101A AND 101B KEY EQUIPMENTS

MAINTENANCE

1.00 INTRODUCTION

1.01 This section provides information for maintaining and testing 101-type key equipment. Wiring diagrams of key units and commonly used relay equipment are included. Reason for reissue:

- Change Fig. 2, 17B KTU spring contact designations 1 and 3 top.

1.02 A wiring diagram of the station end of a typical 1A1 installation utilizing the 101-type key unit is also included.

2.00 GENERAL

2.01 C Sections dealing with identification and installation should be consulted for information.

2.02 Make a visual inspection of apparatus for obvious defects such as loose, displaced, or broken parts.

2.03 Maintenance of handsets, dials, ringers, and buzzers shall be in accordance with C Sections covering these apparatus items.

2.04 Adjustment of keys and relays shall be in accordance with Bell System Practices covering circuit and adjusting requirements.

2.05 Shields covering keys on the key unit retard the accumulation of dust on contacts. They should be replaced if not in good condition. Shields are coded 38M for units with five pickup keys and 38N for units with six pickup keys.

2.06 To ensure maximum illumination from lamps, position each lamp near its associated lamp cap.

3.00 TESTING

3.01 The tests covered are:

- Ringing Feeder
- Battery Feeder
- Audible Signal Circuits
- Line, Telephone, and Battery Cutoff Circuits

3.02 Note that no severe clicks are heard in head receiver when dialing or tripping ringing.

3.03 A test receiver or equivalent is used in connection with the following tests.

3.04 ***Ringing Feeder:*** Connect one clip of the test receiver to ground and touch the other test clip to the equipment side of the ringing lamp. The lamp should be lighted, and ringing induction should be heard in the receiver. Now connect one clip of the test receiver to the ringing feeder ground terminal and touch the other test clip to a terminal of the ringing lamp socket. Ringing induction should be heard in the receiver.

3.05 ***Battery Feeder:*** After checking proper connection of ringing feeder, connect one clip of the test receiver to the ringing feeder ground terminal and touch the other test clip to the fuse bus of the battery feeder. A pronounced click in the receiver indicates the presence of battery and that it is correctly connected. Then with the one test clip of the test set connected to the ground terminal, touch the other test clip to the battery terminals of each apparatus unit. A pronounced click in the test receiver should be heard as each battery terminal is touched.

3.06 ***CO or PBX Ringdown Line Circuit:*** Have central office or PBX ringing current applied to the first line. The line and busy lamps as-

sociated with that line should light intermittently at all appearances. Operate the BUZ key to the ON position. The buzzer should sound. Restore the BUZ key to the OFF position. The buzzer should be silenced. Then operate the line key with the attendant receiver removed. Machine ringing should be tripped, and the line and busy lamp should light steadily at all appearances. With the line key operated, operate the HOLD key momentarily. Then restore the line key to its normal position. The hold lamp should light steadily at all appearances, and the line and busy lamp should be extinguished. Reoperate the line key. The line and busy lamps should then light steadily, and the hold lamp should be extinguished. Restore the line key to normal. All lights should then be extinguished. Repeat these tests on all other lines.

3.07 ***Automatic Tie Line to Other Key Equipments:*** Have the attendant at the distant key equipment operate the key associated with the line. From this point on, the tests should be the same as for the CO or PBX ringdown line circuit.

3.08 ***Automatic Tie Line Circuit for Use Between Key Equipment and PBX:*** Have operator at PBX put an EXT cord into the line jack. From this point on the tests should be the same as for the CO or PBX ringdown line circuit.

3.09 ***Secretarial Line Circuit — Locked-in Signal:***

(a) Have central office or PBX ringing applied to the line being tested. The bell at the customer station should ring, and the line and busy lamp at the secretarial key box should light intermittently at all appearances. Operate the BUZ key to the ON position. The buzzer should sound. Restore the BUZ key to the OFF position. The buzzer should be silenced. Then operate the line key with the attendant receiver removed. Machine ringing should be tripped, and the line and busy lamps should light steadily at all appearances. With the line key operated, operate the HOLD key momentarily. Then restore the line key to its normal position. The hold lamp should then light steadily at all appearances and the line and busy lamps should be extinguished. Reoperate the line key. The line and busy lamps should then light steadily, and the hold lamps should be extinguished. Restore the line key to normal. All lights should then be extinguished.

(b) Have ringing current again applied to the line, but this time answer at the customer station by removing the receiver. When this is done, the flashing line and the busy lamp at the key box should change to a steady lamp. Test to see that a conversation cannot be carried on between the secretarial attendant and the central office when using the customer's telephone. Replace the receiver at the station and restore the line key box to normal. All lights should then be extinguished.

(c) Have ringing current again applied to the line. Answer at the key box and place the line in the hold condition. Remove the receiver at the station. The hold lamp at the key box should be extinguished, and the line and busy lamp should light steadily. Replace the receiver at the station; all lights should be extinguished. Repeat these tests on all secretarial lines.

3.10 ***Battery Cutoff Key:*** Operate the BCO key to the OFF position. Have ringing current applied to a line. Do not operate the line key at the key equipment being tested. Have the distant end disconnect. The line signal should immediately be extinguished. Repeat this test on all lines. Restore the BCO key to the ON position.

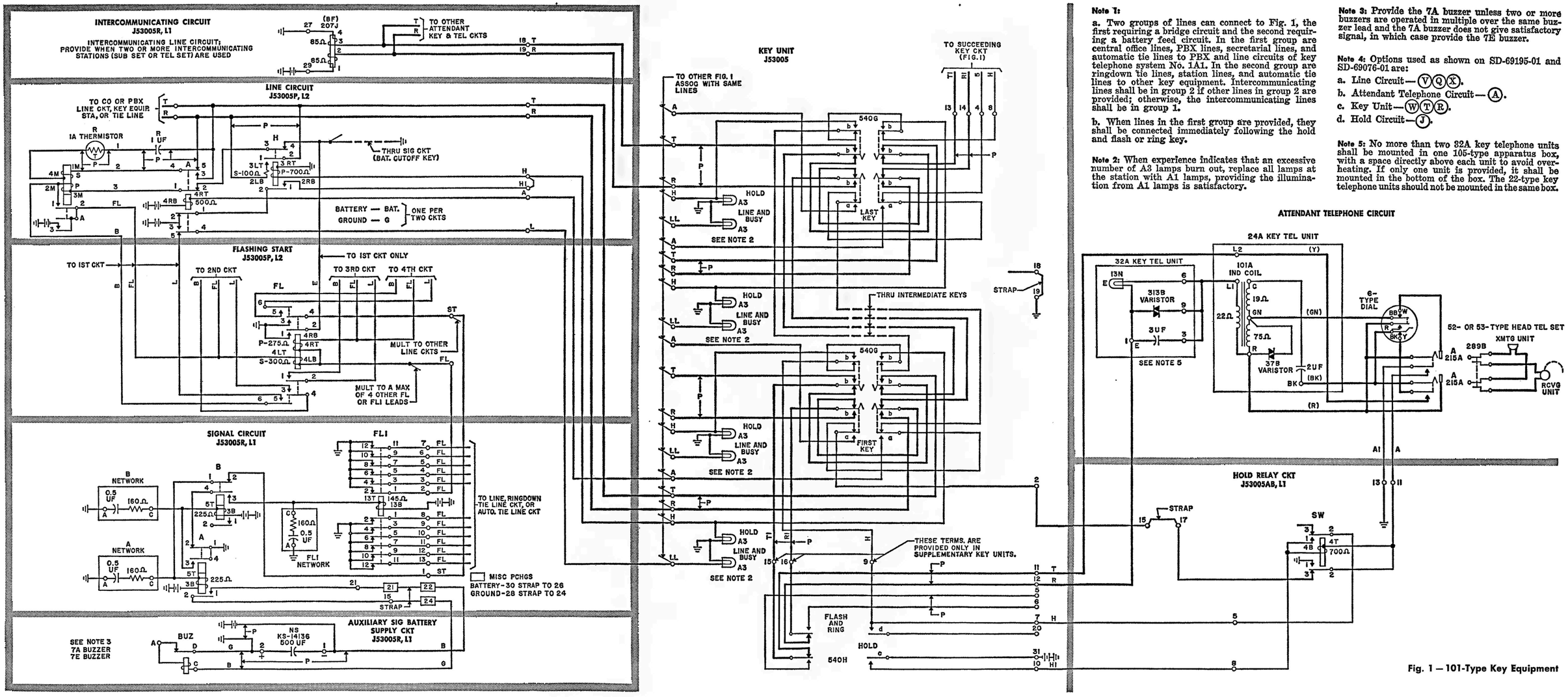
3.11 ***Fuse Alarm Circuit:*** Operate the FA key to the ON position. Short-circuit the battery bus bar and the alarm bar. The FA buzzer should sound, and the FA lamp should light. Restore the FA key to the OFF position. The buzzer should be silenced. Remove the short circuit between the battery bus bar and the alarm bar. The FA lamp should be extinguished.

4.00 CIRCUIT DRAWINGS

4.01 The following drawings of the key unit and relay units will assist in testing more commonly found circuit arrangements.

4.02 For clarity, Fig. 1 shows only one central office or PBX line. The intercommunicating line has been added to the last key position. Fig. 2 shows the station end of a 1A1 installation. For associated 1A1 relay equipment, refer to existing C Sections covering associated equipment.

4.03 The drawings should be used as a supplement to schematic drawings and are not intended to replace them.



Note 1:

a. Two groups of lines can connect to Fig. 1, the first requiring a bridge circuit and the second requiring a battery feed circuit. In the first group are central office lines, PBX lines, secretarial lines, and automatic tie lines to PBX and line circuits of key telephone system No. 1A1. In the second group are ringdown tie lines, station lines, and automatic tie lines to other key equipment. Intercommunicating lines shall be in group 2 if other lines in group 2 are provided; otherwise, the intercommunicating lines shall be in group 1.

b. When lines in the first group are provided, they shall be connected immediately following the hold and flash or ring key.

Note 2: When experience indicates that an excessive number of A3 lamps burn out, replace all lamps at the station with A1 lamps, providing the illumination from A1 lamps is satisfactory.

Note 3: Provide the 7A buzzer unless two or more buzzers are operated in multiple over the same buzzer lead and the 7A buzzer does not give satisfactory signal, in which case provide the 7E buzzer.

Note 4: Options used as shown on SD-69195-01 and SD-69076-01 are:

a. Line Circuit — (V)(Q)(X).

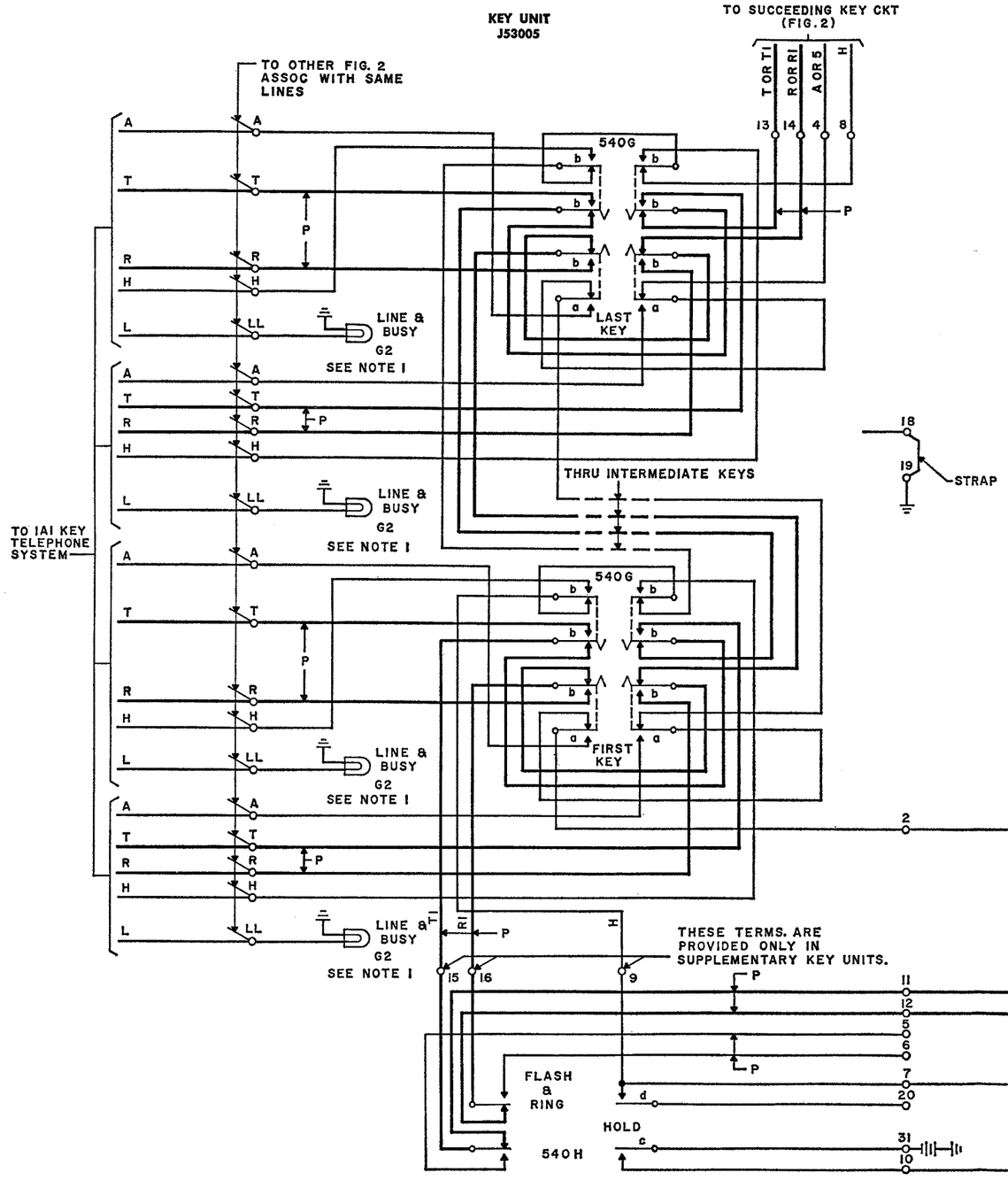
b. Attendant Telephone Circuit — (A).

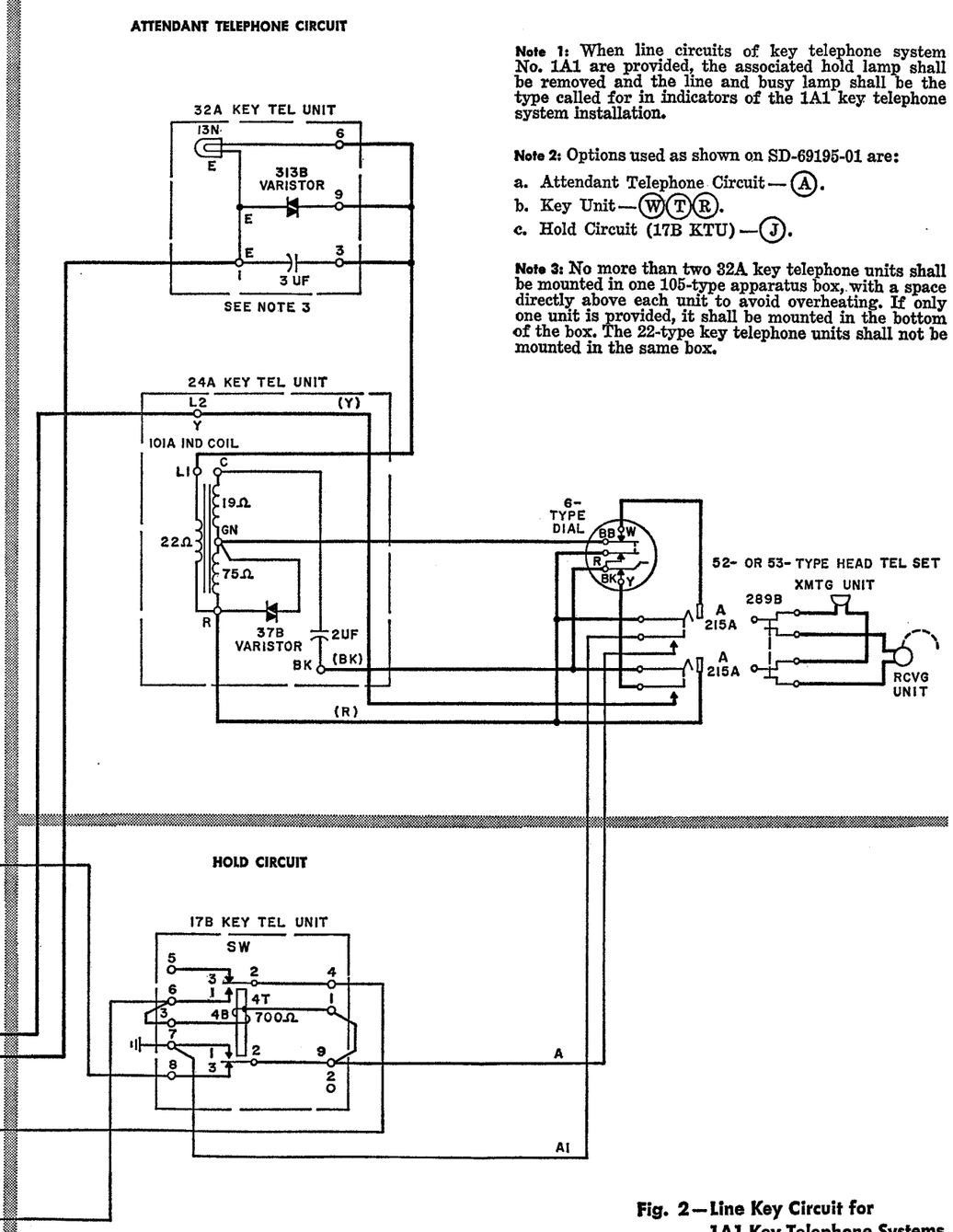
c. Key Unit — (W)(T)(R).

d. Hold Circuit — (J).

Note 5: No more than two 32A key telephone units shall be mounted in one 105-type apparatus box, with a space directly above each unit to avoid overheating. If only one unit is provided, it shall be mounted in the bottom of the box. The 22-type key telephone units should not be mounted in the same box.

Fig. 1 — 101-Type Key Equipment





Note 1: When line circuits of key telephone system No. 1A1 are provided, the associated hold lamp shall be removed and the line and busy lamp shall be the type called for in indicators of the 1A1 key telephone system installation.

Note 2: Options used as shown on SD-69195-01 are:

a. Attendant Telephone Circuit — (A).
b. Key Unit — (W)(T)(R).
c. Hold Circuit (17B KTU) — (J).

Note 3: No more than two 32A key telephone units shall be mounted in one 105-type apparatus box, with a space directly above each unit to avoid overheating. If only one unit is provided, it shall be mounted in the bottom of the box. The 22-type key telephone units shall not be mounted in the same box.

Fig. 2—Line Key Circuit for 1A1 Key Telephone Systems