

STATION SYSTEMS  
KEY TELEPHONE SYSTEMS NO. 1A OR 1A1  
KEY AND TELEPHONE CIRCUIT  
WITH SEPARATELY MOUNTED KEYS  
ARRANGED FOR PICKUP, HOLDING  
CUTOFF AND SIGNALING

1. PURPOSE OF CIRCUIT

This circuit provides station talking and signaling circuits together with separately mounted keys for connecting them to a number of central office, PBX, private, or intercommunicating lines of a key telephone system No. 1A or 1A1. It also provides for operating holding features in the associated line circuits, for a signaling key, for cutting off other stations, listening in stations or extension ringers, and for transferring the local ringer which may be connected to any line, or used as a common signal.

2. WORKING LIMITS

None

3. FUNCTIONS

- 3.1 Provides for a hangup handset and anti-sidetone subscriber set for use with a two wire common battery line.
  - 3.2 Provides for using other telephone sets in conjunction with the keys.
  - 3.3 Provides for picking up a maximum of five lines.
  - 3.4 Provides for operation of holding circuits.
  - 3.5 Provides for an audible signal which may be connected to any line or used as a common or private line signal.
  - 3.6 Provides for a cutoff key which may be used for disconnecting an extension station or ringer, or a listening in station from a given line and for connecting local ringer to the line when desired.
- KEY TEL. SYS. NO. 1A OR 1A1  
KEY AND TEL. CIR.  
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HOLDING CUTOFF AND SIG.

- 3.7 Provides for a signaling key arranged to operate local circuits.

#### 4. CONNECTING CIRCUITS

When this circuit is listed on a key sheet, the connecting information thereon is to be followed.

- 4.1 Line and Signaling Circuits of Key Telephone System No. 1A, SD-69091-01 and SD-69136-01.
- 4.2 Line and Signaling Circuit of Key Telephone System No. 1A1, SD-69203-01.
- 4.3 Intercommunicating Line Circuit with Dial Selection of Stations for Key Telephone Systems No. 1A and 1A1, SD-69199-01.
- 4.4 Key and Telephone Circuit of Key Telephone System No. 1A or 1A1, SD-69206-01.
- 4.5 Key and Telephone Circuits of Key Telephone System No. 1A, SD-69104-01, SD-69129-01, SD-69133-01 and SD-69188-01.
- 4.6 Standard Subscriber Station Sets.

#### 5. DESCRIPTION OF OPERATION

##### 5.1 Transmitting and Receiving

The handset and anti-sidetone circuit function in the usual manner as a common battery subscriber station circuit.

##### 5.2 Line Selection

The pickup keys, which are locking and arranged to release other pickup keys when operated, have three transfer contacts on each key and are chain connected through the respective back contacts of the lower numbered keys to the common circuits, preventing multiple connections should two or more pickup keys be operated at the same time. The "tip", "ring" and "Hold or A" leads are carried through the pickup keys. When a key is operated the common circuits are connected to the line associated with the pickup key and a call may be answered or originated in the usual manner.

## 5.3 Signaling

### 5.31 Audible Signals

#### 5.311 Ringer

A ringer and condenser are provided in the set and may be connected across any of the lines to operate on all incoming calls on that line, from ringing current on the line. The ringer may be disconnected from the lines on the key and connected to external circuits as required, most frequently as a common ringer operating from a local ringer supply when any of two or more lines receive an incoming call.

#### 5.32 Signaling Key

The signaling key provides a single make contact. It is intended primarily to operate intercommunicating signal buzzers and ringout circuits of ringdown private lines.

#### 5.33 Dial

Dial telephone sets are provided for stations intended to operate with machine switching central office or PBX lines, or with dial selective intercommunicating line circuits. The dial is operated in the usual manner.

#### 5.34 Set Switch

The set switch in telephone sets for use with Key Telephone System No. 1A1 is provided with three pairs of contacts. The pair of contacts which make first closes the auxiliary control lead circuit required for the 1A1 key telephone system circuit. Sets with this pair of contacts are not normally used with the 1A key telephone system.

## 5.4 Holding

A hold key is provided for use in connection with line circuits providing the holding feature. The keys are furnished with the wiring arranged for use with 1A key telephone systems. With this arrangement, operation of the hold key connects the hold lead, of the line to which the set is connected, to the sub. set and opens the circuit from the ring of the line to the sub. set. Line current operated the hold relay in series with the telephone set and the relay locks operated.

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Release of the hold key restores the pickup key to normal before the ring circuit closes again, leaving the talking circuit, disconnected and the line held. Line current caused by picking up the line again removes the holding bridge in the line circuit.

When the key is used with 1A1 key telephone system the wiring is changed as specified in Fig. 2 and note 103. Operation of the hold key then opens the "A" lead circuit, which permits the hold relay to operate in series with the telephone set and to lock operated. Release of the hold key restores the pickup key as described above. When the line is again picked up the "A" lead is closed causing the hold relay to be short circuited and to restore, releasing the holding bridge.

#### 5.5 Cut-off Key

The cut-off key may be associated with any one line by connecting its leads to the tip and ring of that line in the key. It is used for disconnecting extension stations or ringers or listening in stations from the line and when desired connects the local ringer to the line.

#### 5.7 Radio Frequency Noise Suppressors

The 6LM filter is furnished only when specified, to suppress radio frequency induction from the dial.

#### 5.8 Selection of Keys

A table in the circuit notes shows the combinations of facilities provided by the different keys.

BELL TELEPHONE LABORATORIES, INC.