TYPE N AND ON2 CARRIER TELEPHONE SYSTEMS

DEVIATION REGULATOR

OUT-OF-SERVICE LINE-UP PROCEDURE — METHOD A OR B

CHECK OF DEVIATION REGULATOR RANGE

This section has been reissued to give the latest information for checking the regulating range of each of the four shape networks (SLOPE, BULGE, CUBIC, and QUARTIC), and the range of the associated control circuit units. An illustration of the circuits involved in the test and the arrangement of the test equipment is shown in Fig. 1. The procedure must be repeated four times; once for each of the shape network circuits.

APPARATUS:

> 200CD Oscillator
> REG TST Cord
> BYPASS Plug
> VTVM, with W2DW Cord
> 3AF Test Set

PREPARATION FOR TESTS	
STEP	**PROCEDURE**
1	Turn the ADJ potentiometers on the four deviation regulator control amplifiers maximum counterclockwise.
2	Insert the SHORTING plugs supplied with the deviation regulator into the TERM SL, TERM BU, TERM CU, and TERM QU jacks.
3	Insert the DUMMY plugs supplied with the deviation regulator into the SLOPE TST, BULGE TST, CUBIC TST, and QUARTIC TST jacks.
4	Remove the CONNECTOR plug from jack J1.
5	Insert the BYPASS plug into jack J1.
6	Remove the CONNECTOR plug from jack J2.
7	Insert the REG TST cord into jack J2.
8	Connect the 200CD oscillator 600-ohm balanced output to the REG TST cord plug which was inserted into jack J2. Energize the oscillator and allow 20 minutes for it to warm up.

CHECK OF DEVIATION REGULATOR RANGE	
STEP	**PROCEDURE**
1	**(A) Check of Network Thermistor Range** Using a W2DW cord, or equivalent, connect the lower (ground) INPUT terminal of the VTVM to the chassis ground; and connect the upper (hot) INPUT terminal of the VTVM to terminal 3 (middle terminal) on the proper channel pick-off filter output potentiometer for the shape network under test. The filter involved in each shape network check is shown in Table A. *Beginning with the SL shape network, complete the entire sequence of tests on each network in turn.*

TABLE A

NETWORK	FREQUENCY IN KC	CHANNEL FILTER
Slope	176	2
Bulge	216	7
Cubic	200	5
Quartic	192	4

2	*Beginning with channel 2* adjust the 200CD oscillator frequency control to the frequency required for the channel filter under test. The oscillator settings for each of the frequencies used in the test are also given in Table A.
3	Set the VTVM selector switch to the −20 db position and adjust the 200CD oscillator output for a reading of −30 db on the meter.
4	Tune the fine-frequency control on the 200CD oscillator for a maximum (peak) reading on the VTVM. Readjust the 200CD oscillator output, if necessary, to keep the VTVM meter reading on scale.
5	Adjust the 200CD oscillator output for a reading of −24.0 db on the VTVM.
6	Remove the SHORTING plug from the TERM jack of the shape network being tested and allow time for the thermistor to stabilize. The network is now in the condition shown in Fig. 1(a). The VTVM meter should indicate a reading for the network under test that is within the limits shown in Table B.

TABLE B

NETWORK	READING IN DB
Slope	−29.3 ± 1.5
Bulge	−21.7 ± 1.5
Cubic	−27.7 ± 1.5
Quartic	−27.2 ± 1.5

If the requirement is met, prepare the 3AF test set as follows:

(a) Set the toggle switch to the 40 MA position.

(b) Set the rotary switch to the ALIGN position.

(c) Insert the two-prong plug (P2) into the TST PWR jack located on the front of the deviation regulator filter and network panel.

STEP	PROCEDURE
7	Remove the DUMMY plug from the TST jack of the shape network being tested and replace it with the 310 plug of the 3AF test set. The network is now in the condition shown in Fig. 1(b).
8	Adjust the 3AF test set CAL potentiometer for a reading of 27 MA. Wait 1/2 minute for the thermistor in the network to stabilize, and if necessary, readjust the CAL potentiometer for 27 MA. The VTVM meter should indicate a reading for the network under test that is within the limits shown in Table C.

TABLE C

NETWORK	READING IN DB
Slope	-19.2 ± 1.3
Bulge	-26.0 ± 1.0
Cubic	-20.9 ± 1.0
Quartic	-21.0 ± 1.0

(a) If the limits are exceeded on any measurement, check for trouble in one of the networks. A method for locating trouble in the shape networks is described in sections in this division covering Maintenance. The entire sequence of tests must be repeated after any network is replaced.

(b) If the requirements are met, proceed with Step 9.

(B) Check of Control Circuit Unit Range

STEP	PROCEDURE
9	Adjust the 200CD oscillator output to minimum.
10	Short the IN jacks of the control circuit associated with the shape network being tested. (The IN jacks are located on the deviation regulator filter and network panel. They are designated SL, BU, CU, and QU.)
11	Depress the ADJ button on the 3AF test set and adjust the 200CD oscillator output control for a reading of 1 MA on the 3AF test set meter.
12	Operate the toggle switch on the 3AF test set to the 40 MA position. The network is now in the condition shown in Fig. 1(c).
13	Turn the ADJ potentiometer on the control amplifier, associated with the shape network being tested, to its maximum clockwise position. Depress the ADJ button. The current reading on the 3AF test set meter should be — ***Requirement:*** At least 20.0 MA.
14	Readjust the ADJ potentiometer on the control amplifier to minimum.
15	Remove the 310 plug of the 3AF test set from the TST jack of the network being tested and replace it with a DUMMY plug.
16	Replace the SHORTING plug in the TERM jack of the network being tested.
17	Remove the shorting cord.
18	Follow Steps 1 through 17 on each of the four shape network circuits.

| STEP	PROCEDURE
	When the series of tests has been completed, disconnect the test equipment as follows:
1	Disconnect the 200CD oscillator, the VTVM and the 3AF test set.
2	Remove the REG TST cord from jack J2.
3	Insert a CONNECTOR plug into jack J2.
4	Remove the BYPASS plug from jack J1.
5	Insert a CONNECTOR plug into jack J1.
6	Leave the SHORTING and DUMMY plugs in the deviation regulator TERM and TST jacks to protect the shape network thermistors and to keep the deviation regulator in a mean condition.
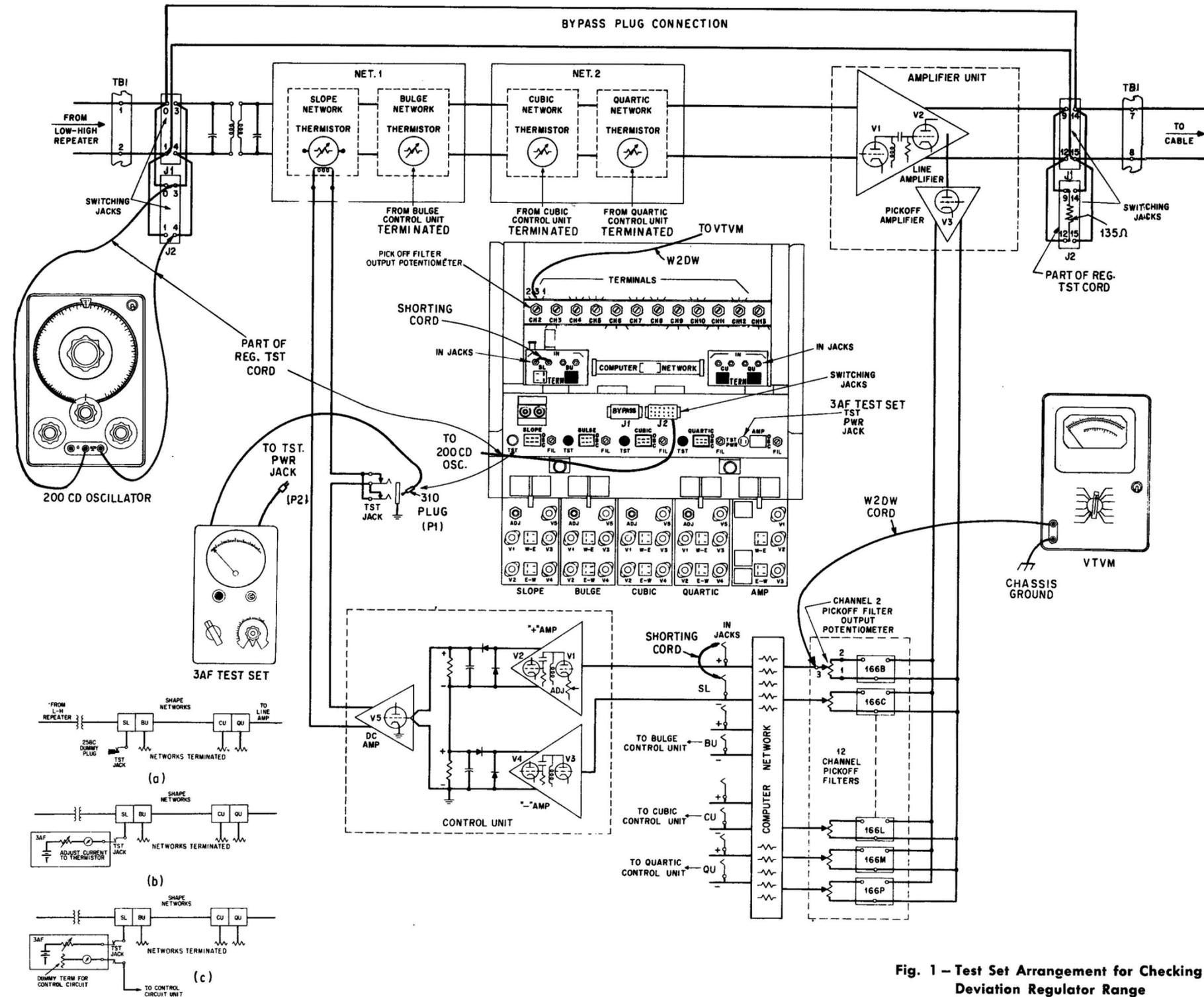
Fig. 1 – Test Set Arrangement for Checking Deviation Regulator Range