TYPE N1 CARRIER TELEPHONE SYSTEM — TERMINAL EQUIPMENT
TESTS AND ADJUSTMENTS — GENERAL
HEATER SUPPLY VOLTAGE ADJUSTMENT

This section provides the information for measuring and adjusting the heater supply voltage to the J98703A (12-channel) terminal, the J98703AT (36-channel bay) terminal, and the J98703AW (24-channel bay) terminal. Because the revisions are extensive, marginal arrows to indicate changes in the section have not been used.

It is recommended that the heater voltage adjustments be made during a period of light load to minimize fluctuations in the measurements.

All of the plug-in units to be used in a system should be in place before the terminal filament voltage is adjusted. It is important to readjust the heater voltage whenever the number of plug-in units is changed for other than maintenance reasons, or when there has been a change in the condition of the power supply which will affect the average supply voltage.

APPARATUS:

1 — Weston Model 931 Voltmeter with special red calibration mark of 1/4% accuracy at 38.5 volts, or equivalent.

CHECK OF AVERAGE BATTERY SUPPLY VOLTAGE

The terminal heater voltage is adjusted for a value which depends upon the average battery supply voltage. If the average battery supply voltage applied to the terminal is not known, voltage measurements should be taken at three different periods during both the heavy and light load periods of the offices as outlined below.

STEP	PROCEDURE
1	Connect the positive terminal of the voltmeter to ground.
2	Connect the negative terminal of the voltmeter as follows: **J98703A Terminal** (a) Remove the dust cover from the resistor subassembly at the lower right-hand corner of the apparatus side of the terminal. (b) Connect the negative test prod of the voltmeter to the right-hand terminal of the R10 resistor (Fig. 2) and measure the voltage. (See Step 3.)

STEP	PROCEDURE
	J98703AT and J98703AW Terminals (a) Remove the dust cover from the alarm and power equipment panel at the top of the bay. (b) Remove the fuse from the right 48-volt fuse holder. (c) Connect the negative test prod of the voltmeter to the back contact in the fuse holder (−48 volts) and measure the voltage. (See Step 3.)
3	Observe the voltmeter for a period of several minutes and record the average voltage, making sure that two maximum and two minimum readings are observed. The average measurement is considered to be the AVERAGE SUPPLY VOLTAGE of the office.

HEATER SUPPLY ADJUSTMENT

J98703A TERMINALS

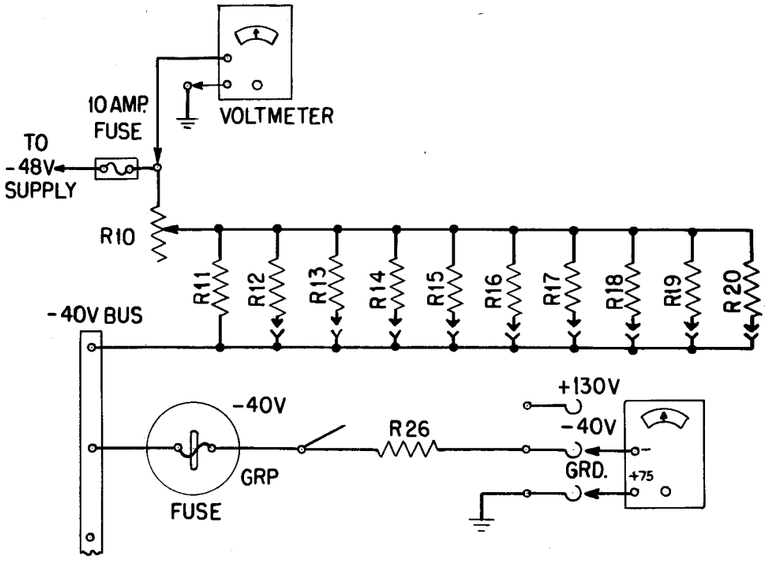
The −38.5 volt heater supply for a J98703A terminal is obtained from the −48 volt office battery through an arrangement of parallel resistors and a series rheostat R10. After the plug-in units have been positioned, the required heater supply voltage is obtained by strapping resistors and adjusting the rheostat.

If the ***average battery supply voltage*** applied to the terminal is not known, it must be determined as covered above in CHECK OF AVERAGE BATTERY SUPPLY VOLTAGE, before this adjustment can be made.

STEP	PROCEDURE
1	Uncover the resistor subassembly at the lower right-hand corner of the apparatus side of the terminal.
2	Strap resistors R11 through R20 according to the average battery voltage and the number of channels furnished as shown in Table I. When other than regular message channel units are used they should be counted as follows: Thru Channel Units J98703AH — 1/3 channel Special Services Channel J98703AM — 1/2 channel Channels Without Signaling J98703AP — 2/3 channel C & D Program Channel J98703TA — 1 channel
3	Place the group units, channel units, and fuses in the mountings.
4	Connect the voltmeter between the right-hand terminal of R10 and ground, and measure the −48 volt supply voltage.
5	Connect the voltmeter between the GRD and −40V jacks on the terminal fuse panel and measure the heater supply voltage.
6	Adjust R10 for the required voltage. ***Requirement:*** Line-up — Value of Fig. 3. Mtce — −38.5 ± 0.5 volts, corrected according to Fig. 3. (See Note) ***Note:*** The required heater voltage reading will depend on the heater supply voltage at the time of adjustment (Step 4) with respect to the AVERAGE BATTERY SUPPLY VOLTAGE. If the battery voltage at the time of adjustment differs from the average, a correction is applied to the −38.5 volt requirement. The required heater voltage reading for deviations from average voltage is given in Fig. 3.

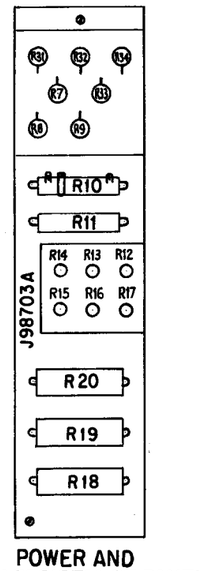
TABLE I

Av. Value of -48 Volt Supply	Number of Channels Furnished	Strap in Resistors
45	4	R11 Thru R17
	5,6	R11 " R18
	7,8,9	R11 " R19
	10,11,12	R11 " R20
46	4	R11 Thru R16
	5	R11 " R17
	6,7	R11 " R18
	8,9,10,11	R11 " R19
	12	R11 " R20
47	4	R11 Thru R16
	5,6	R11 " R17
	7,8	R11 " R18
	9,10,11,12	R11 " R19
48	4	R11 Thru R15
	5	R11 " R16
	6,7	R11 " R17
	8,9	R11 " R18
	10,11,12	R11 " R19
49	4	R11 Thru R14
	5,6	R11 " R16
	7	R11 " R17
	8,9,10	R11 " R18
	11,12	R11 " R19
50	4	R11 Thru R14
	5	R11 " R15
	6	R11 " R16
	7,8	R11 " R17
	9,10,11	R11 " R18
	12	R11 " R19
51	4	R11 Thru R13
	5	R11 " R14
	6	R11 " R15
	7	R11 " R16
	8,9	R11 " R17
	10,11,12	R11 " R18
52	4	R11 Thru R12
	5	R11 " R14
	6	R11 " R15
	7,8	R11 " R16
	9,10	R11 " R17
	11,12	R11 " R18



HEATER SUPPLY MEASUREMENT AND ADJUSTMENT

Fig. 1



POWER AND ALARM RESISTANCE PANEL

Fig. 2

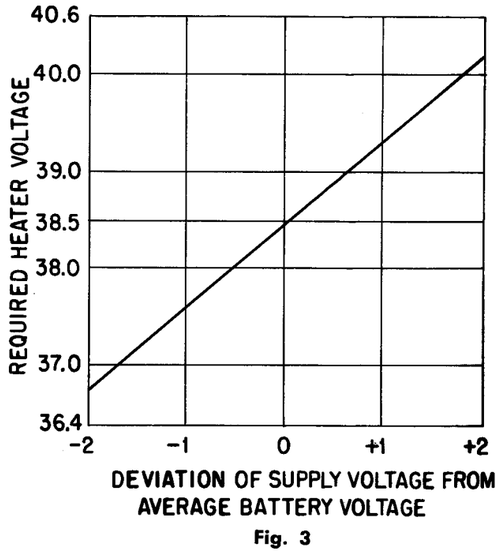


Fig. 3

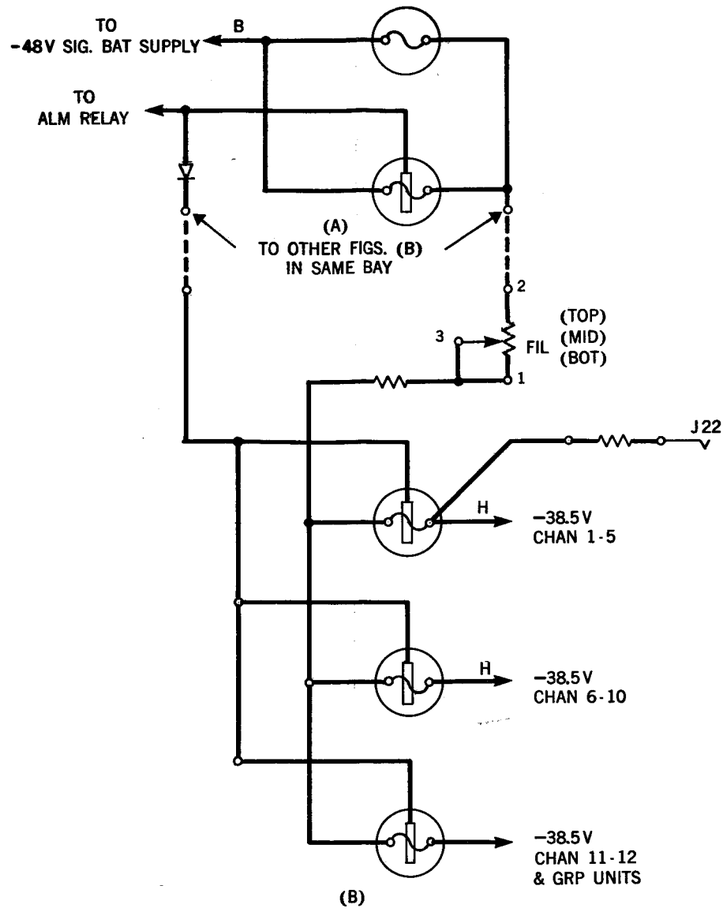
HEATER SUPPLY ADJUSTMENT

J98703AT AND J98703AW TERMINALS

The J98703AT terminal bay contains three 12-channel N carrier terminals and the J98703AW terminal bay contains two 12-channel N carrier terminals. Each terminal bay contains one −38.5 volt circuit per Fig. 4(a). The voltage for the individual terminals is adjusted to the required value by means of an associated (FIL) rheostat. Three heater adjustment circuits per Fig. 4(b) are provided for a 36-channel bay with the rheostats and test jacks positioned at the top of the bay as shown in Fig. 5. The MID rheostat and test jacks have been eliminated on the 24-channel bay.

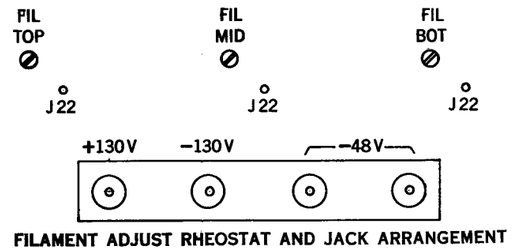
If the average battery supply voltage applied to the terminal is not known, it must be determined as covered above in CHECK OF AVERAGE BATTERY SUPPLY VOLTAGE, before this adjustment can be made.

STEP	PROCEDURE
1	Remove the dust covers from the alarm and power equipment panel at the top of the bay.
2	Measure the −48 volt supply voltage as follows: (a) Remove the fuse from the right −48 volt fuse holder. (b) Connect the positive test prod of the voltmeter to ground. (c) Connect the negative test prod of the voltmeter to the back contact in the fuse holder (−48 volts) and measure the −48 volt supply voltage. (d) Replace the fuse in the fuse holder.
3	Connect the voltmeter between ground and the J22 jack (−38.5V) of the terminal under test. (The TOP, MID, and BOT jacks and rheostats are for the top, middle, and bottom terminals, respectively.)
4	Adjust the FIL rheostat associated with the terminal under test for — ***Requirement:*** Line-up — Value of Fig. 3. Mtce — −38.5 volts, corrected according to Fig. 3. (See Note) ***Note:*** The required heater voltage reading will depend on the heater supply voltage at the time of adjustment (Step 2) with respect to the AVERAGE BATTERY SUPPLY VOLTAGE. If the battery voltage at the time of adjustment differs from the average, a correction is applied to the −38.5 volt requirement. The required heater voltage reading for deviations from average voltage is given in Fig. 3.
5	When the test has been completed, replace the dust cover on the alarm and power equipment panel at the top of the bay.



INDIVIDUAL TERMINAL - 38.5V SUPPLY CIRCUIT

Fig. 4



FILAMENT ADJUST RHEOSTAT AND JACK ARRANGEMENT

Fig. 5