

STATION SYSTEMS
KEY TELEPHONE SYSTEMS NO. 1A OR 1A1
KEY AND TELEPHONE CIRCUIT
ARRANGED FOR PICK-UP, HOLDING, LAMPS
EXCLUSION, CUT-OFF AND SIGNALING

1. PURPOSE OF CIRCUIT

This circuit provides station talking and dialing circuits together with pick-up 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 holding one or more lines, for signal lamps which illuminate the pick-up key buttons, for excluding other stations, for a ringer which may be associated with one of the lines, or a ringer or buzzer which may be used as a common signal, for signaling keys, for cutting off other stations, extension ringers, or listening in stations, and for a common signaling key to signal private or intercommunicating lines.

2. WORKING LIMITS

None.

3. FUNCTIONS

- 3.1 Provides for a handset and antisidetone transmission circuit to a two wire common battery line.
- 3.2 Provides for picking up a maximum of five lines.
- 3.3 Provides for operation of holding circuits.
- 3.4 Provides for an audible signal which may be connected to any one line or to an external circuit.
- 3.5 Provides for dialing.

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- 3.6 Provides for an exclusion key, which may be operated when the handset is off the mounting, to disconnect one or more extension stations from a given line. The exclusion key will be restored to normal when the handset is replaced on the mounting.
- 3.7 Provides for a cut-off key which may be used for disconnecting an extension station or ringer or a listening in station from a given line and for connecting the ringer in the set to the line when desired.
- 3.8 Provides for signaling keys arranged to operate local circuits.
- 3.9 Provides for a common signaling key to signal two or three private or intercommunicating lines.

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 Private Line Circuit of Key Telephone System No. 1A - SD-69105-01.
- 4.4 Intercommunicating Line Circuit with Dial Selection of Stations for Key Telephone Systems No. 1A and 1A1 - SD-69199-01.
- 4.5 Key and Telephone Circuits of Key Telephone System No. 1A - SD-69104-01, SD-69129-01, SD-69132-01, SD-69133-01 and SD-69188-01.
- 4.6 Key and Telephone Circuits of Key Telephone Systems No. 1A or 1A1 - SD-69197-01.
- 4.7 Attendants Telephone and Key Circuit of Key Telephone System No. 1A - SD-69196-01.
- 4.8 Key Equipment No. 101A or 101B Telephone and Key Circuit - SD-69195-01.
- 4.9 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 pick-up keys, which are locking and arranged to release other pick-up 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 pick-up keys be operated at the same time. The "tip", "ring" and "Hold or A" leads are carried through the pick-up keys. When a key is operated the common circuits are connected to the line associated with the pick-up key and a call may be answered or originated in the usual manner.

5.3 Signaling

5.31 Visual Signals

When signal lamps are provided they are arranged to illuminate the pick-up key buttons, and are operated by the associated line circuits which provide different signals by lighting the lamps steady or with various interruptions.

5.32 Audible Signals

5.321 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 in the set and connected to external circuits as required, most frequently as a common ringer operating from a local ringing supply when any of two or more lines receive an incoming call. A magnetic shield is provided to minimize crosstalk when the ringer and induction coil are connected to different lines.

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5.32 Buzzer

The ringer in the set may be replaced by a 7 type buzzer with cover removed, mounted on a 36A bracket. The buzzer is provided as a common signal when ringing current is not available, and as an intercommunicating signal.

5.33 Signaling Keys

The signaling keys provide a single make contact to a lead common to all the signaling keys. They are intended primarily to operate intercommunicating signal buzzers and ringout circuits of ringdown private lines.

5.34 Common Signaling Key (Fig. 2)

Sets arranged for signaling on private or intercommunicating lines by means of a common signaling key do not require the hold or auxiliary control leads for these lines. The sets are so arranged that the straps between the pick-up keys may be opened to separate these leads from the hold key and to connect them to the signaling key. The third lead to the pick-up keys on these lines is then used as a signaling lead by operating the signaling key while the pick-up key is operated.

5.35 Dial

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

5.36 Set Switch

The set switch 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. This pair of contacts is 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 sets 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 induction coil and opens the circuit from the ring of the line to the induction coil. Line current operates the hold relay in series with the telephone set and the relay locks operated. Release of the hold key restores the pick-up 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 set is used with 1A1 key telephone system the wiring is changed as specified in note 308. 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 pick-up 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 Exclusion

The exclusion key is associated with the first line as the sets are furnished and when used with the 1A key telephone system can only be associated with lines having the balancing lead terminated on the terminal strip of the key assembly. When used with the 1A1 key telephone system the exclusion key may be associated with any line picked up. When it is desired to exclude other stations from this line the exclusion key is operated. This opens the line to all excluded stations. When the hand set is replaced on the mounting at the end of the call, the exclusion key is automatically restored to normal reconnecting the excluded stations to the line.

If it is desired to flash the operator while the exclusion key is in the operated position the mounting plunger which is not associated with the exclusion key is operated in the usual manner for flashing. This does not disturb the position of the exclusion key.

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The exclusion key can also be connected for use as a common ringer or buzzer cut off key while the hand set is off its mounting.

5.6 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 set. It is used for disconnecting extension stations or ringers or listening in stations from the line and when desired connects the ringer in the set to the line.

5.7 Radio Frequency Noise Suppressors

The 61P filter is furnished only when specified, to suppress radio frequency induction from the dial. The 152A Condenser is also furnished only when specified and is used to suppress radio frequency induction from the 7 type buzzer when it is operated on direct current.

5.8 Selection of Sets

A table in the circuit notes shows the combinations of facilities provided by the different sets, together with the cording arrangement. Associated information notes show how the set connections should be changed to provide various optional features.

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