102A KEY EQUIPMENT

DESCRIPTION AND USE

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1.00 GENERAL

1.01 This section was formerly Station Installation and Maintenance Section C53.416, Issue 2. Except for editorial changes and renumbering for inclusion in the Station Operations Manual, no other revisions have been made.

1.02 The 102A key equipment has been developed to meet the requirements of the Federal Aviation Agency for use at air route traffic control centers, at airport control towers, and with various military installations. This equipment is not restricted to use by the aforementioned customers but is available to any customer desiring the features furnished by the 102A key equipment, such as airline, pipeline, and various right-of-way companies.

1.03 The key units of this equipment are similar in appearance to the 101-type key units.

1.04 The design of this equipment is such that the attendants may answer, originate, hold, and record calls on a group of lines which may include central office or PBX lines, ringdown or automatic private lines, 2- or 4-wire private lines, toll lines, or station lines.

1.05 The lines which terminate on keys at one or more attendant positions are divided into two general types of lines, one known as conference lines and the other as nonconference lines.

1.06 Conference lines are usually local lines whereby an attendant may signal individually and talk on one line, or he may signal simultaneously on two or more lines and talk on all these lines through the operation of their respective line keys.

1.07 The nonconference lines include central office and PBX lines, nonconference station lines, long lines to distant locations, tie lines, and toll lines.

1.08 The attendant positions are made up of one or more 10-line key units and may be equipped with two sets of jacks, a dial, and a position pilot lamp, as required. The key units are assembled side-by-side in several different mount-

ing arrangements. These arrangements are divided into three general classifications:

- A type 1 position provided with both conference- and nonconference-type lines.
- A type 2 position provided with nonconference-type lines only.
- A type 3 position used for supervisory and monitoring purposes only.

1.09 Type 1 positions employ key units having the upper positions of the keys wired in series for nonconference-type lines and the lower positions of the keys wired in multiple for conference-type lines.

1.10 Type 2 positions have both upper and lower positions of the keys wired in series for nonconference-type lines.

1.11 Type 3 positions are equipped with keys to associate the supervisor telephone circuit with the telephone circuit of any one of the attendant positions for purposes of monitoring or instructing.

1.12 All positions are arranged to connect to voice recorders, which are usually furnished by the customer.

2.00 APPARATUS AND EQUIPMENT KEY UNITS

2.01 The 10-line key units for types 1 and 2 positions are furnished in both originating and supplementary types. The key units are arranged for right-to-left growth only.

2.02 Fig. 1 illustrates a type 1 position, showing the type of key units required as well as the various lamps, keys, etc; Fig. 2 illustrates the type 2 position in the same manner.

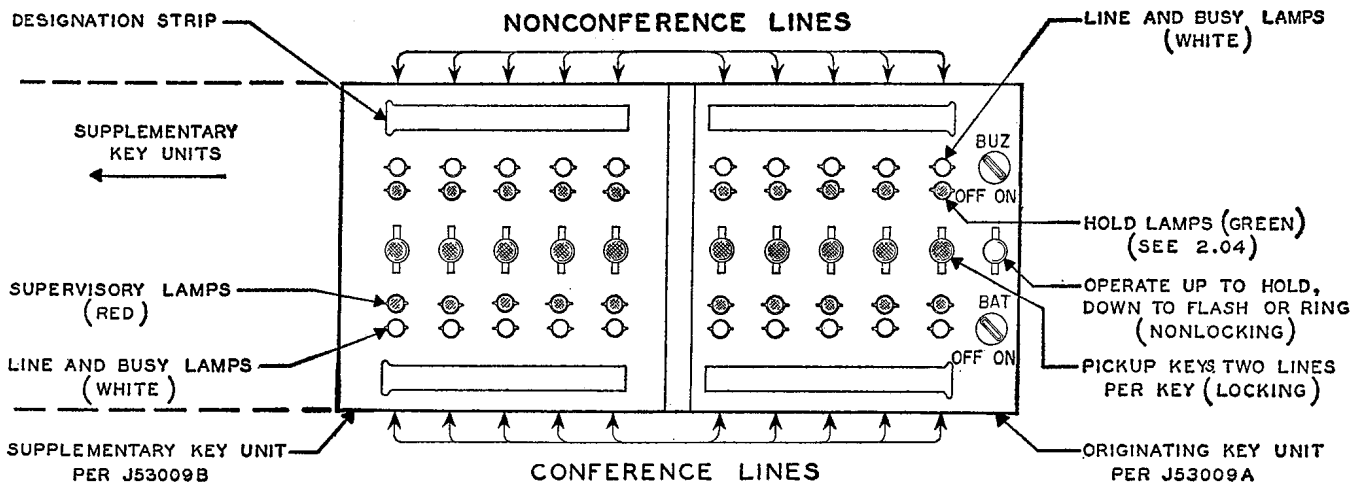

Fig. 1 — Type 1 Position

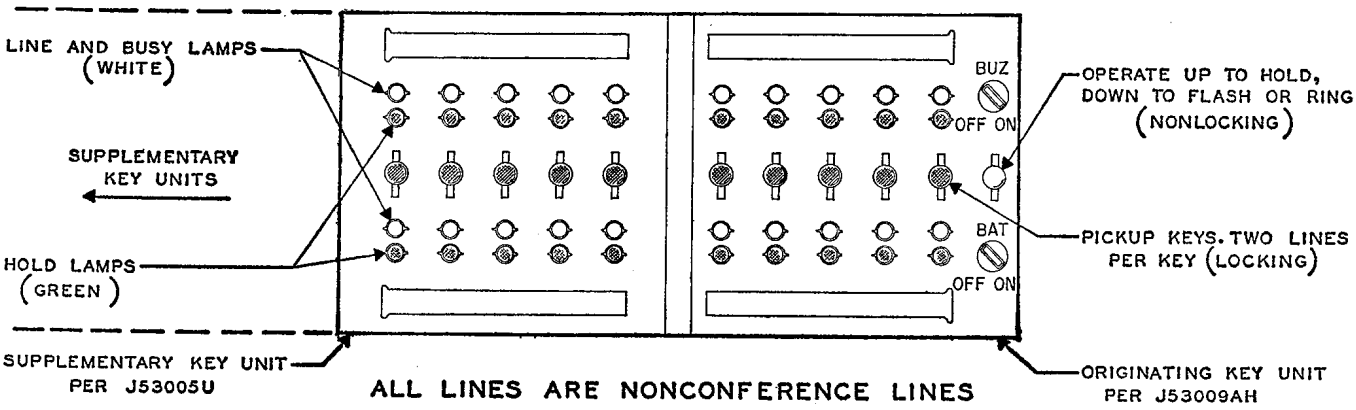

Fig. 2 — Type 2 Position

2.03 When more than one attendant position is necessary, each position requires one originating key unit to furnish the flash, ring, and hold key. Only one originating unit equipped with buzzer and battery cutoff key is required per installation.

2.04 When a long-line or similar circuit is terminated in the key units, the hold lamp is used as a supervisory lamp. In this case the lamp cap associated with these circuits may be changed from green to red.

2.05 The type 3 position, which resembles types 1 and 2 in appearance, is used for supervisory and monitoring purposes and requires the use of key unit J53009AH. This key unit is furnished with a different faceplate. It provides for group (GRP) and monitor (MON) keys in the spaces occupied by the BUZ and BAT keys in the originating units. This flash, ring, and hold key is furnished although it is not used. Operation of the GRP key extends the telephone circuit of the adjacent attendant position to the supervisor position. The supervisor may answer or originate calls by the operation of the GRP key and the line keys in the adjacent attendant position. The supervisor may listen on any attendant position by operating the MON key and the line key associated with an attendant position. He may talk to that same attendant by releasing the MON key and leaving operated the line key associated with that attendant position.

2.06 Fig. 3 shows the key units mounted on a table or desk top. Fig. 4 shows the key units mounted flush with the top of a desk or table. The key units are often installed in customer-furnished consoles of various sizes.

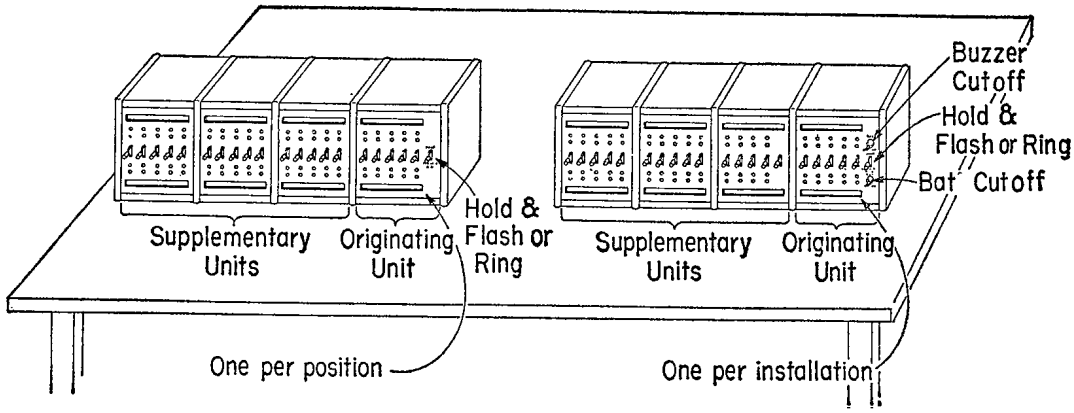

Fig. 3 — Top-mounting Arrangement

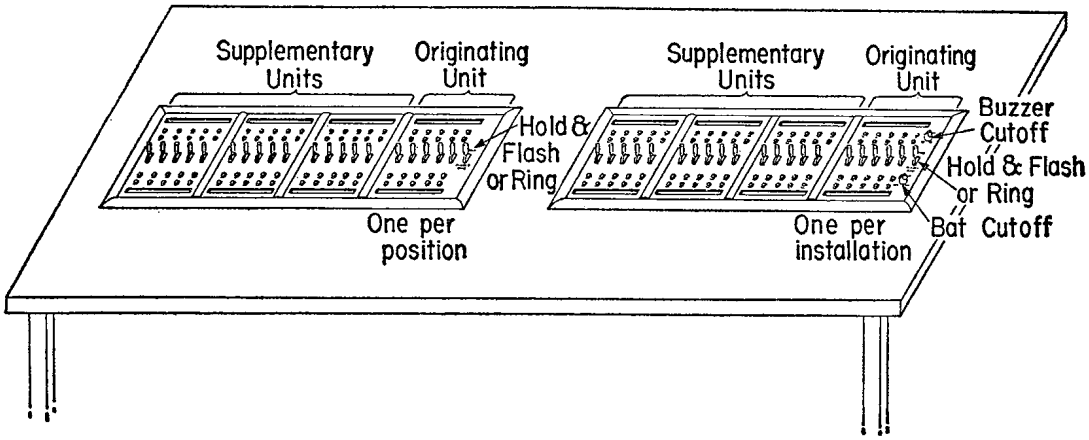

Fig. 4 — Flush-mounting Arrangement

2.07 The flush-mounted arrangement is also designed so that the faceplate may be tilted at an angle of about 20 degrees from the mounting surface. With this tilted arrangement the front edges of the faceplate will be substantially flush with the mounting surface. A wooden framework with a mahogany-walnut finish encloses the raised portion of the key units. Frameworks are available for mounting one, two, three, or four key units in either the flush-mounted or cabinet arangement. When four or more key units are required per position in a console, a modified framework must be used.

2.08 Designation strip holders are located at the top and bottom of the key unit faceplate and are designed to permit insertion and removal of the designation strips from the front without disturbing any part of the unit. A detachable cardholder, coded 9A, and a wider designation strip are available if the writing space is inadequate on the designation strip furnished with the key equipment. This 9A cardholder is covered in the C Section entitled Designation Strips and Cards.

Equipment Units

2.09 The relay units are furnished on 19 by 1-3/4 inch mounting plates and may be mounted in standard equipment cabinets on 19-inch relay racks or by means of adapter ED-68189-01 on 23-inch relay racks. Each relay unit is provided with one or more 195-type terminal strips, as required.

Attendant Telephone Sets

2.10 Head telephone sets and handsets equipped with or without transmitter cutout and push-to-talk switches are available for use at attendant positions.

2.11 Cords used with the 52-type head telephone sets are furnished in 7- and 10-foot lengths with or without a switch to control the transmitter circuit. Retractile cords in the above lengths are available when required. The 53D head telephone set is available with a 12-foot retractile cord only, equipped with a switch arranged for nonlocking (push-to-talk) and locking (transmitter cut in) operation.

2.12 Conference and nonconference stations are usually equipped with subscriber sets and hang-up type telephone sets. The 329-type telephone set may be used at these locations instead of the hang-up type sets if desired. F3-type handsets are provided which have a push-to-talk key arranged to close the transmitter circuit when it is operated.

3.00 SIGNALING

Visual

3.01 Incoming calls are indicated by the line and busy lamp or by the supervisory lamp, either flashing or burning steadily. The arrangement of this steady or flashing signal varies in accordance with the type of line circuit.

3.02 There are several arrangements for selective signaling:

- On a nonconference line a short ring signals the *A* position visually and audibly; a long ring signals the *B* position.
- Conference line signaling of any one of nine attendant positions.
- Conference line signaling of any one of ninety attendant positions.
- A position pilot lamp associated with a position connected to certain lines in that position.
- Two-tone signaling to a particular position on a toll or long line.

3.03 Visible filament lamp caps, 75 type, are available for use with key units at locations such as airport towers where the units are exposed to direct sunlight.

3.04 When line appearances exceed 12, auxiliary line and supervisory and hold relay equipment are required.

Audible

3.05 A common buzzer operates on all incoming signals except long-line circuits. Long-line circuits may operate a separate buzzer or a common group buzzer.

3.06 Audible signaling may also be accomplished by the use of a loudspeaker.

4.00 EQUIPMENT FEATURES

Central Office or PBX Line Circuit and Nonconference Station Line Circuit

4.01 This circuit will provide 2-way ringdown service between the 102-type key equipments and a central office, PBX, key equipment station, or another key equipment. It provides a flashing circuit for the operation of the line and busy lamp and the position pilot lamp on an incoming call. (See SD-69076-01.)

Automatic Tie Line to Other Key Equipments

4.02 This circuit will provide 2-way automatic line or tie line service to other key equipments or to a key equipment station. It provides for connection to the signal circuit to start the flashing operation of the line lamps and the position pilot lamp. (See SD-69111-01.)

Conference Line Circuit

4.03 This circuit provides 2-way service between the 102-type key equipment and a key equipment station that is arranged for conference service. It provides for the application of ringing current toward the station. It connects to the signal circuit to start its operation, thus causing the line and busy lamps to operate.

Signal Circuit

4.04 This circuit provides a means of flashing the line and busy lamps on all types of lines, for operating the audible signal on certain incoming calls, and for operating an audible and visual alarm signal for 102-type key equipment. It provides for a steady buzzer on certain arrangements. It furnishes the connection for applying power to the buzzers. It provides a battery cutoff key and a fuse panel. It provides for the auxiliary relays that are required for the operation of the position pilot lamp. (See SD-69127-01.)

Conference Line Circuit Arranged for Dialing Any One of Nine Attendants

4.05 This circuit provides 2-way service between the 102-type key equipment and a key equipment station that is arranged for conference service and for dialing. It provides for lighting the supervisory lamp at the called attendant and for flashing the line and busy lamps at all other positions. It connects to the signal circuit to start the flashing operation and the common buzzer. It also provides for ringing current to be applied to the distant station. (See SD-69146-01.)

2-wire Multistation Line Circuit

4.06 This circuit provides a 2-wire intercommunicating line for a number of stations in a local area. It provides a line circuit for a 102-type key equipment that will be associated with the 2-wire intercommunicating line and will permit any station on the line to signal the attendant by means of a nonlocking signal key. It provides for loudspeakers across the line at the stations and for disconnection of the speakers when the handset is off the hook. It provides connections to the signal circuit for the operation of the line and busy lamp and for the operation of the position pilot lamp. It also provides for a volume reducing key if required when loudspeakers are used. (See SD-69157-01.)

2- and 4-wire Toll Line Circuits with Cutoff and Bridged Stations

4.07 This circuit is used on private toll line circuits for connecting 2- and 4-wire toll lines to station sets or key equipment positions. It provides for optional connection of bridged stations by use of a key, in order to maintain a uniform transmission level. It also provides for selective signaling on 4-wire circuits by use of the 600/1500-cycle dialing equipment. It provides for connection to the signal circuit for the operation of the line and busy lamp and for the position pilot lamp. (See SD-69158-01.)

Attendant Key and Telephone Circuit

4.08 This circuit provides a means for connecting an attendant telephone set of the 102-type key equipment to the following types of lines: central office and PBX lines, tie lines to other key equipment, 2-wire private lines, 4-wire private lines, long lines, station lines arranged for conference service, station lines not arranged for conference service, 4-wire private lines arranged for selective signaling by means of 600/1500-cycle signals controlled by dial pulses, and 4-wire private lines arranged for connecting the private line to another private line or to a local 4-wire station line by dialing a 2-digit code. This circuit provides for loudspeaker listening service and for starting the recorder and the signal circuits. It provides a hold and ringing key for the attendant to hold a call or to ring out another station. It provides for a position dial for control of 600/1500-cycle dialing for selective signaling on 4-wire private line stations and for dialing on central office lines. (See SD-69159-01.)

Manual Long-line Circuit

4.09 This circuit provides 2-way service between a 102-type key equipment and a station over a toll or long line. It is arranged so that the *A* or *B* position can be signaled selectively on incoming calls from a distant station; arrangements are provided to permit the *B* position attendant to transfer an incoming call to the *A* position. It provides circuits for both 2- and 4-wire lines. (See SD-69164-01.)

Supervisor Telephone and Key Circuit Arranged for Grouping and Common Key Monitoring

4.10 This circuit provides for the supervisor to monitor or talk to any attendant. When grouped to an adjacent position he can answer or originate calls at that position. It provides for busy lamps to be operated in the supervisor position to indicate when an attendant has a call. (See SD-69184-01.)

Supervisor Telephone and Key Circuit Arranged for Connecting to Two Attendant Positions

4.11 This circuit provides a supervisory arrangement for small installations to permit the supervisor to monitor, talk, and record on either of two attendant positions. It accomplishes the connection to either of two attendants by the operation of a key. (See SD-69192-01.)

Auxiliary Line Circuit

4.12 This circuit provides an auxiliary circuit for terminating service on a line from a PBX to an attendant position or between attendant positions. It provides for extending a call immediately to the attendant telephone circuit without testing for a busy condition (referred to as the override circuit). An incoming call is connected to the called attendant telephone circuit and does not require the operation of a key for its completion. This connection is completed regardless of whether the called position is or is not connected to a line. Provision is also made for the operation of a lamp indicating that a call from this equipment is connected to the called attendant telephone circuit. (See SD-69201-01.)

Conference Line Circuit Arranged for Dialing Any One of 90 Attendants

4.13 This circuit provides 2-way service between the 102-type key equipment and a distant key equipment station. It is arranged for conference service and enables the distant station to dial any one of 90 key equipment attendants. It provides for connection to the flashing circuit to signal the attendants either by a lamp, an audible signal, or both. (See SD-69202-01.)