

L3 CARRIER

MAIN AND AUXILIARY REPEATER POWER SUPPLIES

J86447A POWER CONTROL BAY

POWER TURNDOWN AND POWER TURNUP OPERATION

The J86447A power control bay (Fig. 1 and 2) provides control of power in one direction for one pair of coaxials. The circuits in this bay automatically control the 230-volt, regulated and unregulated, single phase ac power to L3 office repeaters and regulated current over the coaxial power sections to auxiliary repeaters. Step-up transformers with secondaries tapped at suitable increments are used to provide operating current for auxiliary repeaters at various voltages up to 4400 volts depending on the length of the power section. The line current required for a given power section is posted on a card located in the holder just above the line current meters on the bay. Power is turned up in increments of approximately 100 volts at 30-second intervals until operating line current is reached.

Caution: Power for the line amplifier-regulator and switching equipment bias is furnished by the 230-volt regulated supply. Whenever power is removed from the power loop, the 230-volt regulated supply is turned off. The equipment previously discussed will also be affected.

This section is reissued to ensure that switches used during the power turnup procedure (Chart 2) are restored to their normal positions. Change arrows are used to indicate significant changes. ***Equipment Test Lists are not affected.***

CHART	PAGE
1—Power Turndown	1
2—Power Turnup	3
3—Routine Line Current and Voltage Test	6

CHART 1

POWER TURNDOWN

STEP	PROCEDURE
1	Ensure that service has been removed from the ODD and EVEN coaxials which make up the power loop served by the power control bay.

CHART 1 (Cont)

STEP	PROCEDURE
2	At the power control panel, set the FINE CONTROL NOR/OFF switch to the OFF position. Requirement: The FINE CONTROL OFF lamp lights.
3	Set the COARSE CONTROL MANUAL/NOR AUTO key to the MANUAL position. Requirement: The COARSE CONTROL MANUAL lamp lights.
4	Operate and hold operated the COARSE CONTROL RAISE-NOR-LOWER key at the LOWER position until the AC VOLTS meter indicates zero. Requirement: (a) TURNDOWN lamp lights. (b) POWER CONTROL FAILURE lamp lights. (c) Audible alarm is activated.
5	Operate the ACO key. Requirements: (a) Audible alarm is retired. (b) POWER CONTROL FAILURE lamp remains lighted. (c) TURNDOWN lamp remains lighted.
6	Remove the coaxial line fuse and, if maintenance is to be conducted on the power control bay, remove fuses F3 and F4.
7	If maintenance is to be conducted on the coaxial cable, reverse the warning plate to display the MEN WORKING ON CABLE side.
8	Fill out the disconnect portion of a power disconnect-restoration card for each party or crew requesting power turndown.
9	Place the power disconnect-restoration card or cards in the holder directly below the warning plate.
10	Identify the power section involved and observe that the CA TERM (green) lamps on the associated cable terminal panels are lighted. Note: These panels are located at the top rear of the line bays and are associated with the power separation filter panels.
11	Remove the PWR cable terminal plugs from the input to the power separation filters associated with the power loop. Note: These PWR cable terminal plugs are accessible by removing the panel cover at the rear of the power separation filter panel.

CHART 1 (Cont)

STEP**PROCEDURE**

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| 12 | The power turndown procedure is complete. Maintenance operations can be performed on the coaxials as required. |
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CHART 2

POWER TURNUP**STEP****PROCEDURE**

Warning: Do not reapply power until power has been turned down for at least five minutes. If power is turned up too soon after being turned down, an excessive voltage will be applied to the repeater circuits.

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|---|--|
| 1 | Ensure that all maintenance on the coaxial cables or power bay is complete. |
| 2 | Check the power separation filter panels associated with the lines in the power loop to ensure that all power cable terminal plugs are connected. |
| 3 | Install fuses F3 and F4 if they were removed. |
| 4 | On the power control panel, ensure that: <ul style="list-style-type: none"> (a) The TURNDOWN lamp is lighted. (b) The controls are set as follows: |

CONTROL	POSITION
MANUAL-NOR-AUTO (key)	MANUAL
RAISE-NOR LOWER (key)	NOR
FINE CONTROL (switch)	OFF

- | | |
|---|--|
| 5 | Install the coaxial line fuse. |
| 6 | Turn the warning tag to display the CABLE IN SERVICE side. |
| 7 | Operate the ACO key. |

Note: Operation of the ACO key releases a relay lockup circuit which would otherwise prevent power turnup.

CHART 2 (Cont)

STEP	PROCEDURE
8	While observing the line voltage meter (Fig. 2), operate the COARSE CONTROL RAISE-NOR-LOWER key to the RAISE position for approximately 2 seconds and then to the NOR position for approximately 30 seconds. Requirement: Line voltage meter indicates an increase of approximately 0.1 kV (100 volts). Note: By gradually increasing the current, the plate voltages are limited to a safe value while the electron tube heaters in the auxiliary repeaters and regulators are warming up.
9	Repeat Step 8 until each of the two line current meters indicate approximately 1 ampere.
10	Observe the ODD and EVEN line current meter indications and compare the difference. Requirement: (a) For power section with 15 or less repeaters, a difference of less than 50 mA (b) For power section with 16 or more repeaters, a difference of less than 60 mA.
11	If the requirement of Step 10 is met, proceed to Step 12. If it is not met or if the line voltage differs substantially from 75 percent of the posted line voltage for PS1 (65 percent for PS2), trouble is indicated. Turn down power per Chart 1 of this section and clear trouble.
12	Continue to increase the line current in 0.1-kV (100-volt) steps using the procedure in Step 8 until the line current meters indicate the posted values. Note: One hundred volts equals approximately 0.05 ampere.
13	If necessary, adjust the electronic current regulator ADJ CUR potentiometer to obtain the required line current indication on the line current meters.
14	◆ Wait approximately 30 seconds for line current to stabilize; then, (a) Restore (COARSE CONTROL) MANUAL/NOR-AUTO key to NOR-AUTO position. (b) Restore (FINE CONTROL) NOR-OFF switch to NOR position.◆
15	Observe the ODD and EVEN line current meter indications and compare the difference. Requirement: (a) For power section with 15 or less repeaters, a difference less than 50 mA

CHART 2 (Cont)

STEP**PROCEDURE**

(b) For power section with 16 or more auxiliary repeaters, a difference less than 75 mA.

16 If the requirement of Step 15 is met, proceed to Step 17. If it is not met or if the line voltage differs substantially from 75 percent of the expected line voltage, trouble is indicated. Turn down power per Chart 1 of this section and clear the trouble.

17 Operate the UNREG-REG switch to the UNREG position.

Requirement: AC VOLTS meter indicates 230 volts.

18 If the requirement of Step 17 is met, proceed to Step 19. If it is not met, proceed as follows:

(a) Check the AC VOLTS meter on the associated motor alternator control panel. The two meters should indicate approximately the same.

(b) If necessary, adjust the voltage adjust rheostat on the motor alternator control panel to obtain a 230-volt indication on the AC VOLTS meter.

19 Operate the UNREG-REG switch to the REG position and observe the AC VOLTS meter indication.

Requirement: 230 $\pm$ 5 volts

20 If the requirement of Step 19 is met, proceed to Step 21. If it is not met, restrap the T5 transformer as follows:

(a) Turn down per Chart 1 of this section.

(b) Restrap the T5 transformer per SD-81152-01 to obtain a regulating voltage as near as possible to 230 volts.

(c) Check the power control panel and readjust as prescribed in Section 167-671-326.

21 Complete and file the power disconnect-restoration card or cards.

CHART 3

ROUTINE LINE CURRENT AND VOLTAGE TEST

SPECIAL CONSIDERATIONS

At main and terminal main repeaters, the line current and voltage are checked on a periodic basis. The required current and voltage values are determined during initial or subsequent power lineup surveys. These values are posted in the card holders located above the meters in the power control bay.

The L3 carrier power system operates on a constant current basis. As the line current is regulated to compensate for variations on the line, the line voltage will vary *slightly* from the posted value. However, a large variation from the posted value indicates a trouble condition on the line.

A comparison of pilot and power survey readings of HTR-1 voltages or ODD and EVEN line current differences from previous survey readings may indicate:

- (a) Changes in line resistance due to temperature change.
- (b) Change in line characteristics due to a defective loading inductor.
- (c) Need for readjusting the line current to reset the majority of the LOAD ADJ switches so that the auxiliary repeater HTR-1 voltage requirements can be met.

If a new value of line current is required, it should be posted and the power control circuits should be adjusted to regulate at the new value as prescribed in Section 167-671-326.

STEP

PROCEDURE

Note: If the requirements of Steps 1, 2, and/or 3 are not met, a trouble condition in the power section is indicated and should be investigated as prescribed in Section 167-671-326.

- 1 On the power control panel, observe the ODD and EVEN line current meters and the line voltage meter.

Requirements:

- (a) ODD and EVEN line current meters: Posted value ± 15 mA
- (b) LINE voltage meter: Within 75 percent of posted value
- (c) Difference between ODD and EVEN line current indications for:
 - (1) Power section with 15 or less auxiliary repeaters: Less than 0.050 amperes
 - (2) Power section with 16 or more auxiliary repeaters: Less than 0.075 amperes.

- 2 Operate the UNREG-REG switch to the UNREG position and observe the AC VOLTS meter.

Requirement: 230 ± 2 volts

CHART 3 (Cont)

STEP**PROCEDURE**

3 Operate the UNREG-REG switch to the REG position and observe the AC VOLTS meter.

Requirement: 230 ± 5 volts

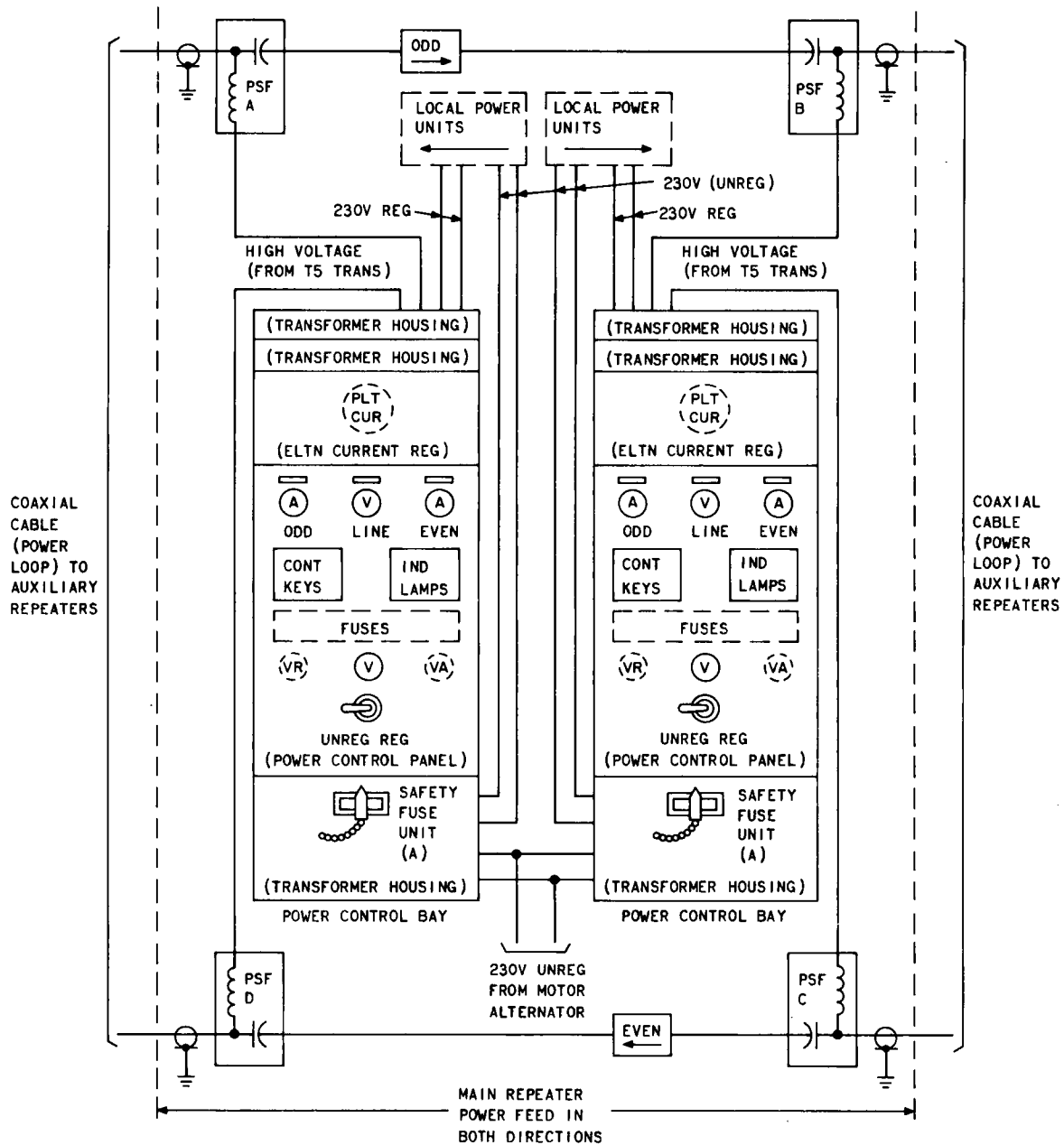
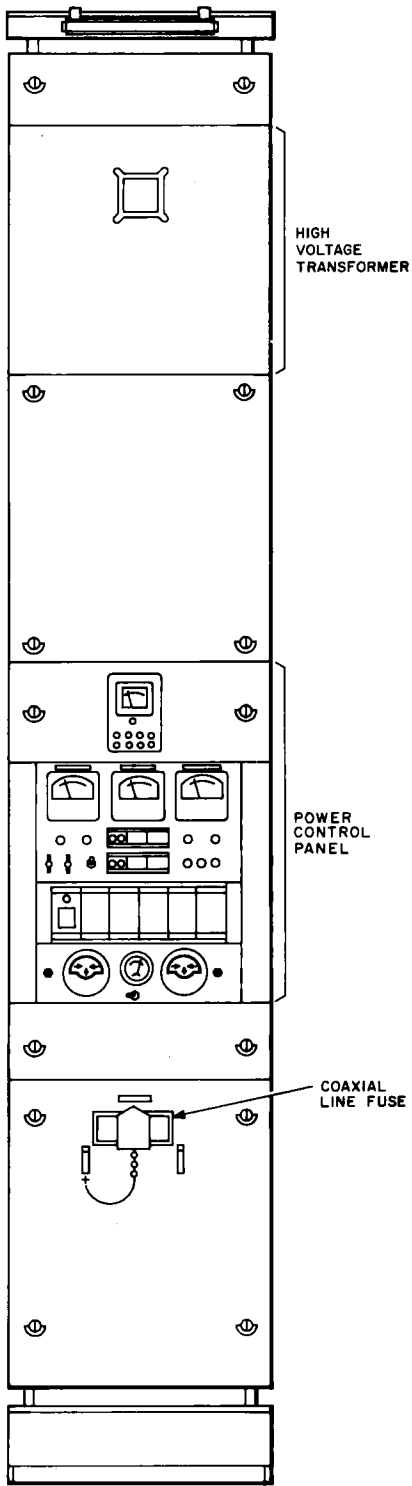
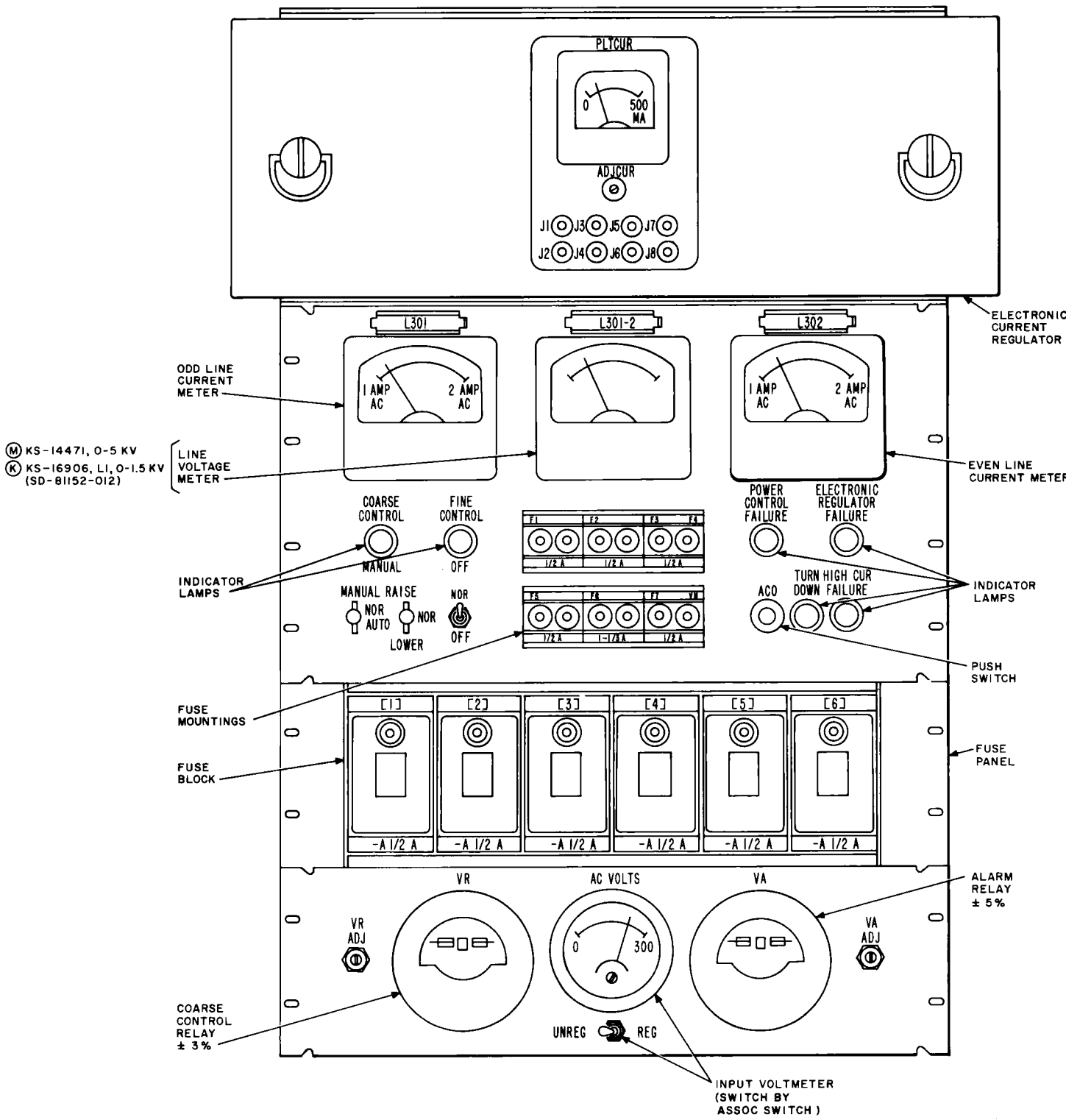


Fig. 1—L3 Power Control—Block Diagram



POWER CONTROL BAY



POWER CONTROL PANEL

Fig. 2—L3 Carrier, J86447A Power Control Bay