

## 5A AND 5B KEY EQUIPMENTS INSTALLATION AND MAINTENANCE

### 1.00 INTRODUCTION

This section covers the installation and maintenance of the 5A and 5B key equipments using the 100-type loudspeaker set for loudspeaker conference service.

### 2.00 GENERAL

2.01 Prior to installation an agreement covering the provision of any necessary power wiring must be made with the customer.



*The cord provided for commercial power shall not be passed through a hole in a wall or be fastened to a wall.*

2.02 Install the components of the key equipments to provide the best service and meet the customer's requirements.

2.03 Room noise impairs the loudspeaker reception; therefore, any steps which can be taken to minimize it will, in general, improve the results.

2.04 The installation of telephone and subscriber sets is covered in the C Section entitled Station Sets, Installation.

### 3.00 INSTALLATION

3.01 Fig. 1 and 2 show typical installations of 5A and 5B key equipments, respectively.

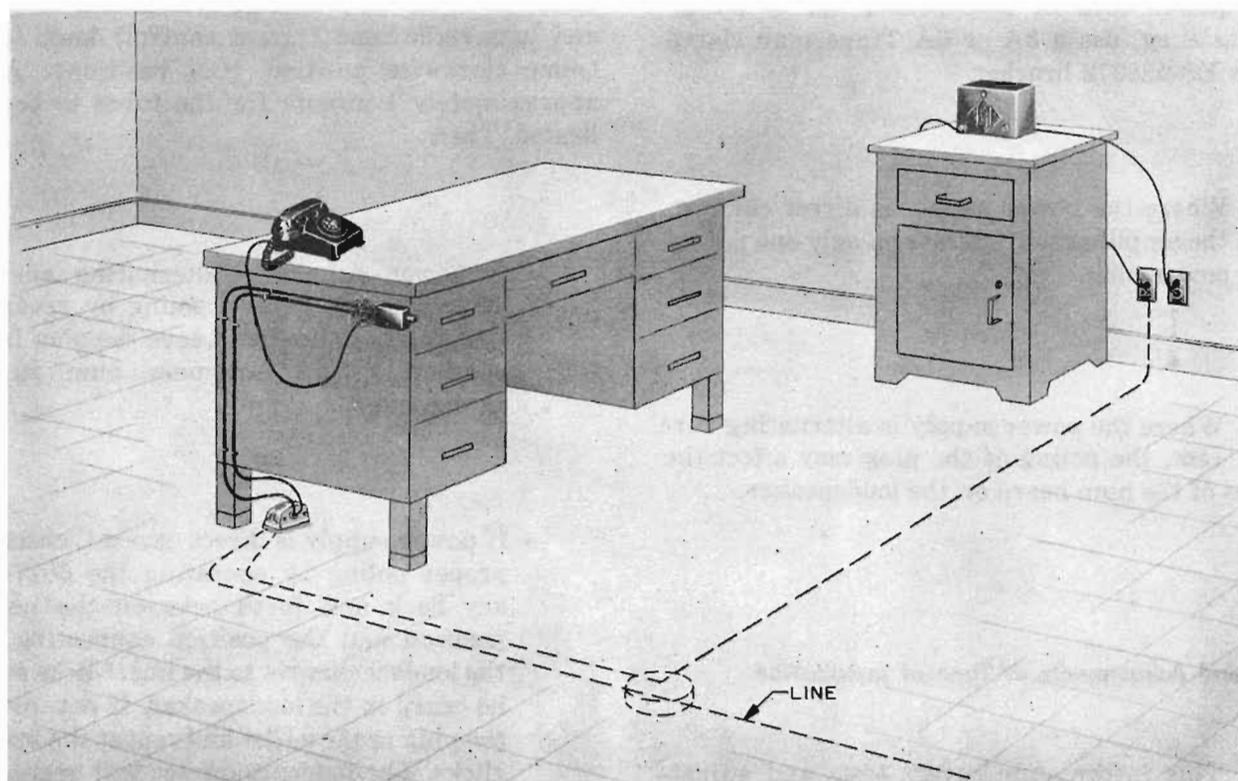


Fig. 1 — 5A Key Equipment Installation

## SECTION C70.133

**3.02** Locate 6017-type key where it will be readily accessible for operation by the user. Avoid locating in the knee well of desk where it might be struck by the customer's knee, chair, etc.

**3.03** Location of loudspeaker set is important.

- Consider accessibility of controls.
- Consider adequate separation between loudspeaker set and local talker's transmitter.
- Avoid mounting on light or unstable furniture.
- Avoid locating where ventilator and loudspeaker openings could become obstructed.

**3.04** Where local instructions permit, fasten power cord of loudspeaker set to power receptacle, eg, use a 5A or 6A Tinnerman clamp and an ES-528772 bracket.

**3.05** Where the power supply is direct current, the amplifier will operate on only one poling of the power plug.

**3.06** Where the power supply is alternating current, the poling of the plug may affect the volume of the hum heard on the loudspeaker.

### Tests and Adjustments at Time of Installation

**3.07** This information covers tests and adjustments required in connection with the in-

stallation of 5A and 5B key equipments where 100-type loudspeaker sets are used. It does not cover the tests and adjustments required which are common to general station work.

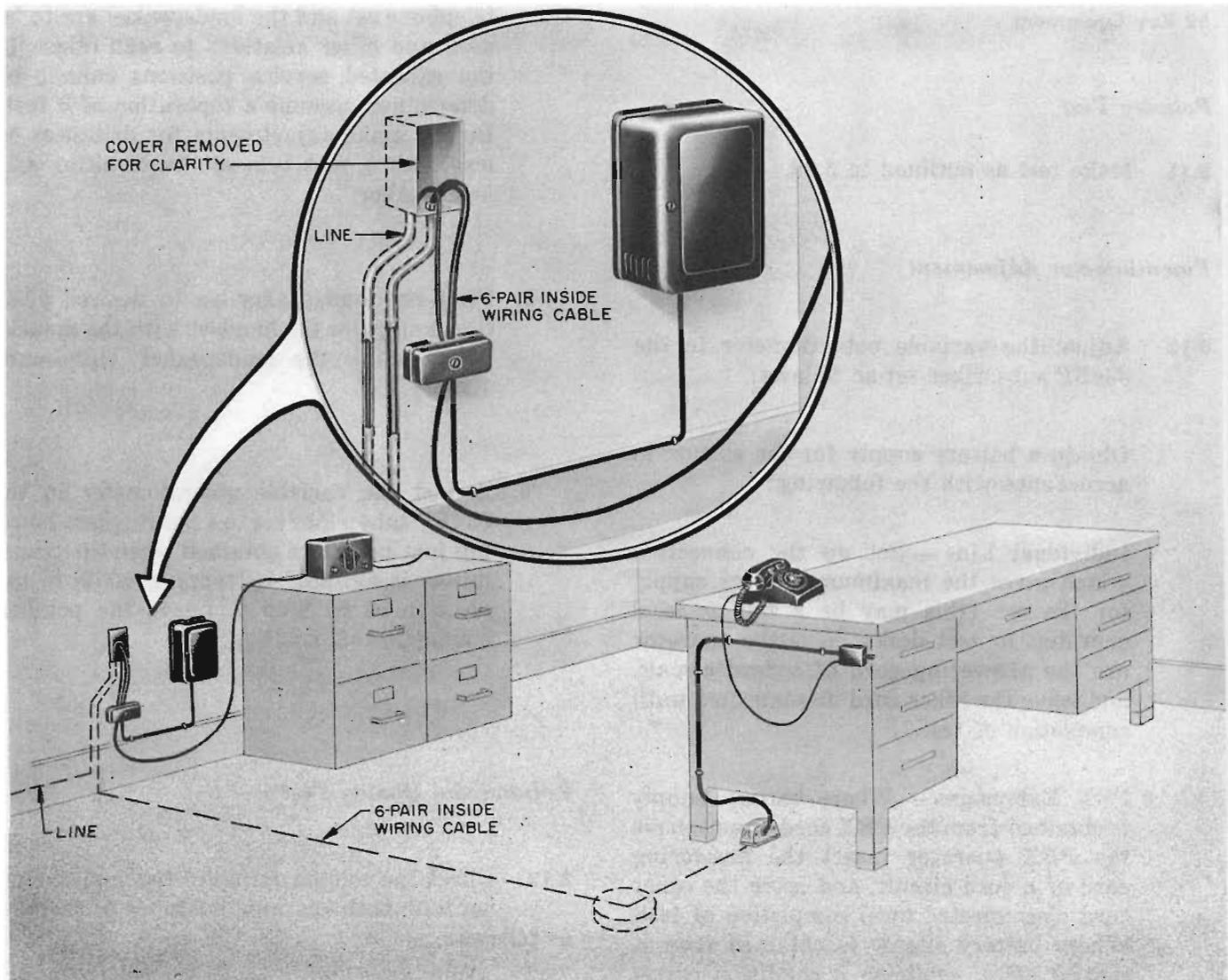
**3.08** If the installation does not meet the test in this part, proceed as described in 4.00 MAINTENANCE, Tests and Adjustments.

### 5A Key Equipment

#### *Polarity Test*

**3.09** With the 6017K key in the normal (straight out) position, turn left-hand (volume control) knob of the loudspeaker set in clockwise direction as far as it will go (maximum volume), and turn right-hand (power control) knob to extreme clockwise position (ON position). Allow approximately 1 minute for the tubes to become heated. Then :

- If power supply is alternating current, determine the quieter poling by reversing the plug in the outlet. Leave the plug in the position giving minimum hum in the loudspeaker.
- If power supply is direct current, check for proper poling by operating the 6017-type key back and forth between the normal position and the position connecting only the loudspeaker set to the line. Clicks should be heard in the loudspeaker. If not, reverse the plug in the outlet and repeat the test for clicks. The loudspeaker set will operate on only one poling of the dc supply.



**Fig. 2 – 5B Key Equipment Installation**

### ***Volume and Quality Test***

**3.10** Check the volume output of the loudspeaker set as follows:

1. Adjust left-hand (volume control) knob to a position approximately three-quarters of the range from minimum to maximum volume position.
2. Request test deskman to use TMT (transmission test) key and to talk close to his transmitter, clearly and with good volume, at the time of making the following test.
3. Operate the 6017K key to connect the loudspeaker set to the line. Adjust the volume control so that a satisfactory volume is received at a distance of about 3 feet from the loudspeaker.

**5B Key Equipment**

***Polarity Test***

**3.11** Make test as outlined in 3.09.

***Potentiometer Adjustment***

**3.12** Adjust the variable potentiometer in the 534BP subscriber set as follows:

1. Obtain a battery supply for the station in accordance with the following:
  - Individual Line — Set up the connection which gives the maximum battery supply for the set (this may be a toll or local operator, or test desk), have the operator use the answering cord of a cord circuit, and leave the other cord disconnected until completion of test.
  - PBX Extensions — Where battery supply is obtained from the PBX cord circuit, have the PBX operator insert the answering cord of a cord circuit, and leave the other cord disconnected until completion of test. Where battery supply is obtained from a central office, establish a condition corresponding to individual line given above.

**Note:** The operator should not remain on the circuit during these tests.

2. Operate the 6017L key to the position connecting both the loudspeaker set and the telephone set to the line.
3. Check the volume control knob of the loudspeaker set to see that it is adjusted for maximum volume.
4. Determine, if practicable, from the customer the expected positions in which the

telephone set and the loudspeaker are to be used and other relations to each other. If the expected service positions cannot be determined, assume a separation of 3 feet. Do not make adjustments for distances of less than 1 foot between transmitter and loudspeaker.

5. Place the loudspeaker set in desired position, and place the handset with the mouthpiece facing the loudspeaker (minimum 1 foot).
6. Adjust the variable potentiometer in the 534BP subscriber set to a point where howling just cannot be obtained when the transmitter is agitated by tapping while in the position as in Step 5. Leave the potentiometer in this position.

***Volume and Quality Test***

**3.13** Check the volume output of the loudspeaker set with both operated positions of the key, as follows:

1. Adjust left-hand (volume control) knob to a position approximately three-quarters of the range from minimum to maximum volume positions.
2. Request test deskman to use TMT (transmission test) key and to talk close to his transmitter, clearly and with good volume, at the time of making the following test.
3. Operate the 6017L key to connect only the loudspeaker set to the line. Adjust the volume control so that a satisfactory volume is received at a distance of about 3 feet from the loudspeaker.

4. While the test deskman is talking, operate the 6017L key to connect both the telephone set and the loudspeaker set to the line, and turn the volume-control knob to give maximum volume. It should be possible to carry on a satisfactory conversation with the test deskman, using the loudspeaker instead of the telephone receiver for listening. The deskman should be intelligible at a distance of about 3 feet from the loudspeaker. The received volume and quality should be satisfactory.

**Note:** While checking the volume, look for any tendency to howl as a check of the potentiometer adjustment.

#### 4.00 MAINTENANCE

**4.01** This information covers maintenance tests and adjustments required in connection with the maintenance of 5A and 5B key equipments where 100-type loudspeaker sets are used. It does not cover the maintenance, also required, which is common to general station work.

##### Tests and Adjustments -- Repair Visits

**4.02** On an investigation of a trouble report, attempt to reproduce the difficulty reported as an aid in locating and correcting the source of the trouble.

**4.03** Inspect the physical condition and appearance of the loudspeaker set, including the two cords.

**4.04** Inspect and test the regular telephone apparatus at the station in accordance with standard practices.

**4.05** With 5B key equipment, whenever the tubes, the loudspeaker set, the telephone transmitter, or the 534BP subscriber set are replaced, adjust the potentiometer in the 534BP subscriber set as described in 3.12.

- 4.06** For tube replacement, see C Section entitled Loudspeaker Sets, 100 Type.

##### *Loudspeaker Set Does Not Operate*

**4.07** If loudspeaker set does not operate, note whether the tubes light when power switch is in right-hand (ON) position. If tubes light, investigate the possible causes of the trouble in the following sequence:

1. Determine that the input to the loudspeaker set from the telephone line is satisfactory by monitoring with a test set receiver across the terminals of the input cord of the loudspeaker set with the key operated to connect only the loudspeaker set to the line.
2. If set is still inoperative, replace the tubes.
3. If set remains inoperative, replace the set itself.

**4.08** If tubes do not light, investigate the possible causes of the trouble in the following sequence:

1. Check for proper polarity where power supply is direct current and for power at the outlet with an approved testing device. If no power is available, notify the customer.
2. If tubes do not light with power available and loudspeaker set is equipped with an automatic door switch, remove rear panel of set and operate automatic door switch manually. If tubes then light, bend rear panel inward at a point opposite the switch and see that tubes light when panel is reassembled.
3. If tubes do not light when door switch is operated, replace the tubes. If new tubes do not light, replace the loudspeaker set.

***Loudspeaker Hum (AC Installation)***

**4.09** With only the loudspeaker set connected to the telephone line and if hum is objectionable, check poling by reversing the power-cord plug in the power outlet. If satisfactory improvement is not obtained, replace the tubes. If hum is still objectionable, replace loudspeaker set.

***Low Volume***

**4.10** With the key operated to connect only the loudspeaker set to the line, determine that the input to the loudspeaker set from the telephone line is satisfactory by monitoring with a test set receiver across the terminals of the input cord of the loudspeaker set. The volume received in the test set receiver should be comparable with that in the receiver of the telephone set. If the input from the telephone line is satisfactory and the output volume is low, replace the tubes. If the output volume is still unsatisfactory, replace loudspeaker set.

**4.11** At installation of 5B key equipment, after determining that the output volume is satisfactory with only the loudspeaker set connected to the line, check the output volume with both loudspeaker and telephone sets connected. If it is not satisfactory, check the adjustment of the potentiometer in the 534BP subscriber set as in 3.12.

**4.12** If satisfactory volume cannot be obtained by proper adjustment of the potentiometer,

replace the 534BP subscriber set and repeat tests and adjustments.

***Poor Quality***

**4.13** When investigating a report of unsatisfactory quality, first check the quality as described in 3.10 for 5A key equipment, and in 3.13 for 5B key equipment. If the report is verified, replace the tubes in the loudspeaker set. If no improvement is noted with new tubes, replace the loudspeaker set.

**4.14** If the test with the test deskman provides the expected grade of transmission, determine, if practicable, from the customer whether he considers the reception poor on all connections, or only on certain calls, or intermittently. In the first case consult with the supervisor; in the latter cases determine whether the poor reception can be associated with reception from particular stations with which the customer makes frequent connections, and report any such information to the supervisor.

***Howling (5B Key Equipment)***

**4.15** When investigating a report of howling, first check the adjustment of the potentiometer as described in 3.12, redetermining the relative positions of the loudspeaker set and the telephone set as used by the customer. These positions are likely to change from time to time, due to changes in customers' requirements or methods of using the equipment.