# TYPE ON/K CARRIER — REPEATERED HIGH-FREQUENCY LINE
# TESTS AND ADJUSTMENTS — GENERAL
# HEATER VOLTAGE ADJUSTMENT

The ON/K system operates from +152 volts dc and 230 volts ac at auxiliary stations and +130 volts dc, −24 volts dc and 230 volts ac at main stations. The heater supply during normal operation is obtained from 230-volt commercial ac power applied to an ac line regulator which maintains the input to the heater distribution circuit at 117 volts. A distribution transformer reduces the 117-volt line regulator output to 60 volts for transmission to the repeater bays. A heater transformer reduces the 60-volt ac distribution voltage to 19.25 volts for 408A tubes and to 6.1 volts for 418A tubes. The 19.25-volt secondary is center-tapped to supply 9.62 volts for the thermistor heaters. See Figs. 1 and 2 for the different arrangements for adjustments. Two procedures are given: one for power arrangements where tap switches are available and the other where switches are not available. The purpose of this test is to test and adjust the heater voltage for ON/K amplifiers initially and also after each subsequent amplifier is added.

This section is reissued to change the method of heater voltage adjustment when tap switches are available.

**APPARATUS:**

1 — Model 433 Weston A.C. Voltmeter 0-7.5-22.5V or 0-10-20V
2 — 1W13A Cords
2 — 364 Tools
2 — P36A918 Cord Tips

*Note:* Treat the 433 Weston voltmeter with care. Since the wave form of the ON/K amplifiers is nonsinusoidal, ***rectifier type voltmeters*** such as the ***KS-14510 volt-ohm-milliammeter will not read correctly.*** Weston model 433 is used because it responds to the rms value. Tube life will be shortened if voltage is too high. Performance (modulation) will be impaired if voltage is too low.

| STEP | PROCEDURE |
|---|---|
| | *Procedure:* No tap switches available — Fig. 1. |
| 1 | With amplifiers in place, measure voltage at the 6V ac jacks of each ON/K mounting powered from the same 371D transformer. |
| 2 | Adjust primary and secondary taps of 371D transformer and primary taps of 392E transformer to produce an average voltage at 6V ac jacks to read:<br>6.1 ±0.1 volts.<br>*Note:* Table 1 shows approximate voltage changes for various tap settings. |

| STEP | PROCEDURE |
|---|---|
| | **TABLE 1** |

| TRANSFORMER WINDING | TAPS CONNECTED | % INCREASE IN VOLTAGE |
|---|---|---|
| 371D Primary | 1-4 (Normal) | 0 |
| | 2-4 | +2.5 |
| | 1-3 | +5 |
| | 2-3 | +7.5 |
| 371D Secondary | 5 6 (Normal) | 0 |
| | 5-7 | +0.8 |
| | 5-8 | +1.6 |
| | 5-9 | +2.4 |
| 392D Primary | 1-4 (Normal) | 0 |
| | 1-3 | +0.5 |
| | 1-2 | + .1 |

| STEP | PROCEDURE |
|---|---|
| 3 | Measure voltage at 20V ac jacks.<br>***Requirement:*** Approximately 19.25 volts.<br>***Note:*** If this requirement is not met, check filament circuit wiring. |
| | ***Procedure:*** Tap switches available — Fig. 2. |
| 1 | Set R11 and R12 potentiometers to midrange. |
| 2 | With amplifiers in place, measure voltage at the 6V ac jack of each ON/K mounting powered from the same T3 transformer. |
| 3 | Adjust S1 and S2 of the T1 transformer to produce an average voltage at the 6V ac jacks to read:<br>6.1 ± 0.1 volts<br>***Note:*** Table 2 shows the approximate voltage changes for various switch settings. |
| 4 | If S1 and S2 cannot be adjusted to meet the requirement, adjust the T3 SEC and T3 PRI; repeat Step 3 to meet the requirement.<br>***Caution: If the T3 TRANS is adjusted, all bay supplies operating from that T3 TRANS must be adjusted in accordance with Steps 1 through 7.*** |
| 5 | Measure voltage at 20V ac jack and adjust R11 to produce an average voltage of approximately 19.25 volts. |
| 6 | Measure voltage at 9.6-volt pin jacks and adjust R12 to produce an average voltage of approximately 9.6 volts. |

**TABLE 2**

| SWITCH | SWITCH POSITION OPERATED | % INCREASE IN VOLTAGE |
|---|---|---|
| T3 Pri | 1-4 (Normal) | 0 |
| | 2-4 | +2.5 |
| | 1-3 | +5 |
| | 2-3 | +7.5 |
| T3 SEC | 6 (Normal) | 0 |
| | 7 | +0.8 |
| | 8 | +1.6 |
| | 9 | +2.4 |
| T1 S1 (+%) | 1% | 1 |
| | ½% | ½ |
| | 0% | 0 |
| | | % DECREASE IN VOLTAGE |
| T1 S2 (−%) | 4% | 4 |
| | 2½% | 2½ |
| | 1% | 1 |
| | 0% | 0 |

CAUTION ! - HAZARDOUS VOLTAGES - USE PROPER SAFETY PRECAUTIONS.

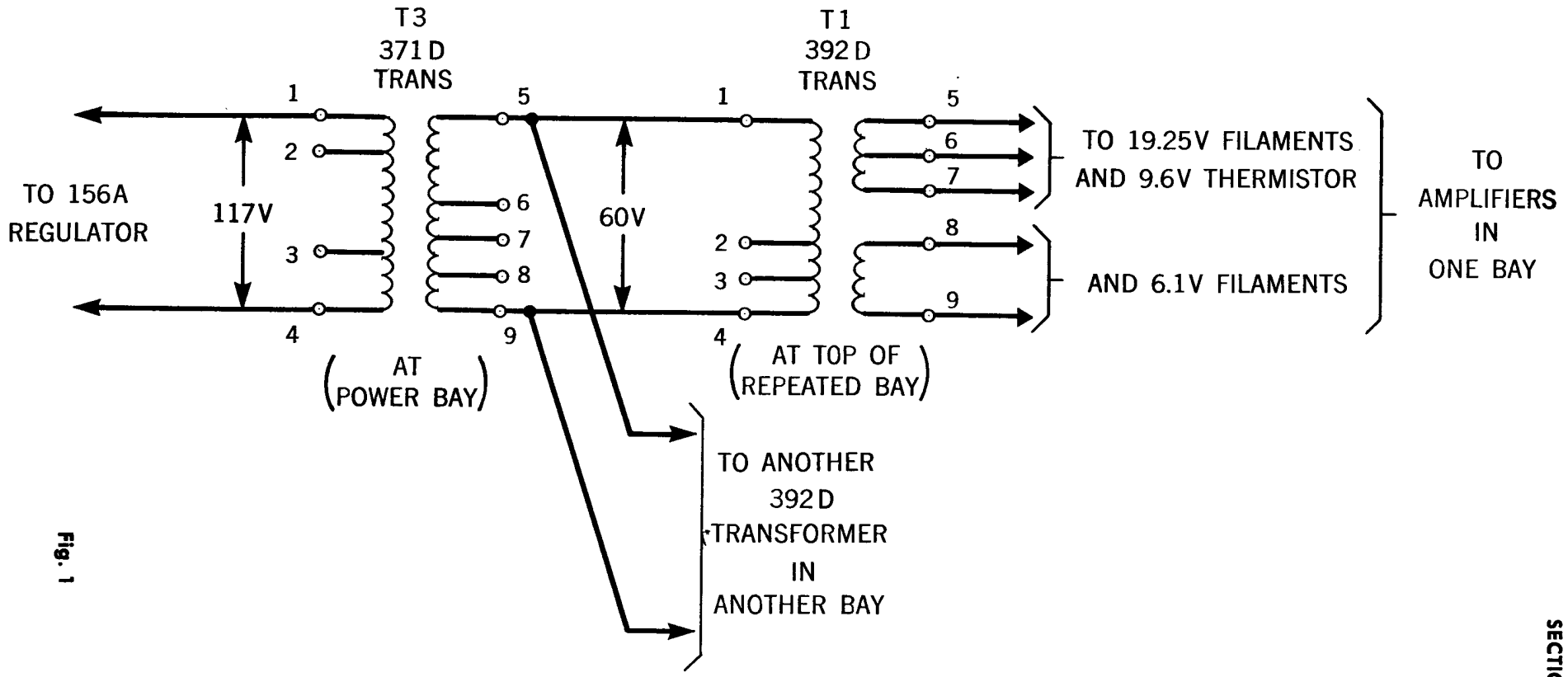
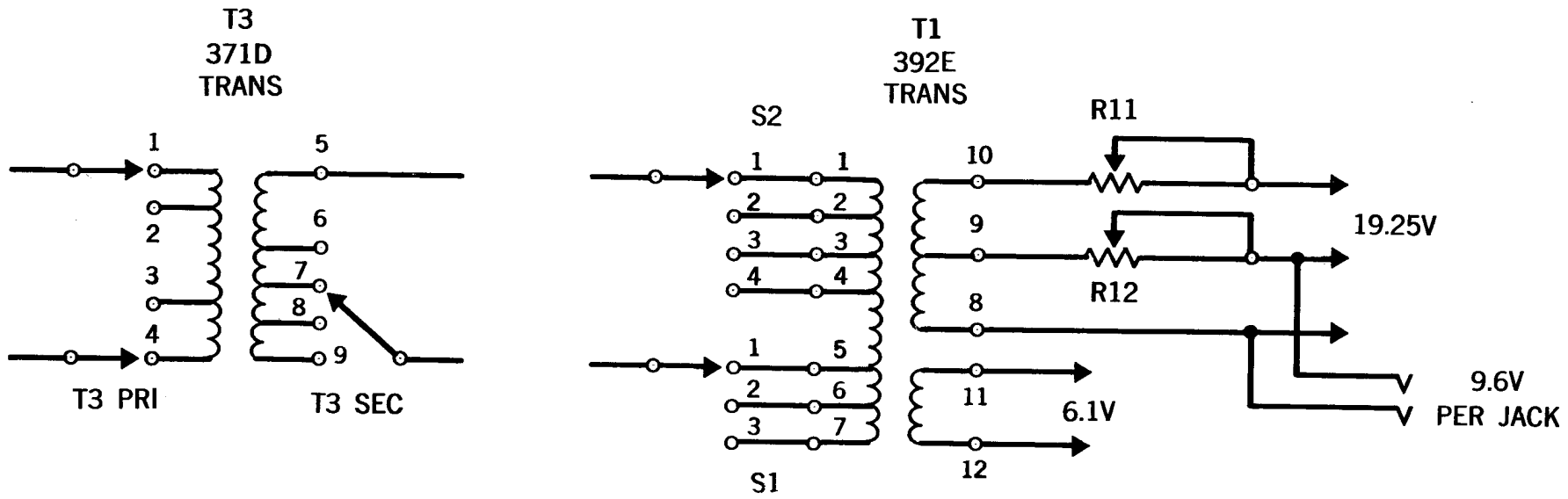
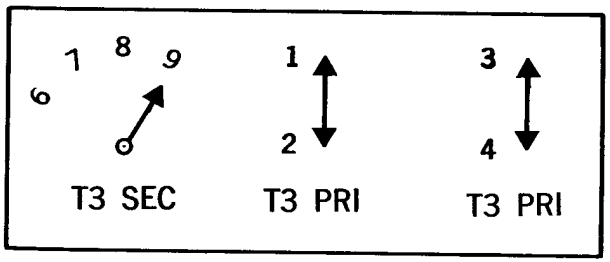
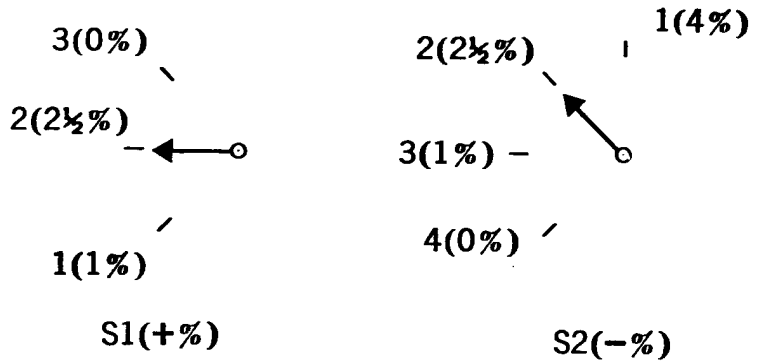



Fig. 1




AT POWER BAY




AT TOP OF REPEATER BAY

Fig. 2