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## 100 KEY EQUIPMENT

### IDENTIFICATION

#### 1.00 INTRODUCTION

This section covers relay units, key boxes, and associated equipment necessary for installation.

#### 2.00 GENERAL

2.01 The 100 key equipment provides for multiple appearances of central office, PBX, or automatic ringdown lines. These telephone lines are terminated in key boxes to permit one or more persons, each having his own telephone set to answer, originate, or hold calls.

2.02 Component parts of a 100 key equipment installation are:

- Relay units for holding and signaling.
- Wooden key boxes containing line keys with line and busy lamps (see Fig. 1).
- Telephone set connecting with each key box.
- Cable distribution system necessary for interconnecting (see Fig. 2).

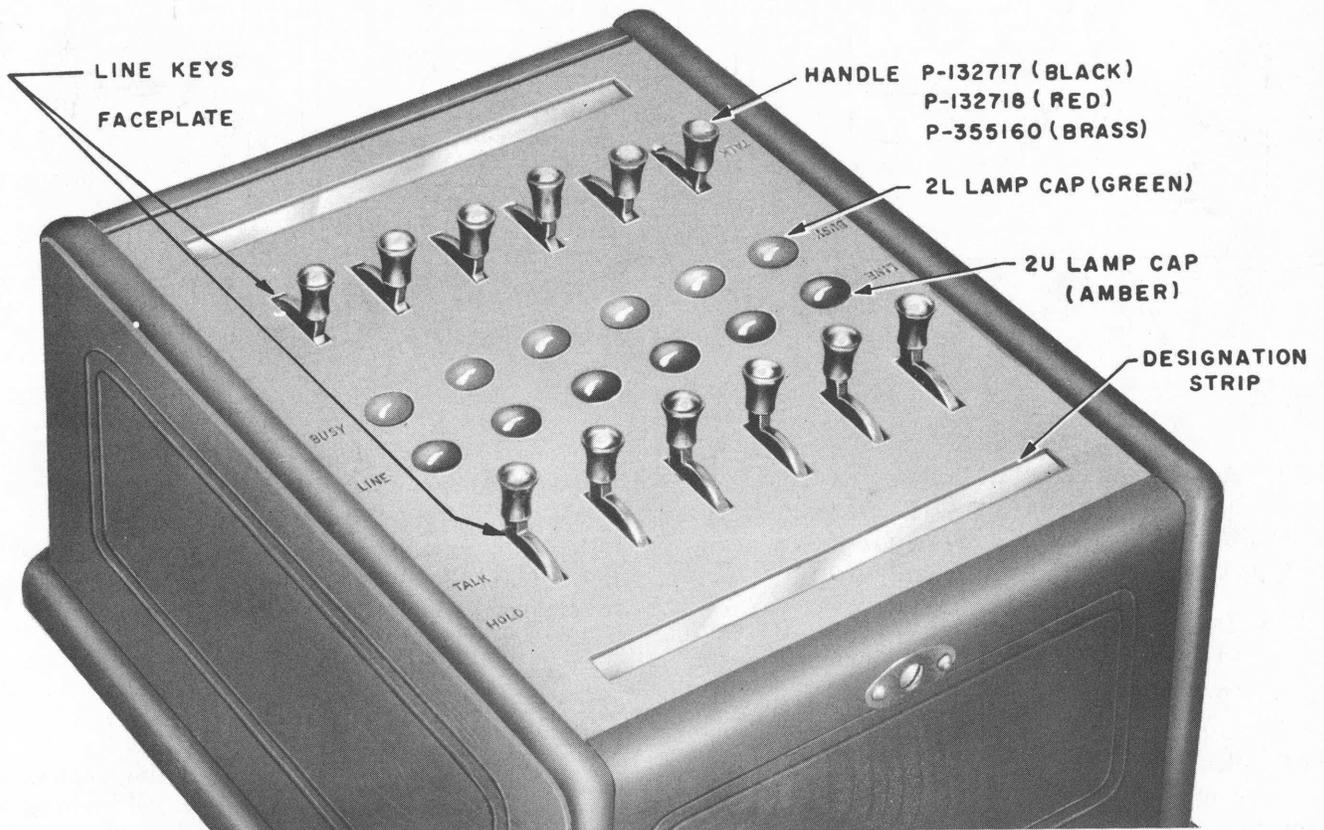


Fig. 1 - 6-line Double-sided Key Box

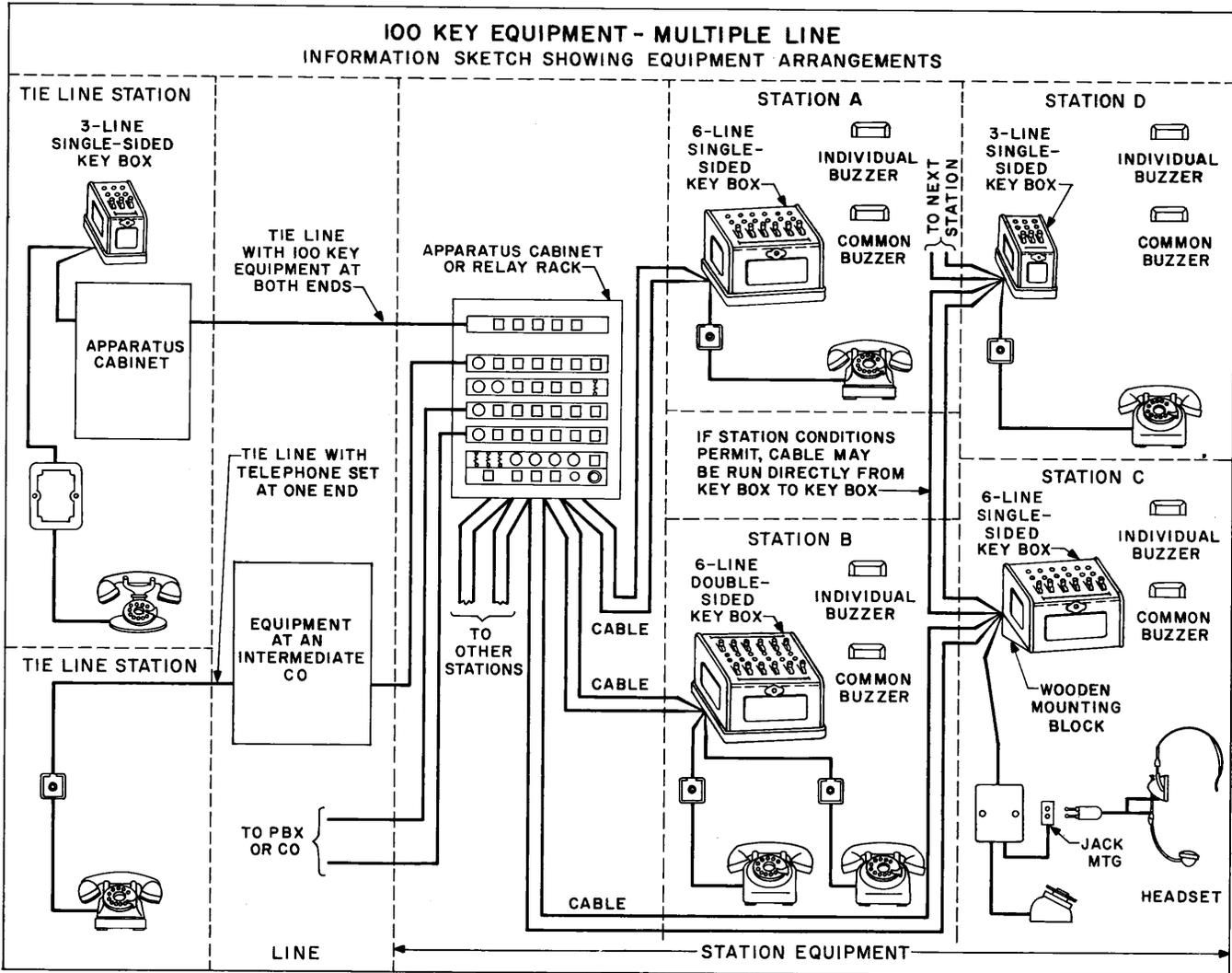


Fig. 2 - 100 Key Equipment Cable Distribution System

2.03 A dc power supply to meet operating voltage requirements of 14 to 26 volts is required. An ac voltage supply is required only when ac-type auxiliary signals are installed.

- Each relay unit is fused individually from fuse panel in apparatus cabinet or relay rack.

2.04 Ringer or buzzer in telephone set is usually connected to particular line assigned to user. A common audible signal may be installed at a position that is always attended.

3.00 RELAY EQUIPMENT UNITS (Table A)

3.01 This equipment is furnished on 19-inch plates for mounting in apparatus cabinets or relay racks located on customers' premises.

CENTRAL OFFICE OR PBX LINE UNIT

3.02 One unit required for terminating each central office or PBX line. Terminal strip provides for terminating cable conductors for 12 key boxes. Relays function to:

- Light line lamps on incoming calls.
- Sound audible signals on incoming call.
- Light busy lamps when line is in use.
- Hold a call when a hold key is operated.

customer is not present to answer calls. A ground cutoff key may be used to provide a similar feature.

**GROUND CUTOFF KEY**

**TIMING AND AUXILIARY SIGNAL UNIT**

**3.03** This unit is common to ten central office or PBX line units. The function of this unit is to control signals on an incoming call. Relay timing chain will retire signals to prevent continuous extended operation during periods when

**3.04** A surface-mounted key (toggle switch) in normal position (ON) furnishes a ground to central office or PBX line unit. The line unit will then lock operated on an incoming call. Line lamps remain lighted and audible signal operated until the call is answered. The key is turned off when equipment is unattended. Signals operate only while ringing current is being applied to line.

**TABLE A  
RELAY UNITS**

Unit	Coding	Description	Drawings	
			Circuit	Equipment
Central Office or PBX line	J53103H*	Will accommodate 10 lines.	SD-69000-01	ED-69006-01†
	J53103V	One required per line.		ED-69065-01
Timing and Auxiliary Signal	J53103W	Time-out signals on incoming call. Common to ten central office and PBX lines.		
Ground Cutoff Key		Switch, tumbler, Hart and Hege-man No. 611. Used as alternate to timing unit.		
Dial and Trip	J53103Y*	List 1 head telephone and dial.	SD-69002-01	ED-69065-01
		List 2 head telephone without dial.		
Telephone	J53103AA*	Required for head telephone in addition to dial and trip. Wired for four circuits.		
Attendant Telephone and Dial Circuit		Standard for new installations with head telephone set. Refer to circuit drawing for equipment details.	SD-69162-01	
Tie Line	J53103AB	One required at each end of tie line between the 100 key equip-ments.	SD-69001-01	ED-69065-01

\* Rated Mfr Disc. Available for A&M Only (Additions and Maintenance Only).

† Cabling ED-90440-01.

## SECTION 512-330-100

### DIAL AND TRIP UNIT

**3.05** Installation of this unit is limited to maintenance replacements. It was furnished when customers wanted a head telephone set instead of desk type. The attendant telephone and dial circuit provides same features.

### ATTENDANT TELEPHONE AND DIAL CIRCUIT

**3.06** The following equipment is furnished when customer wants a head telephone set:

- 24A KTU.
- 60-type dial mounting.
- 237A jack mounting equipped with 215A and 361C jacks.

**3.07** Local battery installation with head telephone set requires the use of 634YD subscriber set and 27A key telephone unit as shown on SD-69162-01.

### TIE LINE UNIT

**3.08** Provides direct connection with automatic signaling between two 100 key equipment installations or PBX tie line circuits. Connection to a regular telephone set at distant end requires additional equipment at distant end or intermediate central office.

- 13B KTU is used with telephone set.
- Central office equipment is shown on SD-96128-01.

### 4.00 KEY BOX UNITS, MOUNTINGS, AND ASSOCIATED EQUIPMENT (Tables B, C, and D)

**4.01** Small wooden boxes containing line pickup and hold keys, line and busy lamps, and a terminal strip to accommodate wiring cable (see Fig. 3).

**4.02** These boxes are intended for placement on desk or table top, or fastening to a flat surface. A telephone set is wired into each key box position.

- Single-sided key box contains single row of keys to be associated with one telephone set.
- Double-sided key box contains two rows of keys for use by persons at adjoining desks, each having a telephone set.

**4.03** Intercommunication between key box positions may be provided for by using a line key to pick up intercom line. When spare line keys are not available, a separately mounted key is required.

- Buzzer circuits are installed to signal between stations connected to intercom line.
- Battery is supplied through 2A KTU as shown on SD-69000-01.

## 5.00 METHOD OF OPERATION

### INCOMING CALLS

**5.01** On central office and PBX lines the application of ringing current to the line causes the line lamp and audible signal associated with the line to operate at each key box in which the line appears.

**5.02** To answer call, operate line key to the TALK position and remove handset.

- Line lamps are extinguished and busy lamps lighted when handset is removed.
- If call is not answered, line lamps will be extinguished under control of timing circuit.
- Keys are wired so that the telephone set cannot be connected to more than one line at the same time.

**OUTGOING CALLS**

**5.03** Customer selects a line that is not in use and operates line key to TALK position which connects the telephone set to the line.

**HOLDING**

**5.04** The line key operated to HOLD position will place a holding bridge across line. Re-operating key to talk position re-establishes the talking path. Line keys are wired so that the holding bridge cannot be placed on a line accidentally by operation of key to HOLD when the receiver is on the switchhook.

**TABLE B**  
**KEY BOX UNIT**

Unit		Coding	Description	Drawing†		
Sided	Line			Box Assembly	Equipment and Cable	
Single	3	J53103	A*	List 1 arranged for one telephone set.	ED-69075-01	ED-69003-01
	6		D	List 2 without wooden base.	ED-69077-01	ED-69016-01
Double	3		C*	Arranged for dual operation with two telephone sets.	ED-69076-01	ED-69018-01
	6		F		ED-69078-01	ED-69019-01

\* Rated Mfr Disc. Available for A&M Only (Additions and Maintenance Only)  
The 1A1 key telephone system is recommended as a substitute.

† Circuit Drawing SD-69000-01.

**TABLE C**  
**KEY BOX MOUNTINGS**

Unit	Drawing	Description	
Mountings	ED-69012	G2	Block for tilting 3-line single-sided box.
		G3	Block for tilting 6-line single-sided box.
		G4	Metal bracket for 3-line sided box on side of desk.
Framework Assembly (Flush-Mounted)	ED-69070-011 ED-69070-012	When key boxes must be flush-mounted in desk or table top, refer to drawing for detailed equipment arrangement.	
	ED-69115-01	Equipment required to tilt a single-sided flush-mounted key unit (recesses in desk or table top). Refer to drawing for detailed equipment arrangement.	

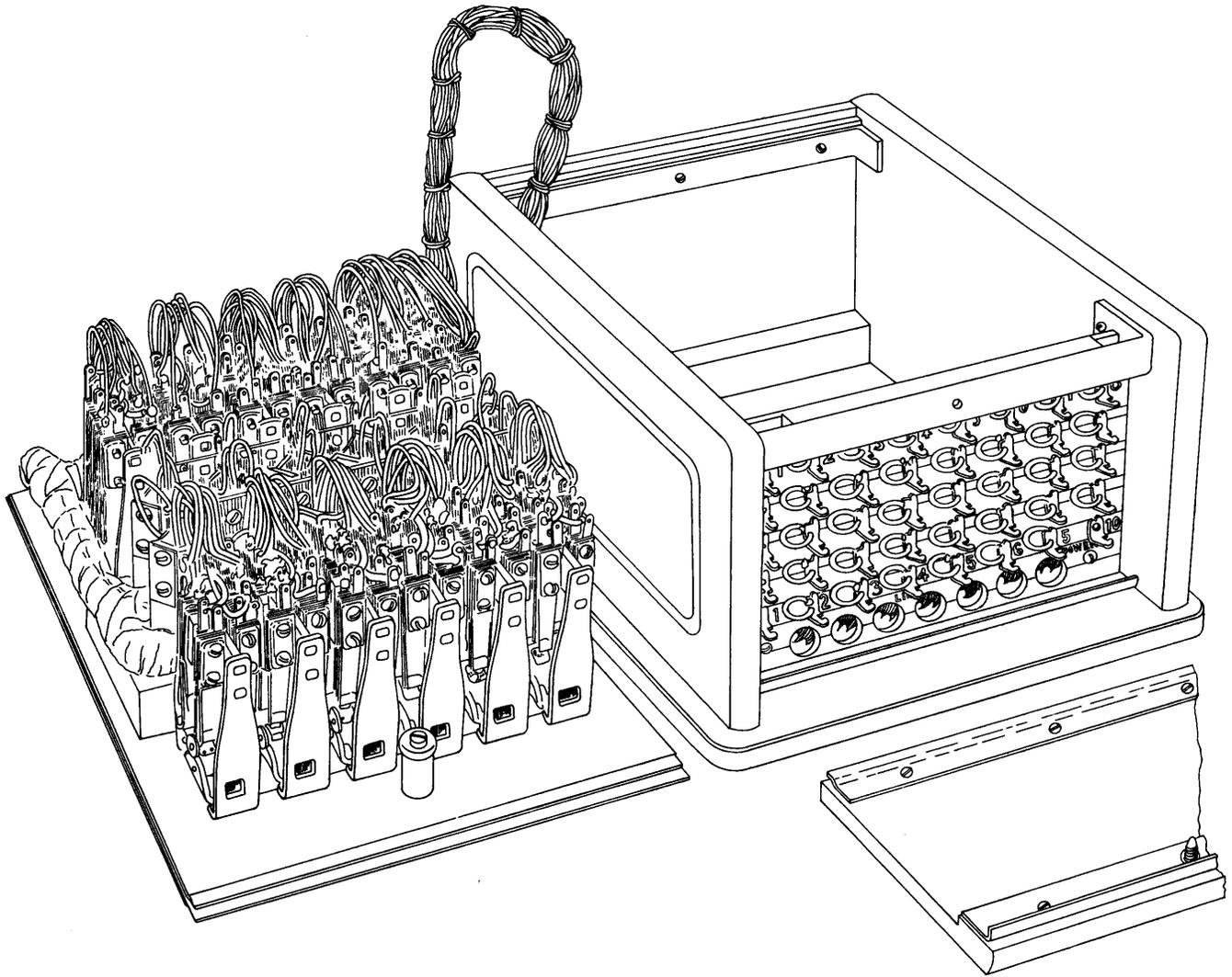


Fig. 3 – Internal View of Key Box

**TABLE D**  
**ASSOCIATED EQUIPMENT**

Item	Coding		Description
Adapter	ED-90335-01	G1	Required to mount ED-90426 fuse panel on 19-inch framework.
		G2	Required to mount ED-90426 fuse panel on 23-inch framework.
Assemblies	ED-69143-01	G1	Mounting bars for KTU on 19-inch framework.
		G2	Mounting bars for KTU on 23-inch framework.
Cabinet			Equipment cabinets and apparatus mounting are covered in the section entitled Equipment Cabinets and Apparatus Mountings, Identification.
Key	6017B		Control key for auxiliary signal cutoff or transfer. Also used for intercom line when spare line key is not available.
Panel	ED-90426-01	G1	Fuse panel for 19-inch framework. Provides 40 fuses arranged in two rows.
	ED-91786-01	G2	Fuse panel for 11- and 18-plate cabinets. Provides 25 fuses. Drilled for mounting 638-type plate.
	ED-69065-01	G1	Protector and ground punching used with auxiliary signal circuit in small cabinets. Equipped with five 62D protectors for 24-type fuses and six 17A ground terminals.
		G4	Required in addition to G2 for ac-type auxiliary signals. Consists of 638A plate with apparatus mounted.
		G5	Required in addition to G1 for dc-type auxiliary signals. Consists of 638B plate with apparatus mounting.
Mounting Plates	600A		Mounting plate equipped with ten 46A lamp sockets. Used in 19-inch frameworks to provide resistance lamps in ac ringing supply.
	638A		Drilled to mount a 46A lamp socket for resistance lamp for ac-type auxiliary signals. Used with panels ED-69065-01, G1 and ED-91786-01, G2.
	638B		Drilled to mount 139A capacitor and 47N retardation coil for dc-type auxiliary signals. Used with panels ED-69065-01, G1 and ED-91786-01, G2.
Power Supply			Refer to sections covering selection of power plants for equipment information. Fusing requirements are covered in the SD for particular equipment.
Relay	B297		Provide one per installation of tie line circuit J53103AD when individual ac signals are used. Shown in SD-69001-01 as CR relay.
KTU	32A		Required as transmitter current limiting network with 520-53-type head telephone sets on short loops. Covered in SD-69162-01.

