

TYPE L3 CARRIER SYSTEM
TERMINAL MAIN REPEATER POWER SUPPLIES
(CONSTANT CURRENT FEED—POWER FED FROM CABLE)
PS1 AND PS2 POWER SYSTEMS

This section describes the terminal main repeater (constant current feed) power supply measurements on the Type L3 carrier system.

This section describes power supply voltage measurements on equipment which is powered from the cable (constant current feed), and measurement of power supply voltages which are powered from a local power source.

- (1) Measurement of power supplies which receive power from the cable.
 - (A) Filament and Bias
 - (B) 130 Volt MET RECT
 - (C) Plate Supply — Measurement of "A", "B" and "C" Power Supplies.
- (2) Measurement of power supplies which receive power from a local source.
 - (A) Filament and Bias
 - (B) Plate Supply
- (3) HTR 2 BIAS

This section is reissued to show reference to the PS1 and PS2 power systems. The original L3 power system has been designated the PS1 supply.

APPARATUS:

- 1AL Power Test Set
- 1— Adapter Cord per Fig. 2

Caution: *The measurements described in this section can be made on an "in service" basis. The power supply voltages should not be interrupted as this interruption will cause objectionable hits and possible line switching on the carrier system.*

Fig. 1. Block schematic showing the source of power for each power supply at a terminal main repeater (constant current feed) which receives its power from the cable. As shown in the figure any interruption on the power loop will affect the power supplies for the line receiving, line transmitting and the switching equipment bias. Any interruption to the local 230 volt source will affect the power to the line connecting equipment.

Fig. 2. Special adapter cord to be constructed in field to make HTR 2 BIAS test.

Caution: The plate voltage limiter circuit provides a load on the plate power supply to limit the voltage during power turnup. If power is turned on too soon after being turned off an excessive voltage is applied to the repeater equipment. It is therefore advisable to wait for at least 5 minutes after turning power off before turning it on.

STEP	PROCEDURE																																												
1	At the main or terminal repeater supplying power read and readjust, if necessary, the line current to the value posted on the cards in the power control panel. If necessary to readjust the line current refer to Section 359-020-513 for line current and voltage check. (1) Measurement of power supplies which receive power from the cable.																																												
2	(A) Filament and Bias Procedure: Connect the test set to the TST connector on the filament and bias supply to be measured. Measure and record the filament and bias voltages for each filament and bias power supplies as shown: <table><tr><th>IAL SET MTR SW POSITION</th><th>FIL AND BIAS TST SW POSITION</th><th>REQUIREMENT</th><th>ADJUSTMENT</th></tr><tr><td>HTR 1</td><td>BIAS and HTR 1A</td><td>6.6 to 6.8</td><td>See Note</td></tr><tr><td>HTR 2</td><td>"</td><td>"</td><td>"</td></tr><tr><td>HTR 1</td><td>BIAS and HTR 1B</td><td>"</td><td>"</td></tr><tr><td>HTR 2</td><td>"</td><td>"</td><td>"</td></tr><tr><td>BIAS 1</td><td>BIAS and HTR 1A</td><td>98 to 104</td><td>Replace V1</td></tr><tr><td>"</td><td>BIAS and HTR 1B</td><td>"</td><td>Replace V2</td></tr><tr><td>BIAS 2</td><td>Any position</td><td>"</td><td>Replace V3</td></tr><tr><td>BIAS 3</td><td>BIAS 1A</td><td>55 to 65</td><td>ADJ BIAS 1A</td></tr><tr><td>"</td><td>BIAS 1B</td><td>"</td><td>ADJ BIAS 1B</td></tr><tr><td>"</td><td>BIAS 2</td><td>"</td><td>ADJ BIAS 2</td></tr></table> Note: The switches used in bias supplies for repeaters operating on constant current adjust resistance in shunt with primaries of the individual transformers used in the circuit. Since these primaries are connected in parallel, the two controls are in parallel and either the HTR A or HTR B control will adjust both the HTR 1 and HTR 2 voltage. HTR 2 voltage is not individually adjustable.	IAL SET MTR SW POSITION	FIL AND BIAS TST SW POSITION	REQUIREMENT	ADJUSTMENT	HTR 1	BIAS and HTR 1A	6.6 to 6.8	See Note	HTR 2	"	"	"	HTR 1	BIAS and HTR 1B	"	"	HTR 2	"	"	"	BIAS 1	BIAS and HTR 1A	98 to 104	Replace V1	"	BIAS and HTR 1B	"	Replace V2	BIAS 2	Any position	"	Replace V3	BIAS 3	BIAS 1A	55 to 65	ADJ BIAS 1A	"	BIAS 1B	"	ADJ BIAS 1B	"	BIAS 2	"	ADJ BIAS 2
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"	BIAS 1B	"	ADJ BIAS 1B																																										
"	BIAS 2	"	ADJ BIAS 2																																										
3	(B) 130 Volt MET RECT Procedure: Connect the test set to the TST connector on the 130 volt MET RECT to be measured. Measure and record the bias voltage for each 130 volt MET RECT as shown: <table><tr><th>IAL SET MTR SW POSITION</th><th>TST CONNECTOR</th><th>REQUIREMENT</th></tr><tr><td>BIAS 2</td><td>130V MET RECT</td><td>97 to 103</td></tr></table> If requirement is not met adjust the ADJ VOLTS control on the MET RECT to as near 100 volts as possible.	IAL SET MTR SW POSITION	TST CONNECTOR	REQUIREMENT	BIAS 2	130V MET RECT	97 to 103																																						
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STEP

PROCEDURE

4

(C) Plate Supply – Measurement of "A", "B" and "C" Power Supplies

Procedure:

Connect the test set to the *V TST connector on the plate power supply to be measured. Measure and record the plate voltages for each of the plate power supplies as shown:

1AL SET MTR SW POSITION	*V TST CONNECTOR	REQUIREMENT
PLT 1	AUX PWR A	180-220 See Note
PLT 2	"	270-355 "
PLT 1	AUX PWR B	180-220 "
PLT 2	"	270-355 "
PLT 1	AUX PWR C	180-220 "
PLT 2	"	270-355 "

Note:

LOAD ADJ switch, on the appropriate power panel, should be adjusted so that plate voltage readings are as near as possible to 190 volts for PLT 1 and 315 volts for PLT 2.

*

When V TST connector is not provided on the auxiliary power units it will be necessary to make the voltage readings on the appropriate transmission panels.

(2) Measurement of power supplies which receive power from a local source.

5

(A) Filament and Bias

Procedure:

Connect the test set to the TST connector on the filament and bias supply to be measured. Measure and record the filament and bias voltages as shown:

1AL SET MTR SW POSITION	FIL AND BIAS TST SW POSITION	REQUIREMENT	ADJUSTMENT
HTR 1	BIAS and HTR 1A	6.6 to 6.8	See Note
BIAS 1	BIAS and HTR 1A	98 to 104	Replace V1
BIAS 2	Any	"	Replace V3
BIAS 3	BIAS 1A	55 to 65	ADJ BIAS 1A
BIAS 3	BIAS 2	"	ADJ BIAS 2

Note:

Adjust HTR 1A control on filament and bias supply panel to meet HTR 1 requirement. The requirement given is expected, with a mean voltage, to produce 6.2 volts on the individual transmission and control panels. Measurement of HTR 2 voltage is not specified as its voltage is not individually adjustable.

(B) Plate Supply

Procedure:

Connect the test set to the TST connector on the plate supply to be measured. Measure and record the plate voltages as shown:

1AL SET MTR SW POSITION	TST CONNECTOR	REQUIREMENT
PLT 1	190V SEMICOND RECT	185 to 195 (a)
PLT 2	315V SEMICOND RECT	307 to 322 (b)

If requirement (a) or (b) is not met

adjust the ADJ VOLTS control on the appropriate rectifier panel so that voltage reading is as near as possible to 190 volts for PLT 1 and 315 volts for PLT 2.

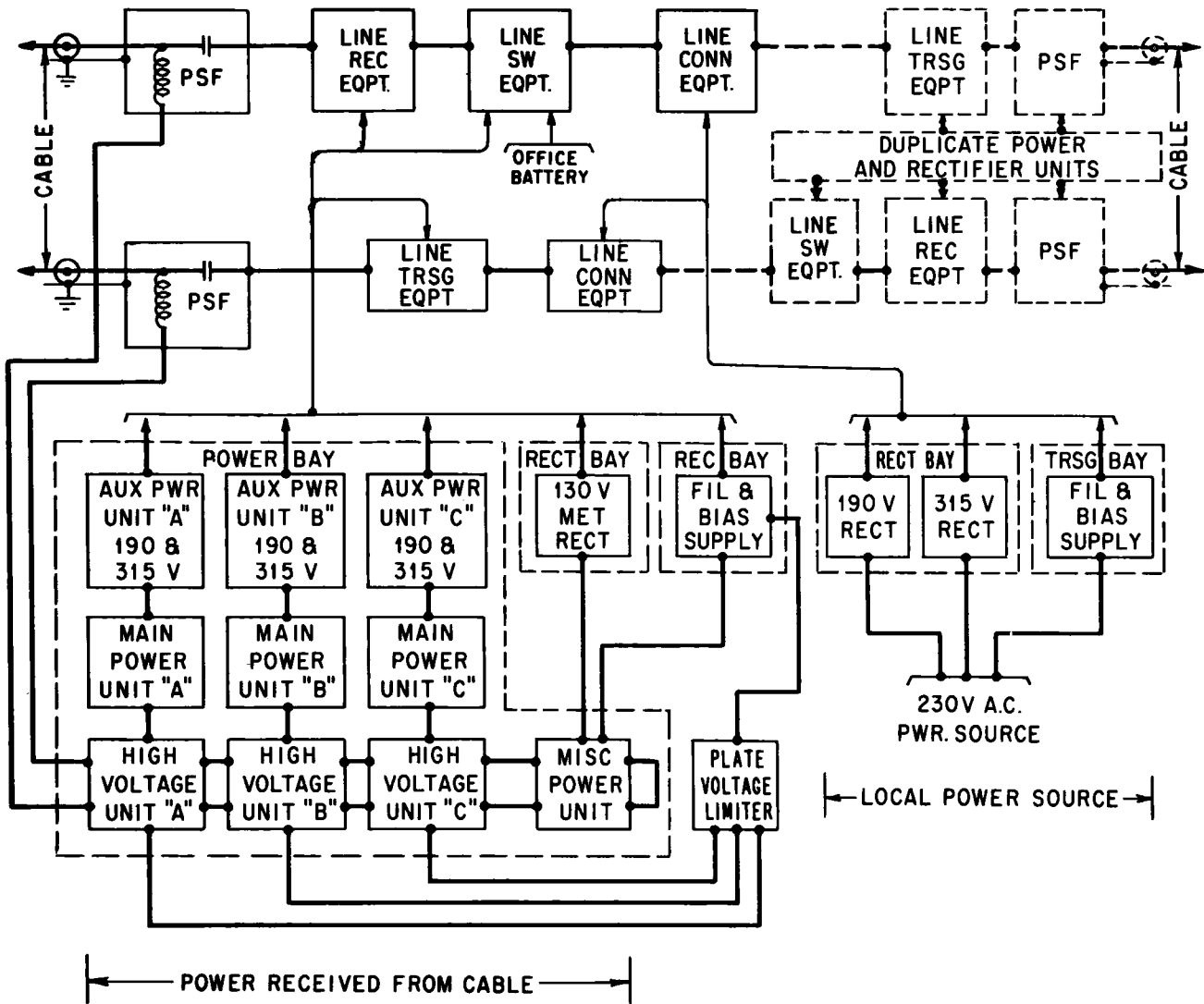


Fig. 1 – Typical Power Supply Arrangement
Terminal Main Repeaters
(Constant Current Feed)

STEP	PROCEDURE
	(3) HTR 2 BIAS Test
7	The heater 2 bias test is made to detect a shorted filtering capacitor on the HTR 2 leads of an amplifier. To implement this test with the J64001 AL power test set, it will be necessary for the field to construct an adapter cord per Fig. 2. The function of the adapter cord is to transfer one of the HTR 2 supply leads to the PLT 1 test lead in the V TST connector of the test set.
8	Connect the adapter cord per Fig. 2 between the V TST plug on the 1AL test set and V TST jack in any transmission panel.
9	Arrange the 1AL test set controls for making a PLT 1 voltage test. Requirement: The reading on the 1AL test set should not be less than 120 volts. Note: If this requirement is not met, this is an indication that one or more of the amplifiers at the repeater under test has a defective filtering capacitor on the HTR 2 supply leads. The faulty amplifier may be determined by removing the power connector from one amplifier at a time until the requirement is met, thereby indicating that the final amplifier having its power removed is the one that is defective. Caution: It is imperative to make ceretain, before removing an amplifier power connector, that the line containing that amplifier has been switched out of service. At switching or terminal repeaters where transmitting flat amplifiers are involved their power connector should be removed last to avoid what may be an unnecessary switching operation if the trouble is found to be in one of the other amplifiers. Since the bias on the HTR 2 supply leads is normally a minimum of 180 volts at an auxiliary repeater, the 1AL test set would read 180 volts if the 0.1 Meg. limiting resistor between the PLT 1 power supply and the HTR 2 supply leads were not present. The limiting resistor acts as an additional multiplier resistor in series with the meter in the test set thereby affecting the calibration of the voltmeter scale. A reading of 120 V. on the meter corresponds approximately to a 180 V/bias. In general, when one of the capacitors on the HTR 2 leads on an amplifier breaks down the impedance across it is so low that the bias potential drops to zero.

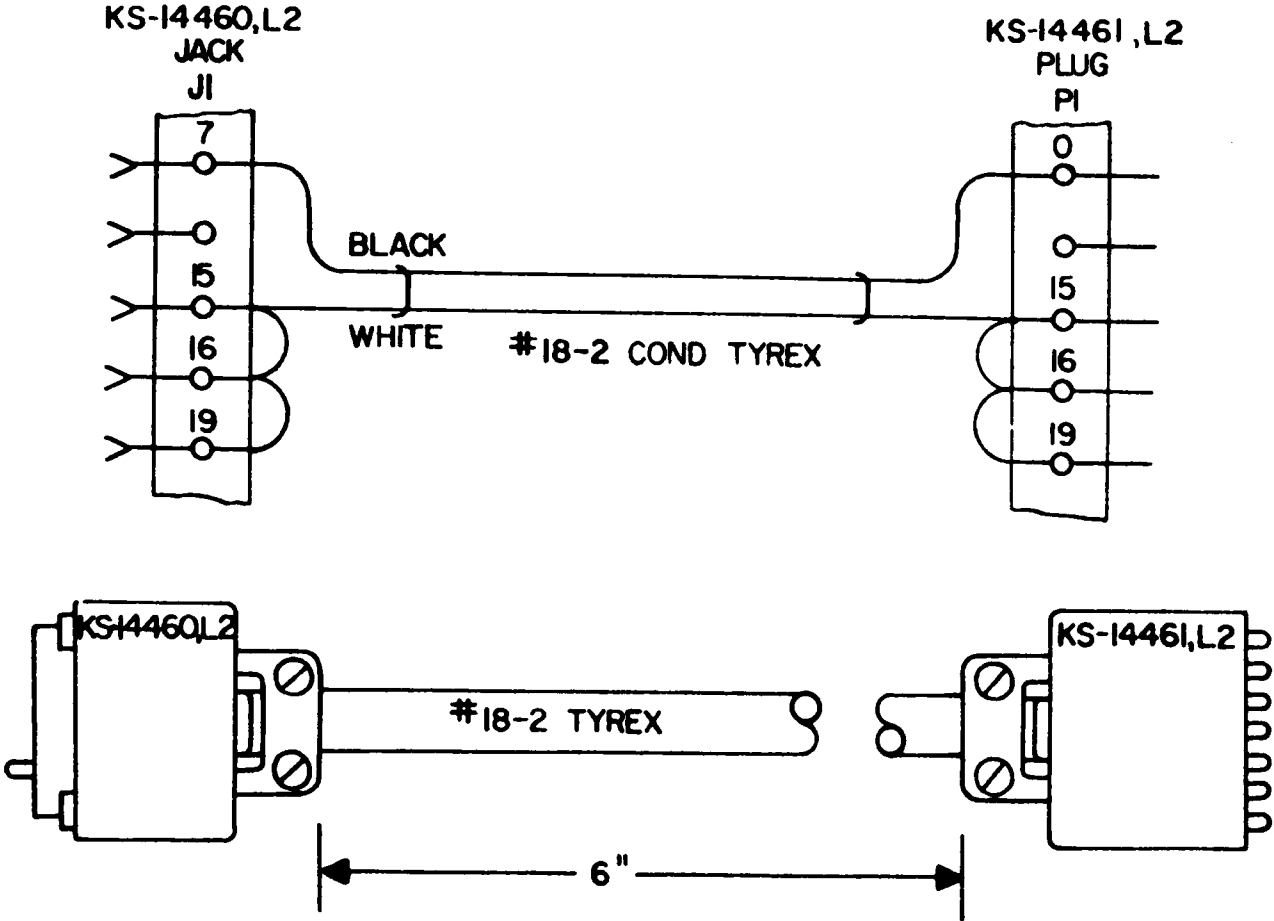


Fig. 2 - Adapter Cord for 1AL Power Test Set