TYPE O AND ON CARRIER TELEPHONE SYSTEMS — TERMINALS AND JUNCTIONS
TESTS AND ADJUSTMENTS — GENERAL
HEATER SUPPLY VOLTAGE ADJUSTMENT — TERMINALS

The −48-volt office battery is distributed from the input plug and receptacle assembly, through two fuses, one of which furnishes power to the transmission circuits and the other furnishes power for the alarm circuit.

The heater supply circuit in the terminal is adjusted with all terminal units in position so that the voltage at the −40V test jack is −38.5 volts when the 48-volt supply is at its nominal value. Where the resistance of the voltage dropping rheostat (R24, HTR) is inadequate, the 7-ohm resistor (R23) is added.

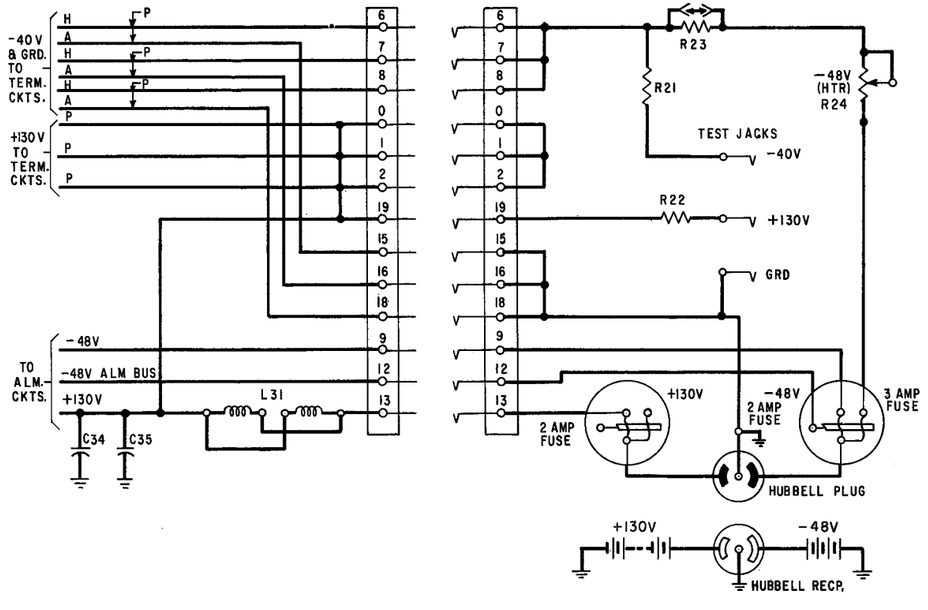
It is important to readjust the heater voltage whenever the number of channels is changed, for other than maintenance reasons, and any change in the condition of the power supply such as adding terminals to the supply lead.

The purpose of this test is to set the heater supply voltage to the correct value.

APPARATUS:

1 — Weston Model 931 Voltmeter or equivalent

STEP	PROCEDURE
1	If the average battery supply voltage, as applied to the terminal, is not known, it may be determined as follows: Connect the voltmeter to terminal 2 of the HTR potentiometer. Measure the voltage at five-minute intervals for three successive readings during both the heavy and light load periods of the office. The average of the readings is the average supply voltage.
2	Connect the voltmeter between the −40V and GRD test jacks and read the heater voltage. ***Requirement:*** The actual meter reading required will depend on the resistance of the meter being used and the relative magnitude of the battery voltage at the time of adjustment with respect to the average battery voltage. The corrections are made to compensate for the effect of a resistor in series with the −40V jack and to insure an average voltage across the heater of −38.5 volts. To determine this required value continue with Step 3.
3	Fig. 1 gives the corrected meter reading to which to adjust under the various battery and meter conditions. An example of a typical test is as follows: Meter — Weston Model 931 — 1000 ohms per volt Battery Voltage Reading — 47.1 volts Average Battery Voltage — 48.6 volts Present Battery Voltage is then 1.5 volts less than the average.

STEP	PROCEDURE
	From line B in Fig. 1 we see that the HTR potentiometer should be adjusted to give a voltage of 36.6 volts. The needle should be displaced from the scale reading of 36.6 the same direction and distance as the red calibration mark is displaced from the black scale reading of 38.5. The filament voltage should be maintained within ±0.5 volt of this value. ***Note:*** If desired, the right-hand side of Fig. 1 may be permanently marked for the particular Model 931 meter in use at the particular office to enable the desired meter reading on the black scale of the meter to be read directly from the graph. This eliminates displacing the needle from the indicated reading a distance and direction equal to that of the red line from the black scale reading of 38.5. If the red line is "X" tenths higher than the black scale reading for 38.5 volts, a new vertical scale on the right side of Fig. 1 for ***line B only*** (Model 931 meter) is written "X" tenths lower than the left-hand scale of Fig. 1. Vice versa if the red line is "Z" tenths lower than the black scale reading of 38.5 volts, the new vertical scale on the right side of Fig. 1 needs to be "Z" tenths higher than the left-hand scale.  **Fig. 2 – Terminal Heater Supply Voltage**

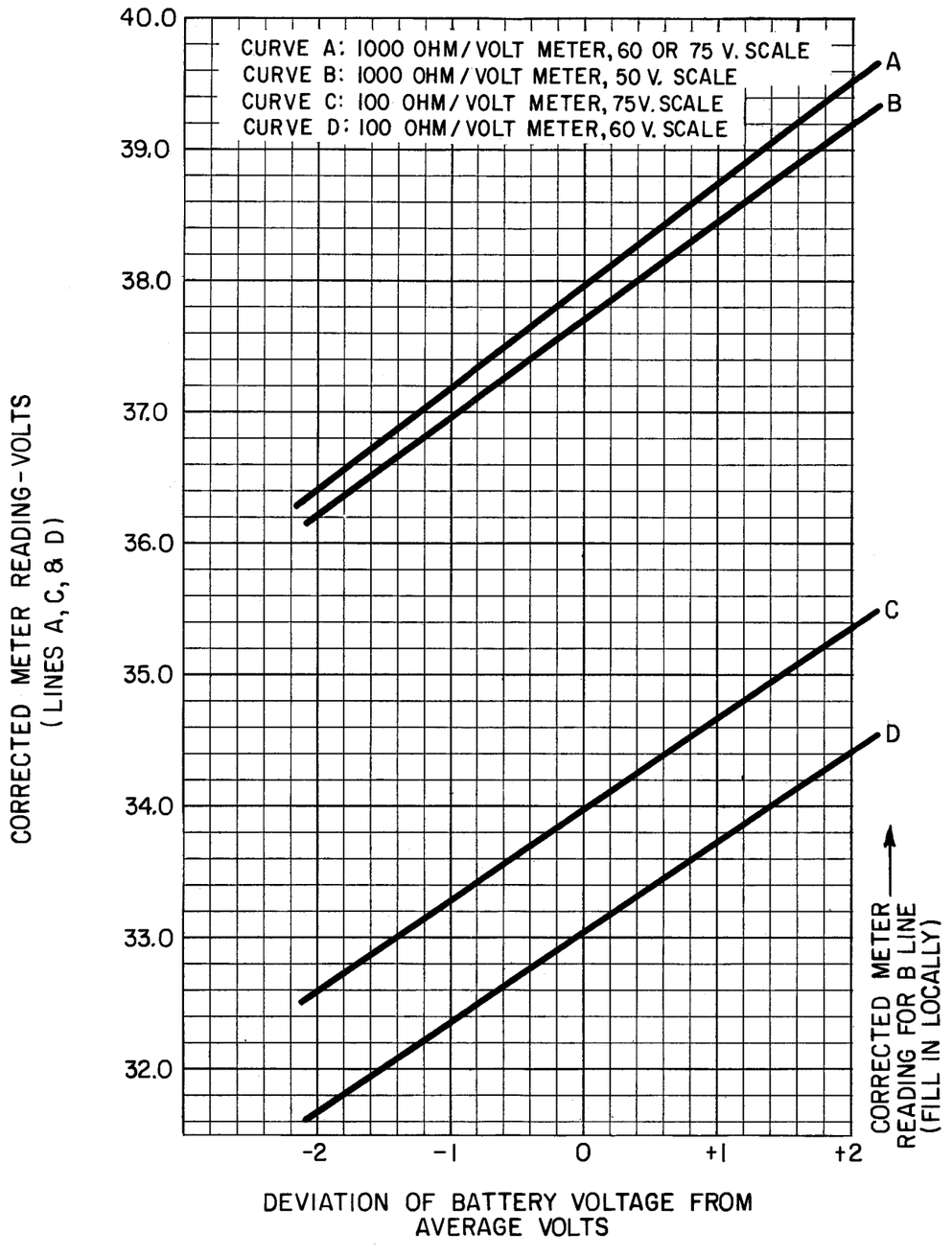


Fig. 1 – Heater Voltage Adjustment — Terminals