TYPE L3 CARRIER SYSTEM
AUXILIARY REPEATER POWER SUPPLIES
PS1 AND PS2 POWER SYSTEMS

This section describes the method for making auxiliary repeater power supply measurements on the type L3 carrier system. The voltage measurements made in this section are part of the initial line-up and maintenance tests.

This section covers the power supply measurements at pilot and thermometer regulated auxiliary repeaters.

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.

Fig. 1. Simplified schematic showing the method used to obtain the voltages for powering the amplifiers and regulators at an auxiliary repeater location. The circuit locations for the following adjustments are shown:

(1) LOAD ADJ switch — Used to set the heater voltage

(2) ODD ADJ — BIAS 3, used with pilot and thermometer regulated auxiliary repeaters

(3) EVEN ADJ — BIAS 3, used with pilot regulated auxiliary repeaters only

(4) R24, used in lieu of rect. 3 at thermometer regulated auxiliary repeaters

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

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.

STEP	PROCEDURE
2	At the auxiliary repeater under test connect the test set to the V TST connector on the power TRANS PAN measure and record voltages listed below:

V TST CONNECTOR	1AL SET MTR SW POSITION	REQUIREMENT	ADJUSTMENT
ODD	HTR 1	6.0-6.3 (A)	See Note
"	HTR 2	6.0-6.3 (B)	"
"	PLT 1	180-240 (C)	"
"	PLT 2	270-355 (D)	"
"	BIAS 1	98-104	Replace V1
"	BIAS 2*	98-104	Replace V2
"	BIAS 3	40-60	ODD ADJ
EVEN	BIAS 3*	50-80**	EVEN ADJ

* Measure ODD BIAS 2 and EVEN BIAS 3 only at pilot regulated repeaters.

** Adjust to as near 60 volts as possible.

Note: If requirement (A) is not met adjust the LOAD ADJ switch on the main power panel to meet requirement. If required HTR 1 voltage cannot be met make the following checks:

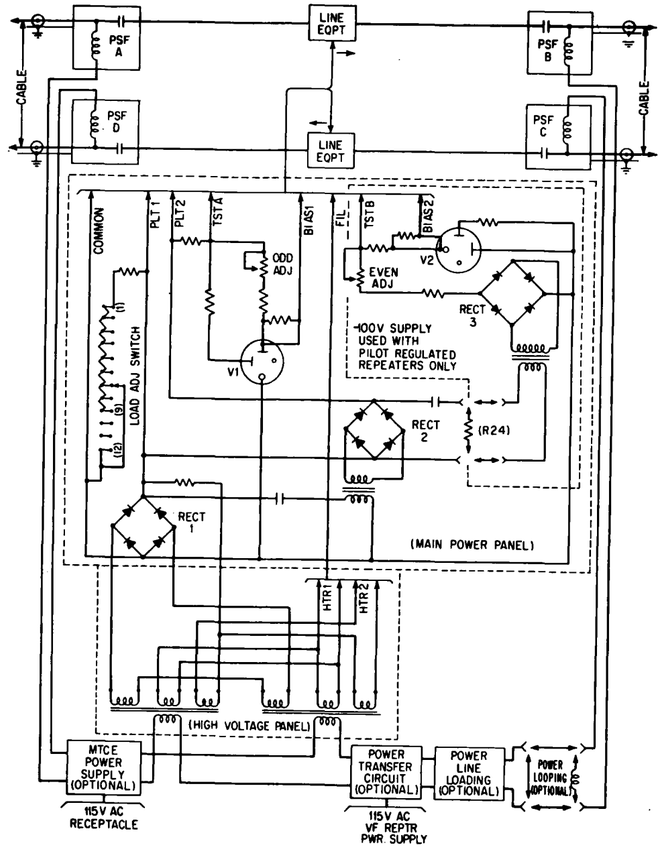
(a) Compare HTR 1 voltage with other HTR 1 voltages in the power section to determine if an adjustment of power loading is required. If the majority of HTR 1 voltages are close to or beyond one limit, the indication is that line current should be changed in one direction to bring all within limits. If one repeater is beyond the limit, and all others are within, the indication is that there is an incorrect load, or other irregularity at the repeater at which measurements are outside the requirements.

(b) If the variable and fixed loading coils are correctly adjusted but the majority of the LOAD ADJ switch settings are all higher or lower than those specified on the layout card, adjust the line current at the power supply source until the HTR 1 voltage requirements can be met. See Section 359-020-513 for line current and voltage check if it is necessary to readjust the power supply source.

If requirements (B), (C) and (D) are not met after meeting requirement (A) the plate loads may be incorrect or the power supply may be defective.

Any trouble condition should be investigated before making further adjustments.

Since the V TST jacks on the ODD and EVEN transmission panels measure the same voltage source, except in the case of BIAS 3, common voltage readings are made only on the ODD transmission panel.



The high voltage unit provides alternating current to the main power unit. This AC voltage is rectified to provide +190 volts, the 120 CPS ripple (approx.) which appears on this output is rectified to provide an additional +125 volts. This voltage added to the +190 volts provides the +315 volt supply. The 240 CPS ripple (approx.) which appears on this output is rectified to provide negative bias voltage. R24 is a resistor load used in lieu of the negative bias rectifier at thermometer regulated repeaters as the negative bias voltage is not required.
The power supply is so designed that the reflected load to the power loop is equivalent to a resistor load.

Fig. 1 – Typical Power Supply Arrangement Auxiliary Repeater (Constant Current Feed)

STEP	PROCEDURE
3	**HTR 2 BIAS Measurement** The HTR 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.
4	Connect the adapter cord per Fig. 2 between the V TST plug on the 1AL test set and V TST jack in either transmission panel.
5	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 certain, 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.

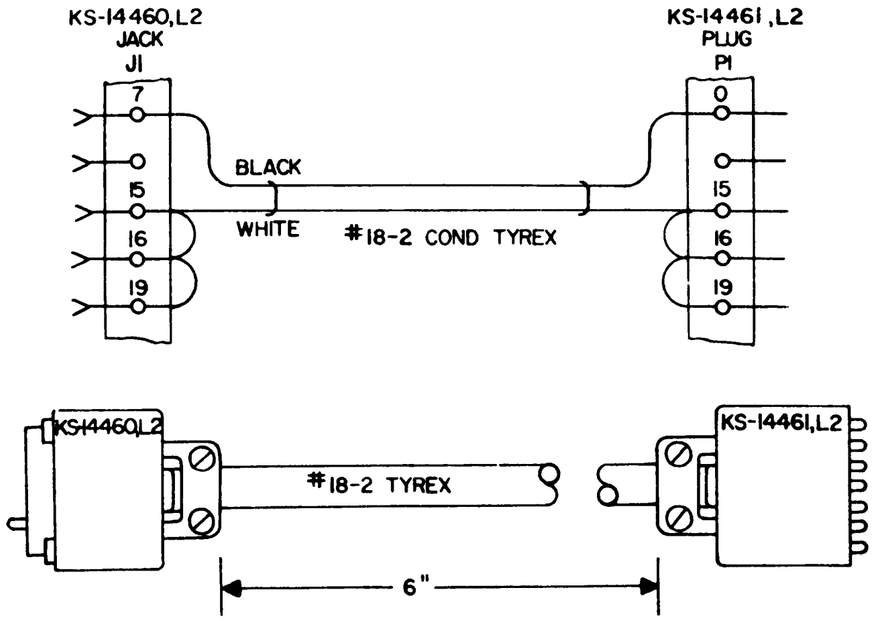


Fig. 2 – Adapter Cord for 1AL Power Test Set