

**SUBSCRIBER SETS — 415E**  
**MAGNETO — CONNECTIONS**

**1.00 INTRODUCTION**

This section covers the combination of apparatus, circuit diagrams, and connections for the 415E mag-  
neto subscriber sets.

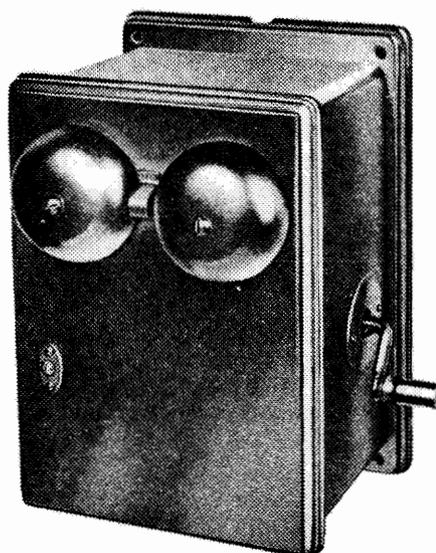


FIG. 1—415 TYPE

TABLE A—COMBINATION OF APPARATUS

Sub. Set Code	Components			
	Induction Coil	Capacitor	Ringer	Generator
415E	104A	149F, 449F, 1149B, or 449H	52A or B5A	22E
	113D*			

\* Furnished only when specified.

**2.00 GENERAL**

**2.01** The 415E subscriber set may be used in combination with hand telephone sets to provide service at 4-party selective magneto stations.

**2.02** These sets may come equipped with either 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

**2.03** 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.

**2.04** Unless otherwise specified, sets are furnished with the A network, as shown in the circuit diagram 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 SL; terminate both leads on an unused terminal in the set. Connect a KS-8058, 400-ohm resistor between terminals A and SL. (See notes 1 and 3.)

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

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

**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-8050, 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.

**Notes**

1. The KS-8058 resistor requires no mounting.
  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.
  3. Capacitors and resistors are not furnished as part of the set and must be ordered separately.
- 2.05** 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.

TABLE B—CAPACITOR IN SERIES WITH TALKING CIRCUIT

Wire or Lead		Ring Party Positions 1 and 5	Tip Party Positions 2 and 6	Ring Party Positions 3 and 7	Tip Party Positions 4 and 8
Capacitor Lead	Y	L1	L1	L1	L1
	Y	Cond	Cond	Cond	Cond
Lead From L1 or S on Induction Coil	SL	Cond	Cond	Cond	Cond

TABLE C—CAPACITOR IN SERIES WITH RINGER

Wire or Lead		Ring Party Positions 1 and 5	Tip Party Positions 2 and 6	Ring Party Positions 3 and 7	Tip Party Positions 4 and 8
Capacitor Lead	Y	Cond	Cond	Cond	Cond
	Y	L2	L1	L2	L1
Ringer Lead	R	GND	GND	Cond	Cond
	BK	Cond	Cond	GND	GND
	GN	K	K	K	K

TABLE D—CAPACITOR IN SERIES WITH TALKING CIRCUIT AND RINGER

Wire or Lead		Ring Party Positions 1 and 5	Tip Party Positions 2 and 6	Ring Party Positions 3 and 7	Tip Party Positions 4 and 8
Capacitor Lead	Y	Cond	Cond	Cond	Cond
	Y	L2	L1	L2	L1
Ringer Lead	R	GND	GND	Cond	Cond
	BK	Cond	Cond	GND	GND
	GN	K	K	K	K
Mounting Cord or Local Wiring	R	R	R	R	R
	Y	Y	Y	Y	Y
	BK	BK	BK	BK	BK
	GN	Cond	GN	Cond	GN
Lead From L1 or S on Induction Coil	SL	L1	Cond	L1	Cond

**Notes**

- When used in series with a high-impedance ringer, the capacitor should be 0.5 uf (449H or equivalent).
- 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 2.05.

**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 in Table E.

3.03 Hand telephone sets of the type in Table E may be used with the 415E subscriber set to provide service as indicated in the section covering the selection of magneto station sets.

TABLE E—ASSOCIATED APPARATUS

Desk Types	Hang-up Types
202H 215A	201A 211E 213E

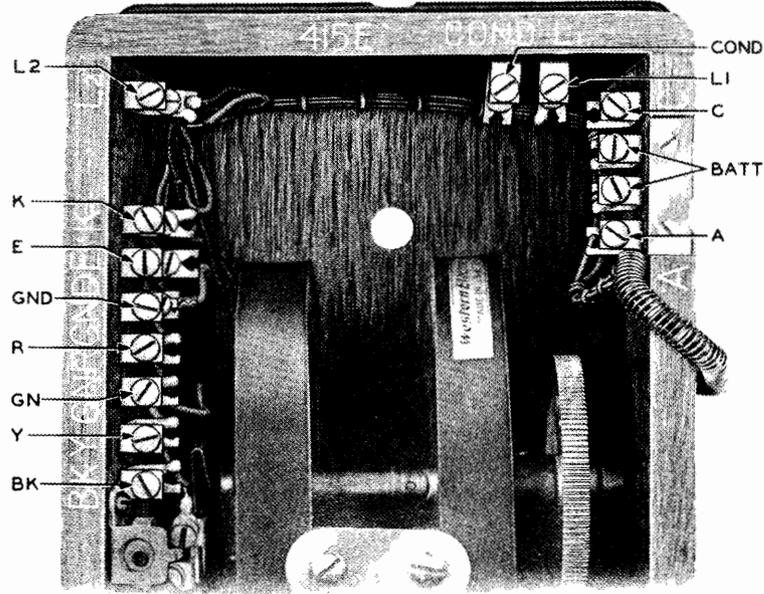


FIG. 2—415E

TABLE F—CONNECTIONS

Wire or Lead		Ring Party Positions 1 and 5	Tip Party Positions 2 and 6	Ring Party Positions 3 and 7	Tip Party Positions 4 and 8
Inside Wire From Protector or Line	RING	L2	L2	L2	L2
	TIP	L1	L1	L1	L1
	GND	GND	GND	GND	GND
Ringer Lead	R	GND	GND	L2	L1
	BK	L2	L1	GND	GND
	GN	K	K	K	K
Magneto Lead	R	L2	L2	L2	L2
	BK	L1	L1	L1	L1
Mounting Cord or Local Wiring	R	RBK or R	RBK or R	RBK or R	RBK or R
	Y	Y	Y	Y	Y
	BK	SL or BK	SL or BK	SL or BK	SL or BK
	GN	GN	GN	GN	GN

Note: Connection for ringer shows leads of the 52A ringer. The red, slate, and black leads of the B5A ringer correspond respectively to the red, black, and green leads shown.

4.00 CIRCUIT DIAGRAM

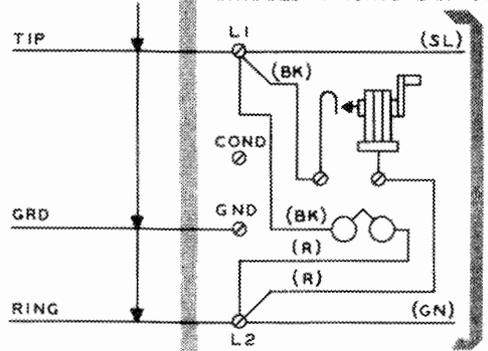
INSIDE WIRE FROM PROTECTOR OR LINE

RINGING CIRCUIT

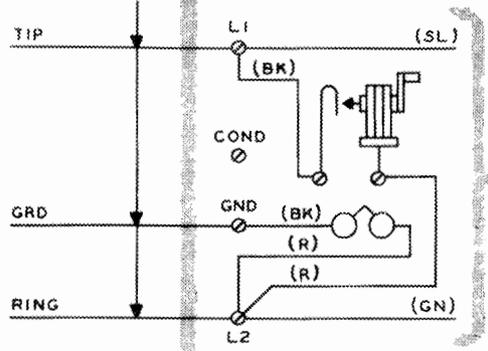
TALKING CIRCUIT

MTG CORD OR LOCAL WIRING

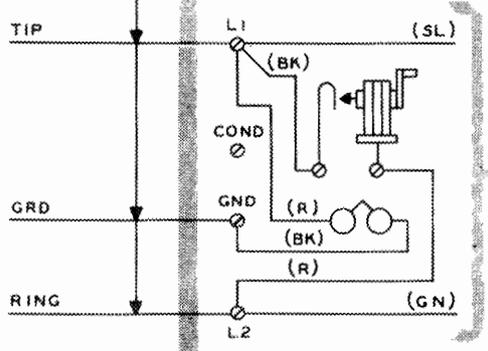
INDIVIDUAL LINE AND BRIDGED RINGING STATIONS



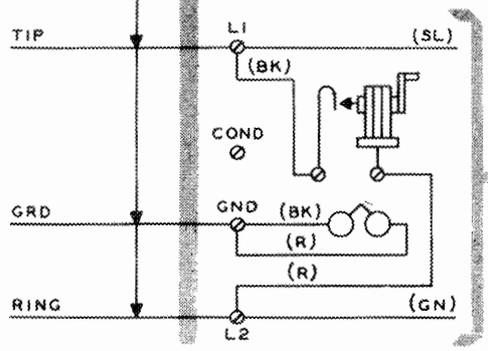
PARTY ON RING



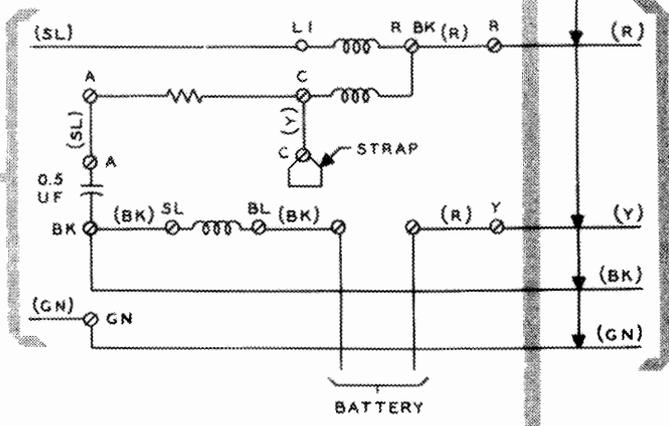
PARTY ON TIP



EXTENSION STATION WITHOUT RINGER



SET EQUIPPED WITH 104A INDUCTION COIL



SET EQUIPPED WITH 113D INDUCTION COIL

