

**BELL SYSTEM PRACTICES**  
**Outside Plant Construction**  
**and Maintenance**

**SECTION G86.061.6**  
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## **20C TEST SET**

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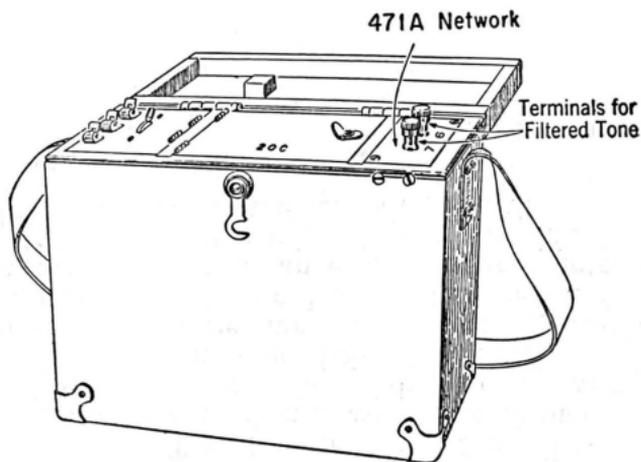
### **1. GENERAL**

1.01 This section describes the 20C Test Set used to supply tone in locating conductor faults, except opens, in non-loaded cables by the exploring coil method and in tracing the path of buried cables, pipes, etc.

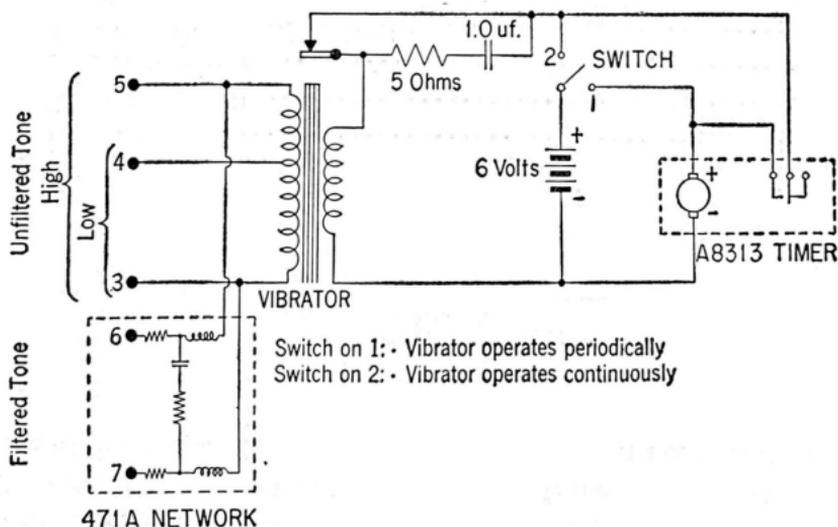
1.02 The 20C set should be equipped with a **471A Network** to provide filtered tone for use in running down faults in working cables, to minimize interference on working circuits.

### **2. DESCRIPTION**

2.01 The 20C Test Set consists of a vibrator-type tone generator housed in a wood case 12 inches long, 6-1/2 inches wide and 10-1/2 inches high equipped with a carrying strap. The set with four KS-6542 batteries weighs about 17 pounds. The batteries must be ordered separately. The sets are equipped with either a Haydon Company A8313 Timer, a Haydon B3624 Timer, or an electromagnetic interrupter. Sets currently supplied are equipped with the A8313 Timer. The 20C set is illustrated in the following sketch.



2.02 The schematic diagrams of the 20C set and 471A network (formerly coded the Specification D-159628 Network) are shown below. The fundamental frequency of the tone is about 35 cycles per second but the major portion of the energy is in the 1000 to 1200-cycle range.



2.03 The set supplies two types of tone. When the operating switch is in position 1, the set supplies interrupted tone and when in position 2, continuous tone is supplied. The interrupted tone should be used when difficulty is encountered in distinguishing between the tone of the set and that from extraneous sources.

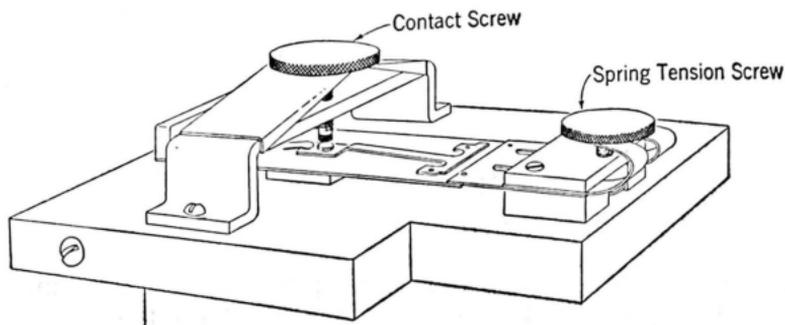
2.04 Maximum output is obtained from either terminals 3 and 5 or terminals 3 and 4, depending on the resistance of the circuit. Tone from the terminals which gives the louder tone should be used in tracing the path of buried cables, pipes, etc. The filtered tone from terminals 6 and 7 (on the 471A Network) should be used in locating conductor faults in working cables. The 20C set should not be connected between a wire and ground in a cable containing working program pairs.

### **3. PRECAUTIONS**

3.01 Before connecting the 20C set to a working cable, carefully check the pairs to which the tone will be connected to insure that a working circuit is not included. When a working trunk pair is involved, disconnect the pair at both ends from the central office equipment and when a working subscriber pair is involved disconnect the central office equipment at one end and the subscriber apparatus at the other. The test deskman should be advised before the circuit is opened. If these precautions are not followed, the operator of manual equipment may receive a signal and answer the circuit with the result that she will get tone in her receiver. Connection to working pair of a dial office may impair the operation of the equipment.

### **4. ADJUSTMENT OF VIBRATOR**

4.01 In sets equipped with an electromagnetic vibrator, the vibrator should be adjusted to operate at as low a frequency as practicable consistent with obtaining a uniform tone. The adjustment is made by turning the contact screw and the spring tension screw, shown in the following sketch, until the desired adjustment is obtained. Care should be taken to insure that the armature does not strike the core of the induction coil.



## 5. MAINTENANCE

5.01 The 20C set should generally require only battery renewals and, in sets equipped with an electromagnetic vibrator, adjustment of the vibrator.

5.02 Batteries should be discarded when the voltage measures less than 3.5 volts with the set in operation.

5.03 The contact points of the vibrator should be kept free of grease and dirt. Slightly worn contacts should be smoothed with a fine file or emery cloth. The contacts should then be wiped with a brush saturated with mineral spirits. A cloth should not be used as it may leave lint on the contacts. When contacts can not be reconditioned, the set should be returned in accordance with local routine for repair.

### 5.04 Replacement Parts:

**Battery, KS-6542**

**Timer, Haydon, A8313, for 20C Test Set**