V3 TELEPHONE REPEATER

CIRCUIT ORDER AND PERIODIC TESTS

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1. GENERAL

1.01 This section specifies the circuit order and periodic tests to be made on the V3 telephone repeater. It supplements Section 332-010-100 covering the instructions relating to the general phases of maintenance and the operation of voice frequency telephone repeaters, with which the repeater attendants should be familiar.

1.02 This section is reissued to include information about the KS-21076 Hybrid Integrated Network (HIN) which replaces the 408A vacuum tube in the V3 repeater. To protect the HIN from transient voltages, a Lightning Surge Protector (ED-7C057) must be installed. Refer to Section 332-103-100. This conversion will result in substantial savings of electrical power, reduce maintenance cost, increase system stability, and reduce repeater outage.

1.03 The operating requirements and limits associated with the testing methods for the V3 repeater are covered in Section 332-103-500.

1.04 Table A is a summary of test requirements for the V3 repeater; however, the tube test does not apply to the HIN equipped amplifiers. The table can also be used for troubleshooting purposes.

1.05 Where single frequency signaling is involved on repeatered circuits, the circuit should be taken out of service before gain tests are made on the amplifier units.

1.06 With the installation of the HINs, significant benefits are derived from the maintenance viewpoint such as, no cathode activity test, space current history test, tube test or heater voltage adjustments. However, a gain adjustment is required during conversion of the V3 repeaters to the HIN operation. Two reasons are the electron tubes may exhibit degradation due to aging and the HIN gain is approximately 1.5 dB greater than that of the electron tube.

2. CIRCUIT ORDER TESTS

2.01 When the load on the heater supply fuse panel is changed, it is necessary to adjust the battery supply as outlined in the 024 division for the V3 tube-type repeater. These adjustments and tube tests should precede the gain measurements and adjustments on the tube-type repeater.

2.02 Once a heater grouping in any particular bay is converted to HIN operation the heater power to each amplifier can be removed simply by removing the fuses.

2.03 The 1000-Hz gain of the two amplifiers should be measured and adjusted as close as possible to the values specified on the circuit layout record card.

3. PERIODIC TESTS

3.01 Periodic tests are not required for the heater supply on the V3 repeater, but if there is an indication of trouble due to the heater supply, make adjustments as outlined in the 024 division for the V3 repeater.

3.02 A 1000-Hz gain test is recommended for the V3 tube-type amplifier unit on a 6-month interval. Once the initial gain adjustment is made on the HIN equipped amplifier units (gains set to the same value as those of the electron tube), no future adjustments are anticipated for the life of the repeater.

TABLE A

SUMMARY OF TESTS

TEST	CIRCUIT ORDER TESTS	PERIODIC TEST INTERVAL	TEST UPON REPLACING TUBE	REFERENCE IN 322-103-500
Tube Test	x (See Note)	6M	x	Part 6
1000-Hz Gain	x	—	x	Part 7
Noise	—	—	—	Part 9
Crosstalk	—	—	—	Part 9

M = Months

Note: Not required where the tube has been tested periodically.

Requirement: The measured 1000-Hz gain of each amplifier unit should not differ from the specified gain by more than 0.3 dB, or gain should be adjusted.

3.03 Due to the simplicity of readjusting the gain and the importance of keeping the overall circuit net loss as close to the specified values as practicable, consideration should be given to readjusting the gain each time it is measured. (It is considered practicable to adjust to an accuracy of better than 0.1 dB.) Where the unit is within easy reach, this should be done; if not, the time and additional maintenance effort may not be easily justified.

4. SUMMARY OF TESTS

4.01 Table A summarizes the test to be made on a circuit order or periodic basis and gives testing intervals. These intervals should be followed in the absence of other intervals authorized in accordance with local practices.