

## SUBSCRIBER SETS—400A AND K MAGNETO USED WITH HAND TELEPHONE SETS CONNECTIONS

### 1.00 INTRODUCTION

This section covers the combination of apparatus, circuit diagrams, and connections for 400A and K magneto subscriber sets used with hand telephone sets.

### 2.00 GENERAL

**2.01** These sets may come equipped with a 104A or 113D induction coil, but the coils are not interchangeable in the field. The corresponding terminals of the two coils are given below:

104A — L1    RBK    C    A    BL    SL

113D — S    S1    S2    S3    P    P

**2.02** Means are provided in the sets whereby any one of four different network combinations (A to D) may be made in the induction coil balancing circuit to obtain a satisfactory sidetone balance when sets are used on the different types of subscriber loops employed in the plant.

**2.03** Unless otherwise specified, sets are furnished with the A network, as shown in the circuit diagrams herein. Necessary changes in the set to obtain the other networks are shown below:

#### Sets Equipped with 104A Induction Coils

**Network B:** Disconnect capacitor leads from terminals A and BK. Terminate both leads on an unused terminal in the set. Connect a KS-8058, 400-ohm resistor between terminals A and BK (see Notes 1 and 3).

**Network C:** Disconnect capacitor lead from terminal A and connect to terminal C.

**Network D:** Disconnect end of strap from terminals A and BK. Terminate both leads on an unused terminal in the set. Disconnect one end of strap from terminal C and connect it to terminal BK.

#### Sets Equipped with 113D Induction Coils

**Network B:** Disconnect strap from terminals A and BK. Terminate both ends on terminal C. Connect a 63FD or KS-8058, 280-ohm resistor between terminals A and BK (see Notes 1, 2, and 3).

**Network C:** Disconnect strap from terminals A and BK. Terminate both ends on terminal C. Connect a 449H, or equivalent, capacitor between terminals C and BK (see Note 3).

**Network D:** Disconnect end of strap from terminal A and connect it to terminal C.

**Note 1:** The KS-8058 resistor requires no mounting.

**Note 2:** The 63FD resistor mounts in the upper left-hand corner of the set approximately  $\frac{5}{8}$  inch from the top and  $\frac{3}{4}$  inch from the side.

**Note 3:** Capacitors and resistors are not furnished as part of the set and must be ordered separately.

**2.04** Use of a 449E, or equivalent, 1-uf capacitor in series with the talking circuit or ringer is optional. This capacitor has the following uses:

- When connected in series with the talking circuit only, as shown in Table B, the bells on the line can be rung with a receiver off hook.
- When connected in series with the ringer only, as shown in Table C, the line may be tested on the same basis as common battery lines. This arrangement is also used in some special cases where there is battery on the magneto line, and the switchboard drop operates whenever a receiver is removed from its hook.

**Note 1:** When used in series with a high-impedance ringer, the capacitor should be 0.5 uf (449H or equivalent).

**Note 2:** An HA1 receiver should not be used where there is battery on the line.

- When connected in series with both the talking circuit and the ringer, as shown in Table D, the bells on the line can be rung with a receiver off hook, and the line may be tested on the same basis as a common battery line. This arrangement cannot be used where switchhook supervision is employed, as in the special case described in 2.04.

**TABLE A**  
**COMBINATION OF APPARATUS**

| Sub. Set Code | Components         |   |                        |           |
|---------------|--------------------|---|------------------------|-----------|
|               | Induction Coil     | Capacitor   | Ringer                 | Generator |
| 400A          | 104A<br>or<br>113D | 149A, 449F, 1149B, or 449H with 104A coil; furnished with 113D coil only when specified | 38B, 51B,<br>or<br>B1F | 47A       |
| 400K          |                    |   |                        | 48A       |

**TABLE B**  
**CAPACITOR IN SERIES WITH TALKING CIRCUIT**

| Wire or Lead                        |    | Terminals                   |            |           |
|-------------------------------------|----|-----------------------------|------------|-----------|
|                                     |    | Individual or Bridged Party | Ring Party | Tip Party |
| Capacitor Lead                      | Y  | L1                          | L1         | L1        |
|                                     | Y  | COND                        | COND       | COND      |
| Lead from L1 or S on Induction Coil | SL | COND                        | COND       | COND      |

**TABLE C**  
**CAPACITOR IN SERIES WITH RINGER**

| Wire or Lead   |    | Terminals                   |            |           |
|----------------|----|-----------------------------|------------|-----------|
|                |    | Individual or Bridged Party | Ring Party | Tip Party |
| Capacitor Lead | Y  | COND                        | COND       | COND      |
|                | Y  | L2                          | L2         | L1        |
| Ringer Lead    | R  | COND                        | COND       | COND      |
|                | BK | L1                          | GND        | GND       |

**TABLE D**  
**CAPACITOR IN SERIES WITH TALKING CIRCUIT AND RINGER**

| Wire or Lead                        |    | Terminals                   |            |           |
|-------------------------------------|----|-----------------------------|------------|-----------|
|                                     |    | Individual or Bridged Party | Ring Party | Tip Party |
| Capacitor Lead                      | Y  | COND                        | COND       | COND      |
|                                     | Y  | GN                          | GN         | L1        |
| Ringer Lead                         | R  | COND                        | COND       | COND      |
|                                     | BK | L1                          | GND        | GND       |
| Mounting Cord or Local Wiring       | R  | R                           | R          | R         |
|                                     | Y  | Y                           | Y          | Y         |
|                                     | BK | BK                          | BK         | BK        |
|                                     | GN | COND                        | COND       | GN        |
| Lead from L1 or S on Induction Coil | SL | L1                          | L1         | COND      |

**3.00 CONNECTIONS**

**3.01** To connect the subscriber set to its associated hand telephone set, the appropriate circuit diagram herein should be matched with the foldout page in the section covering the connections for the hand telephone set.

**3.02** Connections in table form are also given for each type of subscriber set connection. Table F covers the connections of the subscriber set when used with hand telephone sets.

**3.03** Hand telephone sets of the type listed below may be used with the 400A or K subscriber set to provide service as indicated in the section covering the selection of magneto station sets.

**TABLE E  
ASSOCIATED APPARATUS**

| Desk Type | Hangup Type |
|-----------|-------------|
| 202H      | 201A        |
| 215A      | 211E        |
|           | 213E        |

**TABLE F  
CONNECTIONS**

| Wire or Lead                       |      | Terminals                   |            |           |
|------------------------------------|------|-----------------------------|------------|-----------|
|                                    |      | Individual or Bridged Party | Ring Party | Tip Party |
| Inside Wire from Line or Protector | Ring | L2                          | L2         | L2        |
|                                    | Tip  | L1                          | L1         | L1        |
|                                    | GND  | GND                         | GND        | GND       |
| Ringer Lead                        | R    | L2                          | L2         | L1        |
|                                    | BK   | L1                          | GND        | GND       |
| Magneto Lead                       | R    | L2                          | L2         | L2        |
|                                    | BK   | L1                          | L1         | L1        |
| Mounting Cord or Local Wiring      | R    | R                           | R          | R         |
|                                    | Y    | Y                           | Y          | Y         |
|                                    | BK   | BK                          | BK         | BK        |
|                                    | GN   | GN                          | GN         | GN        |

*Note:* Extension stations without ringer shall be connected in the same way as the associated main station except that both leads from the ringer shall be connected to GND terminal.

3.04 Circuit diagram of 400 A or K subscriber set when used with hand telephone sets:

