

TYPE N1 CARRIER TELEPHONE SYSTEM – TERMINAL EQUIPMENT
GROUP UNIT LINE-UP – TRANSMITTING
3700-CYCLE OSCILLATOR OUTPUT

This section is reissued to add 3700-cycle oscillator waveform and frequency tests.

The 3700-cycle tone used in signaling is generated in an oscillator located in the oscillator portion of the low group units. One oscillator is used to supply the 3700-cycle tone to all 12 channels. There are two adjustments on the oscillator, the potentiometer (R64) in the middle of the back of the subassembly controls the output, and the variable capacitor (C53) at the top controls the frequency.

A maladjusted or defective 3700-cycle oscillator may cause signaling difficulties and/or adjacent channel interference which appears as noise and crosstalk.

The tests included in this section are:

- (A) Output Level Test
- (B) Output Waveform Test
- (C) Output Frequency Test
- (D) Output Adjustments.

Tests (A), (B), and (C) should be performed in order. Test (D) is required only if there is no access to the rear of the oscillator unit.

APPARATUS:

- 1 — Hewlett-Packard 400-type Vacuum Tube Voltmeter (VTVM)
- 1 — W2DW Cord (used to connect VTVM to test points)
- 1 — KS-13895 Plug, unwired
- 1 — Oscilloscope
- 1 — Frequency Counter or 72A Frequency Meter
- 1 — W20D Cord (REG REC GRP)

STEP	PROCEDURE
1	<p style="text-align: center;">(A) Output Level Test</p> <p>Remove the group connector from one of the jacks J13, J14, J15 or J16 keeping the group connectors in the other three jacks.</p> <p>Insert the unwired KS-13895 plug into the jack cleared in Step 1.</p>
2	

STEP	PROCEDURE
3	<p>Connect the VTVM to terminals 8 and 2 of the KS-13895 plug. The ground side (black terminal) of the W2DW cord should be connected to terminal 2. (See Fig. 1 and 2.)</p> <p>Requirement: Line-up +3.8 db. Maintenance +3.0 to +4.5 db.</p> <p>Note: If this requirement is not met, check the oscillator tube according to Section 362-020-502.</p>
4	<p>If the maintenance limits are not met, adjust the screwdriver potentiometer R64, located under the cover and in back of the oscillator subassembly, to meet the line-up requirements. If there is no access to the back of the unit, use the procedures in Test (D).</p> <p>Caution: Do not change the adjustment of C53 at the top of the oscillator subassembly back since this varies the frequency of the oscillator.</p>
5	<p>Remove the test connections. If no other tests are to be performed, remove the KS-13895 plug from the jack and reinsert the regular group connector.</p>
(B) Output Waveform Test	
1	<p>Make sure the 3700-cycle output level is correct before performing this test. Remove the group connector from one of the jacks J13, J14, J15 or J16 keeping the group connectors in the other three jacks.</p>
2	<p>Insert the unwired KS-13895 plug into the jack cleared in Step 1.</p>
3	<p>Place all channels in the ON HOOK condition.</p>
4	<p>Connect the oscilloscope to terminals 8 and 2 of the KS-13895 plug. (See Fig. 1 and 2.) The ground side of the oscilloscope should be connected to terminal 2.</p> <p>Requirement: The peaks of the sine wave should be rounded with no evidence of flattening.</p> <p>Note: If the requirement is not met, replace the oscillator tube (V41) and adjust the output level if necessary. If the requirement is still not met, replace the oscillator unit. If the requirement is still not met, check for a condition in the terminal which would cause abnormal loading of the 3700-cycle oscillator output circuit.</p>
5	<p>Remove the test connections. If no other tests are to be performed, remove the KS-13895 connector and replace the group connector.</p>
(C) Output Frequency Test	
1	<p>Make sure the 3700-cycle output level and waveform requirements are met before performing this test. Remove the group connector from one of the jacks J13, J14, J15 or J16 keeping the group connectors in the other three jacks.</p>

STEP	PROCEDURE
2	Insert the unwired KS-13895 plug in the jack cleared in Step 1.
3	<p>Connect the frequency counter (or 72A frequency meter) to terminals 8 and 2 of the KS-13895 plug. (See Fig. 1 and 2.) The ground side of the counter should be connected to terminal 2.</p> <p>Requirement: Line-up 3700 cycles Maintenance 3690 to 3710 cycles</p> <p>Note: Before making any frequency adjustment, check the oscillator tube according to Section 362-020-502. If the tube is replaced, repeat Tests (A), (B), and (C). If the tube is good and the maintenance requirement is not met, adjust capacitor C53 on the rear of the oscillator unit. Important: Do not short to ground the tuning slot (end of rotor shaft) of the C53 capacitor as this will blow the -40 volt group unit fuse. If there is no access to the back of the oscillator unit, make the adjustment according to Test (D).</p>
4	Remove the test connections. If no other tests are to be performed, remove the KS-13895 connector and replace the group connector.
(D) Output Adjustments	
1	Using the 2N Group Unit Switching Set and the procedures in Section 362-045-501, switch the low group unit (which contains the oscillator) out-of-service.
2	Remove the low group unit from the terminal mounting and reconnect it by using a W20D cord.
3	Switch the 2N switching set to place the regular unit (now connected via the W20D cord) in service.
4	Remove the group unit cover and make the necessary adjustments as covered in Test (A) and/or (C).
5	Replace the cover on the group unit.
6	Switch the service to the alternate group unit.
7	Return the regular unit to the terminal mounting.
8	Switch the service to the regular unit and disconnect the switching set.

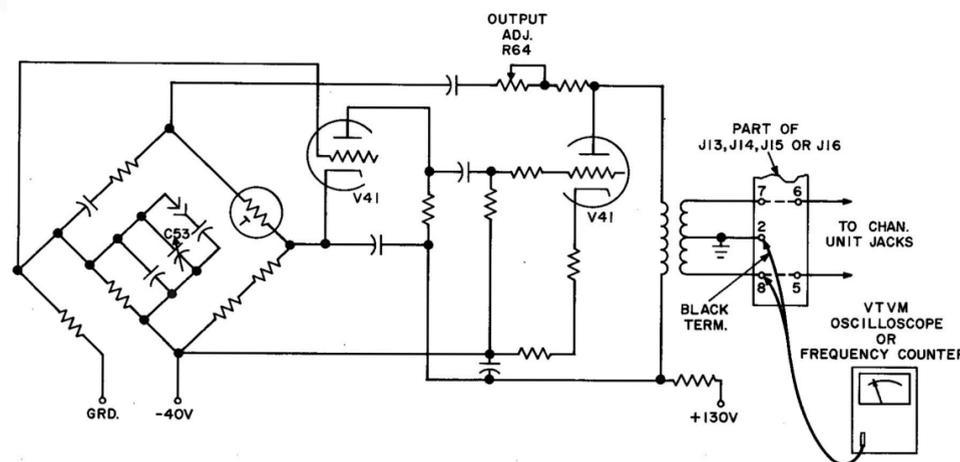


Fig. 1 - 3700-Cycle Oscillator

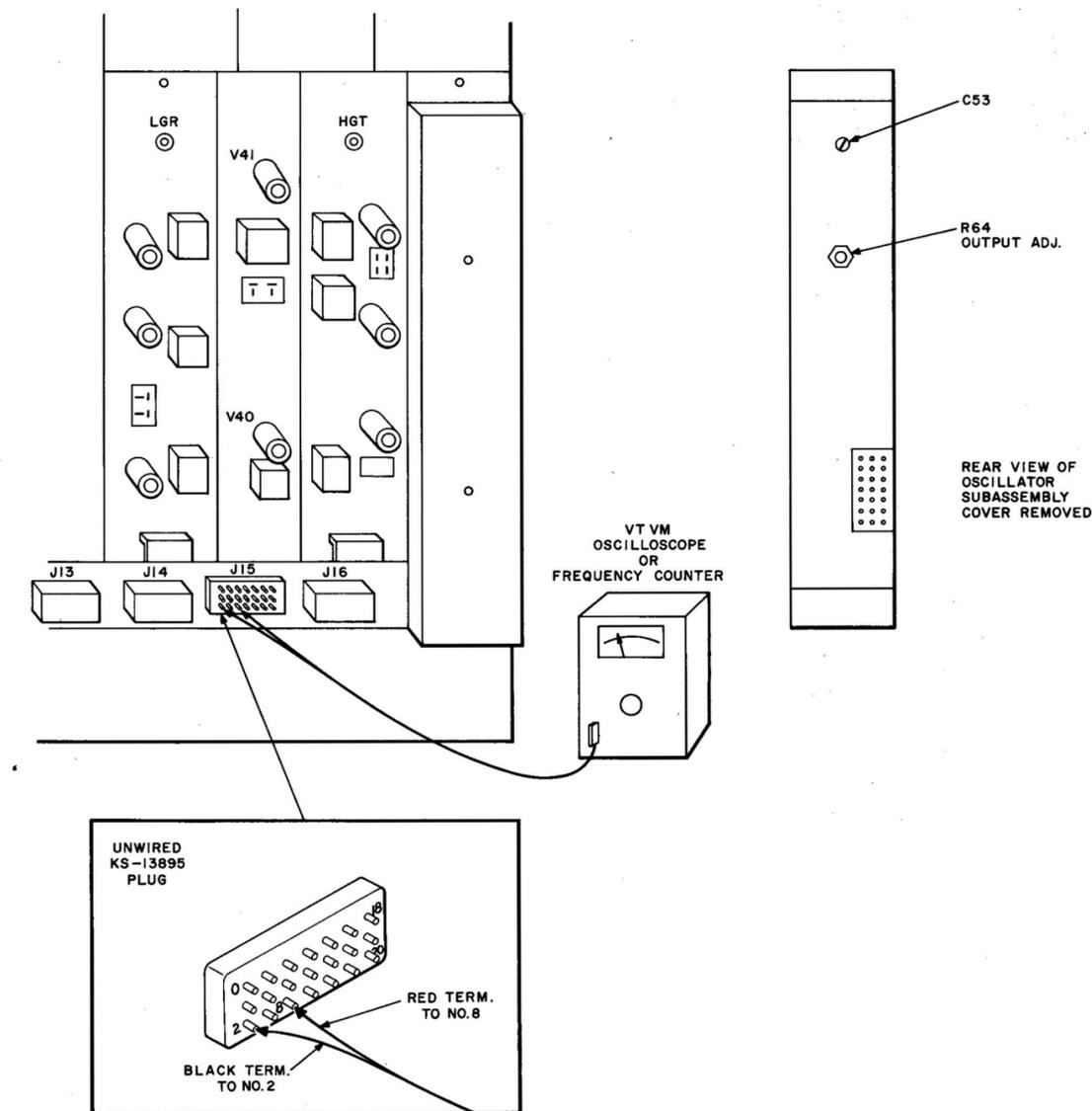


Fig. 2 - Test Set-up