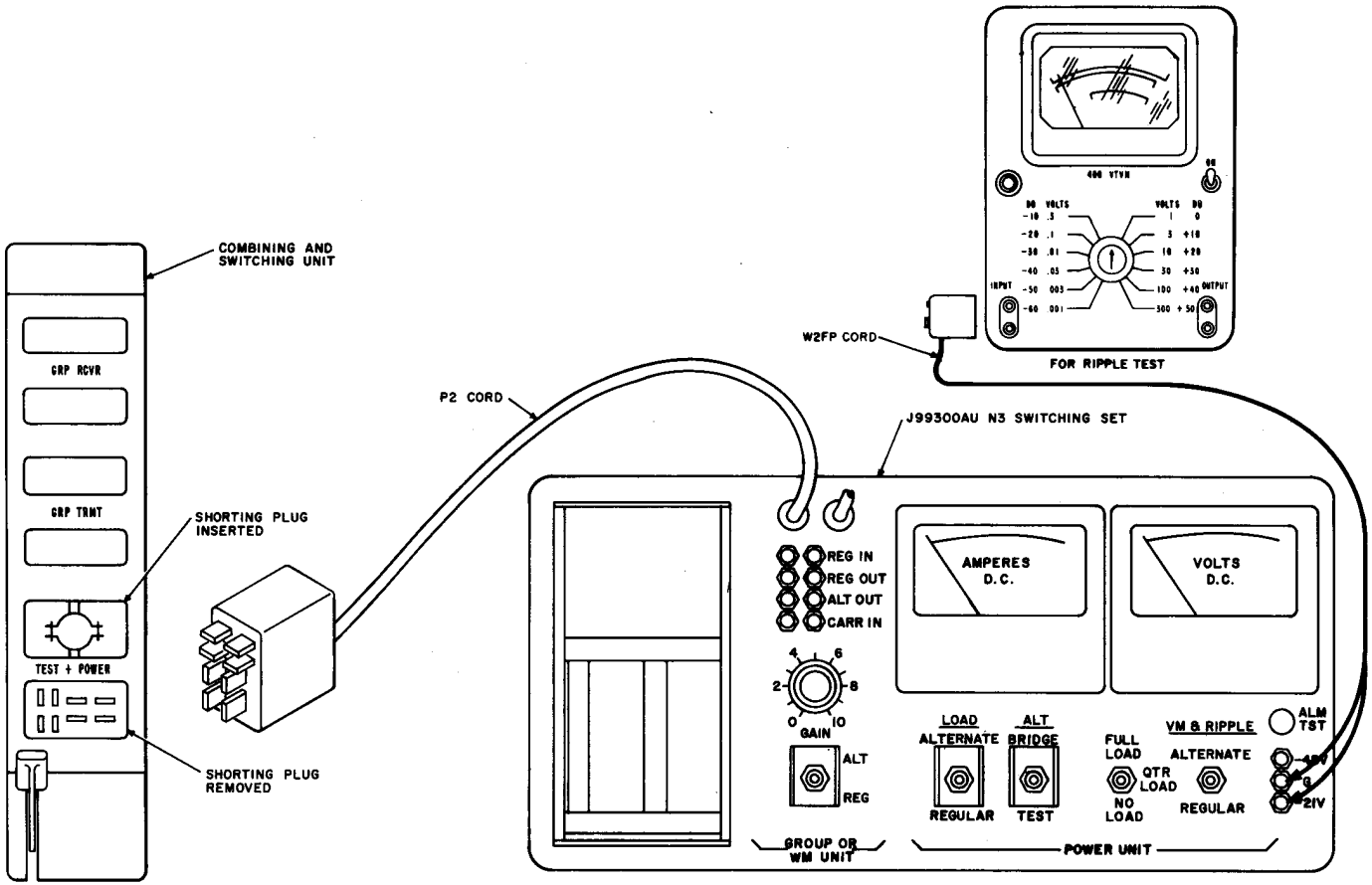


Fig. 4—Output and Ripple Voltage Measurements—Test Arrangement

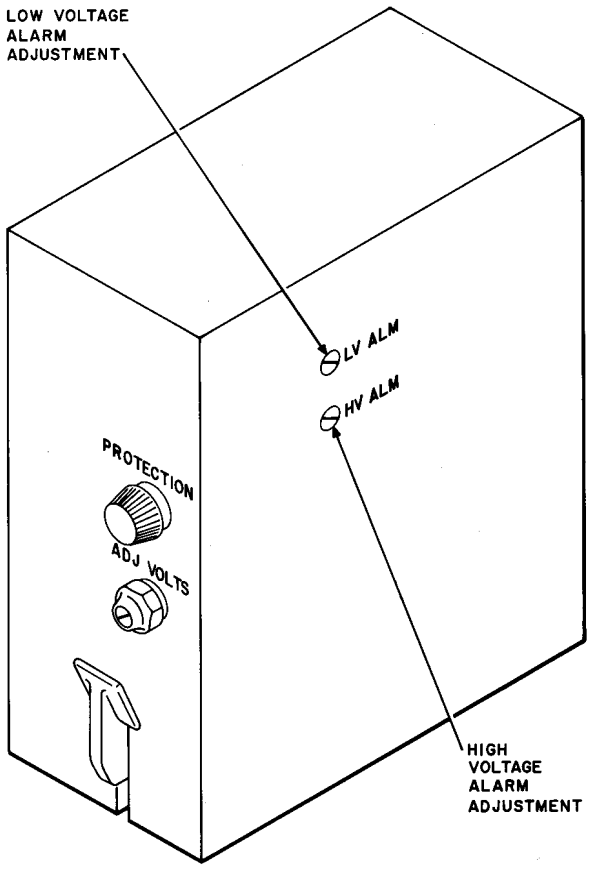


Fig. 5—J87245A Power Supply Unit

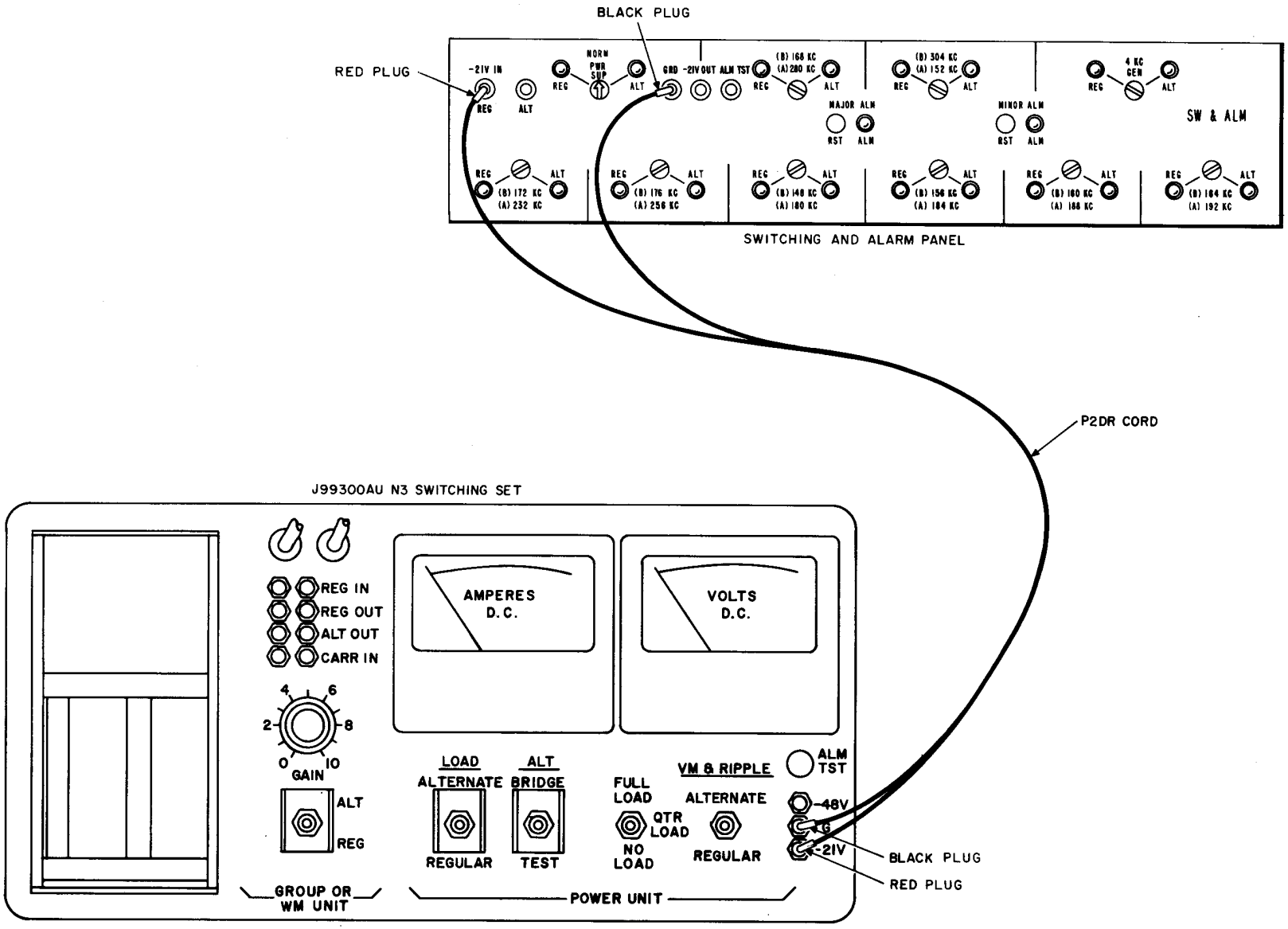


Fig. 6—J99300S List 1 Switching and Alarm Panel—Voltage Tests and Adjustments

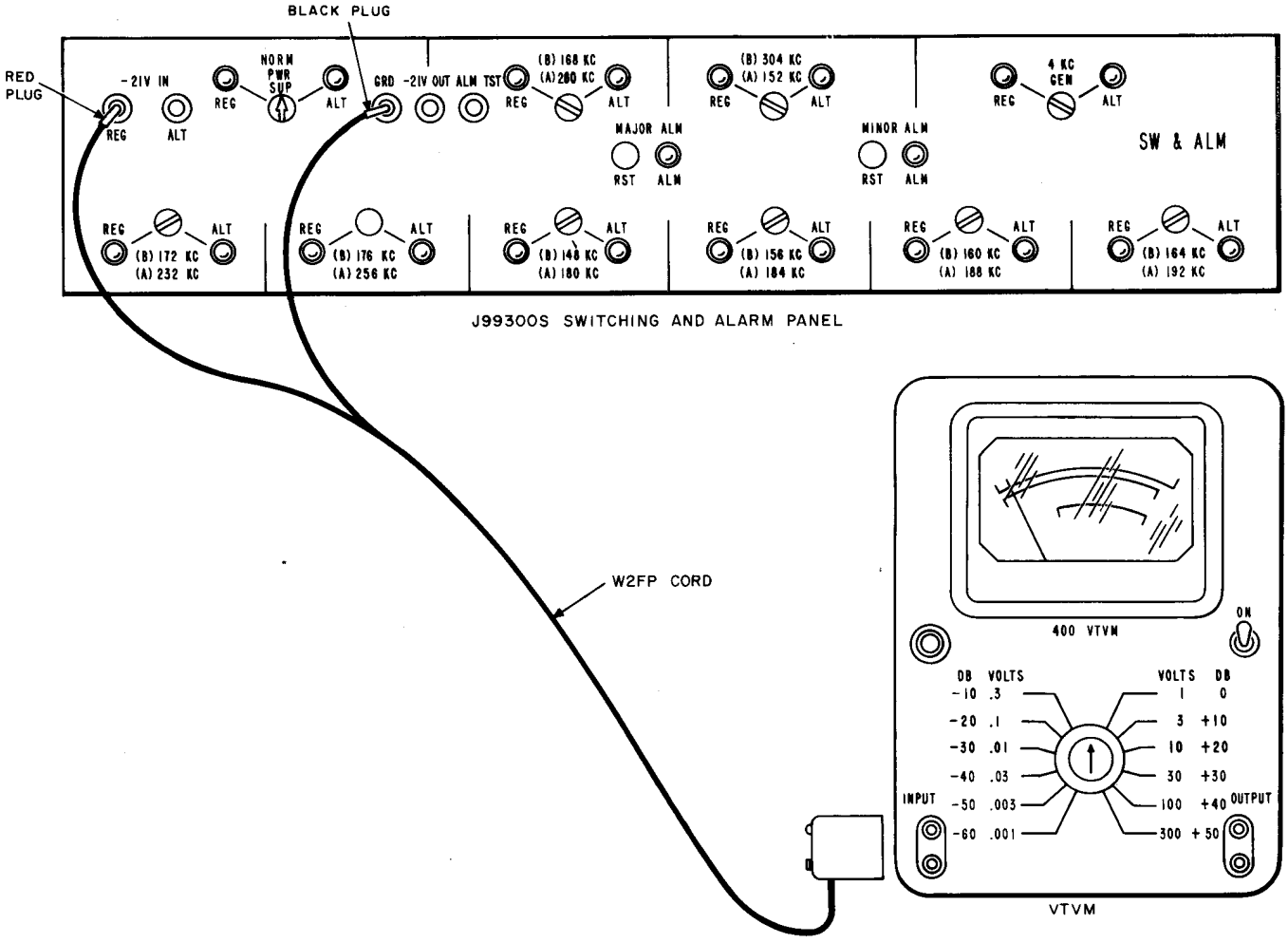


Fig. 7—J99300S List 1 Switching and Alarm Panel—Ripple Voltage Measurements

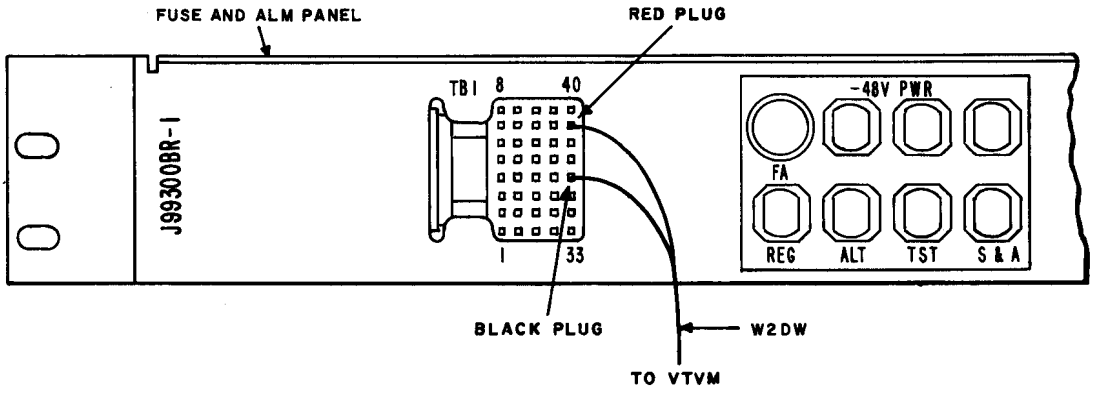


Fig. 8—J99300BR Fuse and Alarm Panel—Ripple Voltage Measurements