

A. E. CO. TYPES 2A, 2B, AND 2C SECRETARIAL  
ANSWERING CABINET  
DESCRIPTION

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1. GENERAL

1.01 This Section presents a physical and operational description of the Types 2A, 2B and 2C Secretarial Answering Cabinets. The information presented herein will familiarize operating and maintenance person-

nel with the different models of Secretarial Answering Cabinets, their various operating controls and the circuit operation of each unit.

1.02 The Secretarial Answering Cabinet provides the facilities for a centralized answering service. It is available in 6-line maximum, 10-line maximum, and 20-line maximum capacities, designated as Type 2A (Figure 1a), 2B (Figure 1c) and 2C (Figure 1b), respectively. Each line terminates at a 3-position lever key on the unit. The key enables the attendant to answer, hold, or release an incoming call. The attendant is notified of the call by both an audible and visual signal. The unit gives complete line privacy as the attendant may connect to only one line at a time; however, she may hold several calls simultaneously.

2. DESCRIPTION

2.01 The Secretarial Answering Cabinet is enclosed in a gray (or beige), all-metal housing, having a sloped front panel. The unit may be placed conveniently on a standard desk

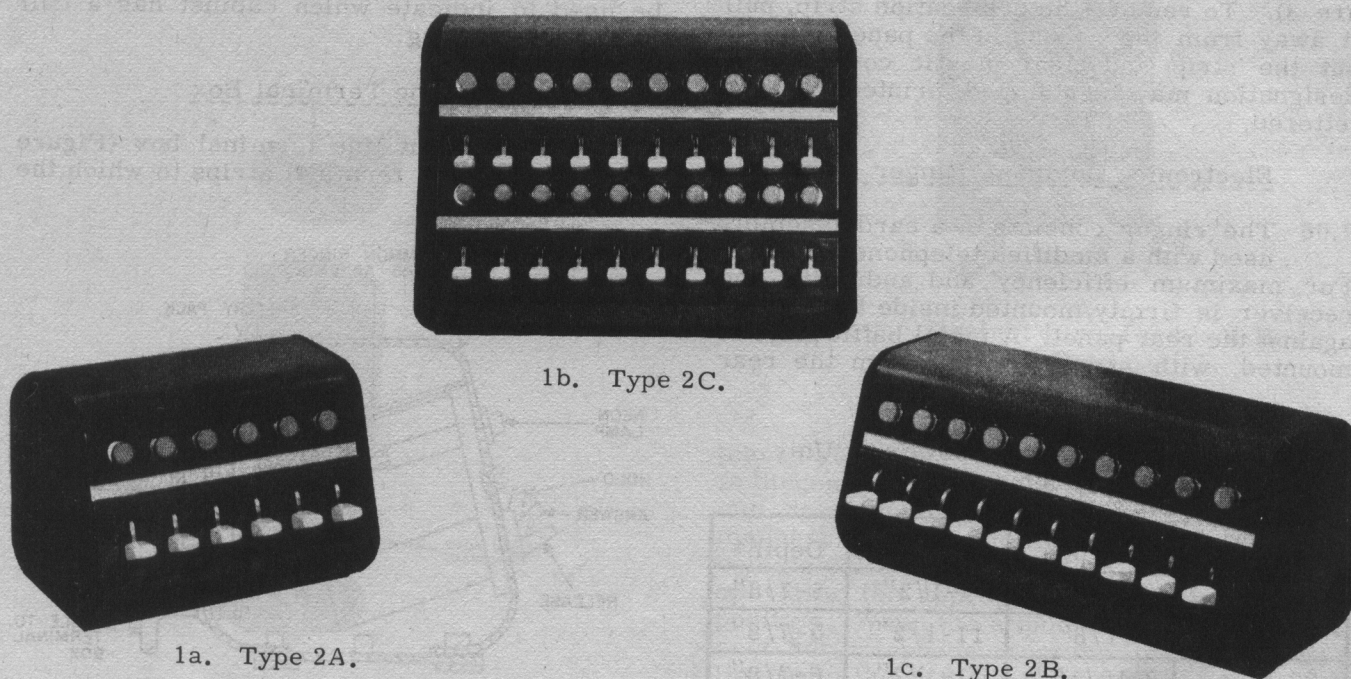


Figure 1. Types 2A, 2B and 2C Secretarial Answering Cabinets.

as indicated by the cabinet measurements (Table 1). The Secretarial Answering Cabinet is fully equipped with designation strips, locking lever keys, indicator lamps, electronic common ringer assembly, and a straight line terminal box (Table 2).

#### Indicator Lamps

2.02 A neon signal lamp is located above each lever key (Figure 2). These neon lamps are encapsuled with a limiting resistor in a nylon protective sleeve and covered by a translucent lens. Each lamp assembly is fastened to the front of the panel by a speed nut.

2.03 Electrically, each lamp, connected in series with its associated resistor, is bridged across the line and will light in response to ringing current.

#### Lever Keys

2.04 Each lever key operates as a locking, cam-operated switch having three positions: RELEASE, HOLD, and ANSWER (Figure 2). A finger-fitting, no-slip handle is attached to the metal extension of each key.

#### Designation Strip

2.05 A 3/8 inch, white, designation strip, covered by clear plastic, allows identification of each line. The Type 2C unit is equipped with two of these strips. The strip is mounted by two spring-loaded bolts (Figure 3). To remove the designation strip, pull it away from the recess in the panel and slip out the strip and clear plastic cover. The designation may be stamped, printed, or hand lettered.

#### Electronic Common Ringer Assembly

2.06 The ringer consists of a card assembly used with a modified telephone receiver. For maximum efficiency and audibility, the receiver is firmly mounted inside the cabinet against the rear panel. A metal baffle plate is mounted, with spacers, away from the rear

Table 1. Secretarial Answering Unit Measurements.

| Capacity | Height   | Width   | Depth* |
|----------|----------|---------|--------|
| 6 Line   | 5-1/8"   | 7-1/2"  | 5-7/8" |
| 10 Line  | 5-1/8"   | 11-1/2" | 5-7/8" |
| 20 Line  | 7-15/16" | 11-1/2" | 6-7/8" |

\* Including lever key.

Table 2. Straight Line Terminal Box Measurements.

| Capacity | Height | Width   | Depth   |
|----------|--------|---------|---------|
| 6 Line   | 3-3/4" | 7-1/4"  | 1-7/32" |
| 10 Line  | 3-3/4" | 7-1/4"  | 1-7/32" |
| 20 Line  | 3-3/4" | 12-1/4" | 1-7/32" |

panel to make the tone all-directional and increase the audible effect.

2.07 A photo-conductive cell and neon lamp assembly (Figure 4) activates the electronic common ringer assembly when a line is being rung.

#### Volume and Tone Controls

2.08 Volume and tone controls are provided on all Secretarial Answering Cabinets. Each is accessed through a small hole located at the rear of the cabinet.

2.09 The volume control is used to increase or decrease the volume of the output signal to any desired level.

2.10 The tone control is a three-position switch used to change the frequency of the output signal. This is most desirable when more than one cabinet is used in the same office. The differences in output frequencies can be used to indicate which cabinet has a call needing answering.

#### Straight Line Terminal Box

2.11 The straight line terminal box (Figure 5) contains terminal strips to which the

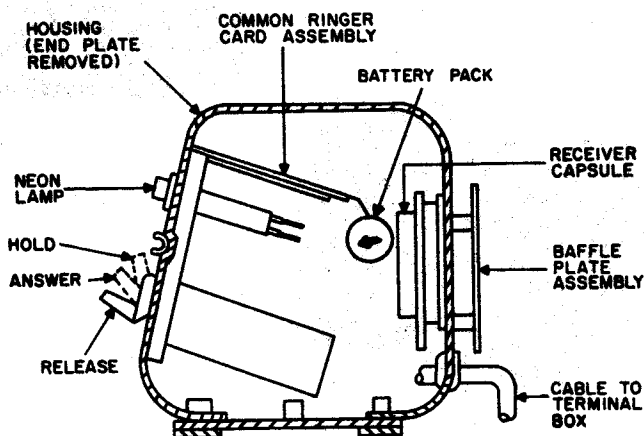


Figure 2. Side View of Housing.



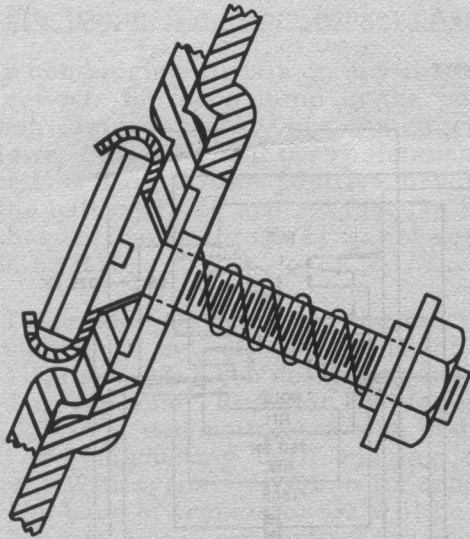


Figure 3. Method of Mounting Designation Strip.

exchange and station telephone lines are connected. The other side of the strips are prewired to the keys and lamps on the Secretarial Answering Cabinet by means of a plastic covered cable.

### 3. OPERATION

#### Key and Lamp Cabinet

- 3.01 A call may be answered by either the individual called party or by the answer-

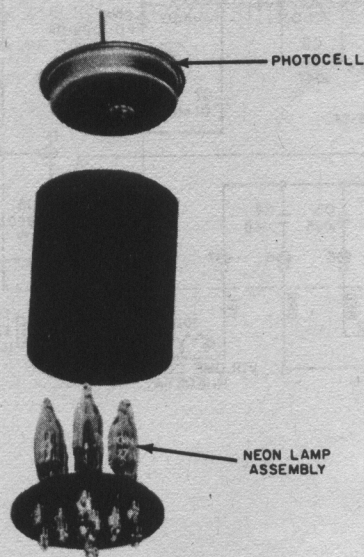


Figure 4. Photocell and Neon Lamp Assembly.

ing cabinet attendant. Should the attendant answer the call, the lever key associated with the lighted neon lamp is operated to the ANSWER position (Figure 6). This connects the attendant's telephone to the calling line. If another call is received at the same time, the lamp associated with that line will light and the electronic common ringer will sound. The attendant may put the first line on HOLD and then answer the second call. With key in the HOLD position, a holding resistor (R11) is

TERMINALS A AND B  
MUST BE RESTRAPPED AS SHOWN  
AT TIME OF INSTALLATION

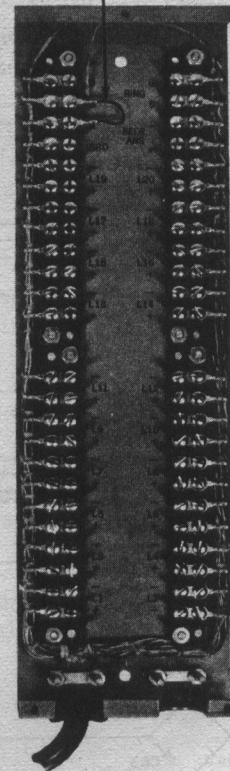


Figure 5. Straight Line Terminal Box (20-Line Unit).

placed across the line, the attendant's telephone is disconnected from the first line, and the circuit is open to the remaining lines. In this manner, the attendant may hold a number of incoming calls at one time and return to them by operating the appropriate key to the ANSWER position. When the attendant wishes to disconnect her telephone from the line or release a line from the HOLD position, she operates the lever key to the RELEASE position. This is the normal position for the lever keys.

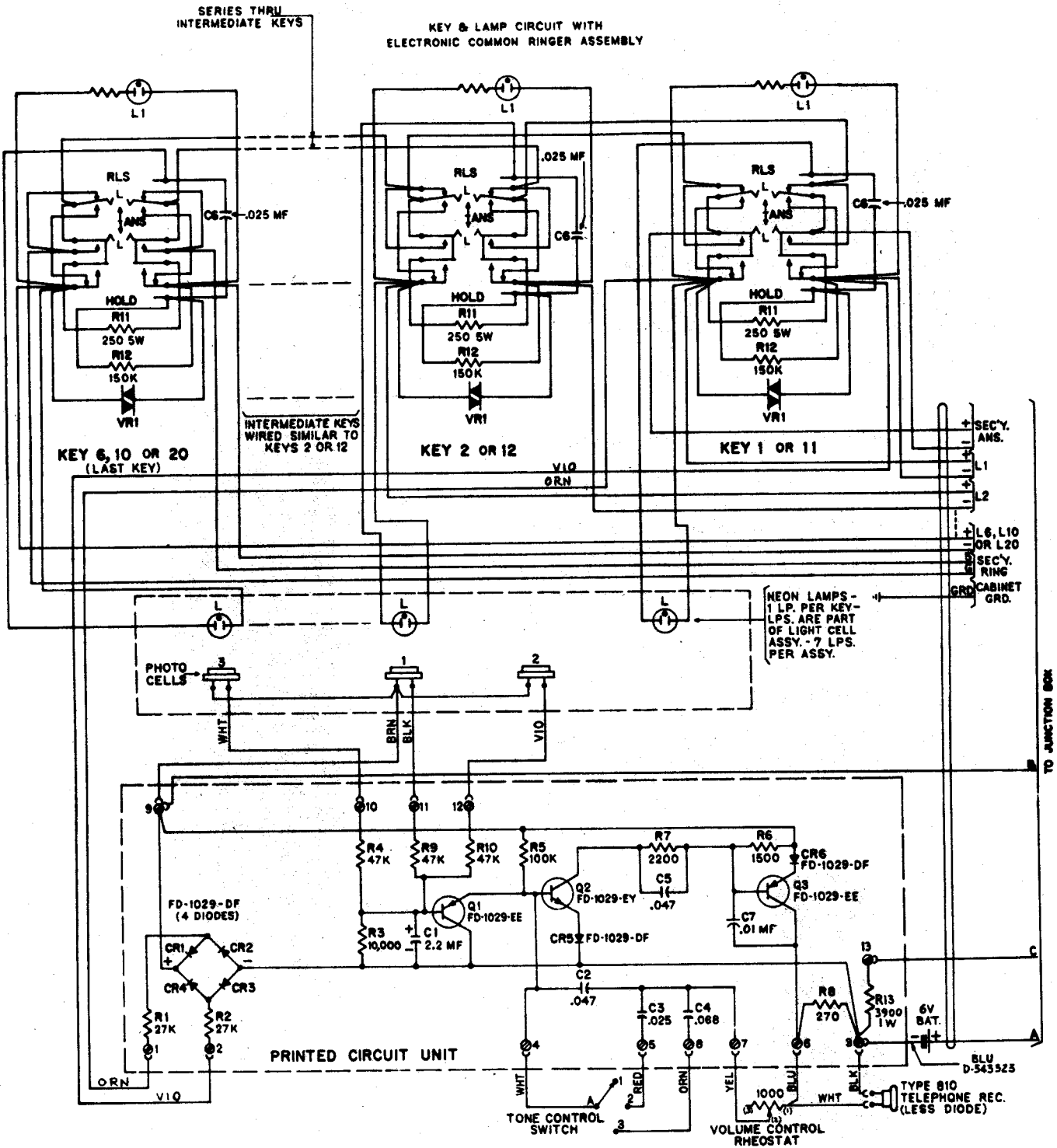


Figure 6. Wiring Diagram for 6-, 10-, or 20-Line Secretarial Answering Cabinet.



Electronic Common Ringer Assembly

3.02 When ringing signals on any line are received, the neon lamp in the photocell and neon lamp assembly associated with that line glows, thus lowering the resistance of the photocell. This allows positive 6-volts d-c from the battery to be applied through the cell to the base of transistor Q1, by way of resistors R4, R9, or R10.

3.03 Transistor Q1 performs the function of a switch to cut off the oscillator (transistors Q2 and Q3) when no ringing current is applied to the line. Resistor R3 biases transistor Q1 in a conducting state so that it will always be conducting until ringing current appears. With transistor Q1 in its conducting state, the base of transistor Q2 will be biased to its cut-off state, preventing the oscillator from operating.

3.04 When the positive potential of the battery is applied through the photocell and neon lamp assembly to the base of transistor Q1, the base becomes more positive, thus cutting off the transistor. Transistor Q1, being cut off, removes the negative bias on the base of transistor Q2 and allows the audio oscillator to operate.

3.05 The frequency of the output signal is determined by the size of capacitors C2, C3, or C4. The tone switch is used as a means to select the desired output frequency. When the switch is in position one, the oscillator will operate at its highest frequency, determined by capacitor C2. When the switch is rotated to either position 2 or 3, capacitors C3 or C4, respectively, are added in parallel with capacitor C2 and the oscillator's output frequency is lowered.

3.06 Capacitor C1, connected to the base of transistor Q1, is used to prevent false operation of the oscillator from d-c surges created when stations are dialing out over exchange lines. This is necessary on the first dialed d-c pulse before capacitor C6 becomes charged from the surges. The suppression network of varistor VR1 and resistor R12 limits high-voltage surges, and capacitor C6 absorbs most of the d-c surge voltage that remains.

3.07 The power for the electronic common ringer assembly is supplied by a nickel-cadmium battery. The battery is kept in a fully charged state by a trickle of direct current from the number 1 line. A full-wave silicon rectifier built into the electronic common ringer assembly provides the correct charging polarity even when the line potential is reversed.

NOTE: In order for the battery charger to operate, the first station line (L1) must be connected to an active working station.

3.08 The battery voltage can be measured at terminals A(positive) and C(minus) in the terminal box. The normal voltage is 6-volts d-c, and will rise to 7-volts d-c after prolonged trickle charging from the line.

3.09 After a long period of storage, the battery may need a "freshening" charge at a rate not exceeding 15 milliamperes. A 3900-ohm resistor in the C lead will limit the current properly with 50-volts d-c connected to terminals A and C. Correct polarity must be observed (positive connected to terminal A).