

2A AND 2B KEY TELEPHONE SYSTEMS

IDENTIFICATION

1.00 GENERAL

1.01 The 2A and 2B key telephone systems are intercommunicating systems providing the following features:

- Loudspeaking and distant talking at a master station.
- Regular telephone set at secondary station.
- Signaling in both directions.
- Switching of master station to regular telephone set when required.
- Switching both master and secondary stations to a regular telephone set for picking up other services when required.

1.02 The 2A key telephone system uses a 321-type telephone set (Mfr Disc.) with a 112A amplifier at the master station. The 2B key tele-

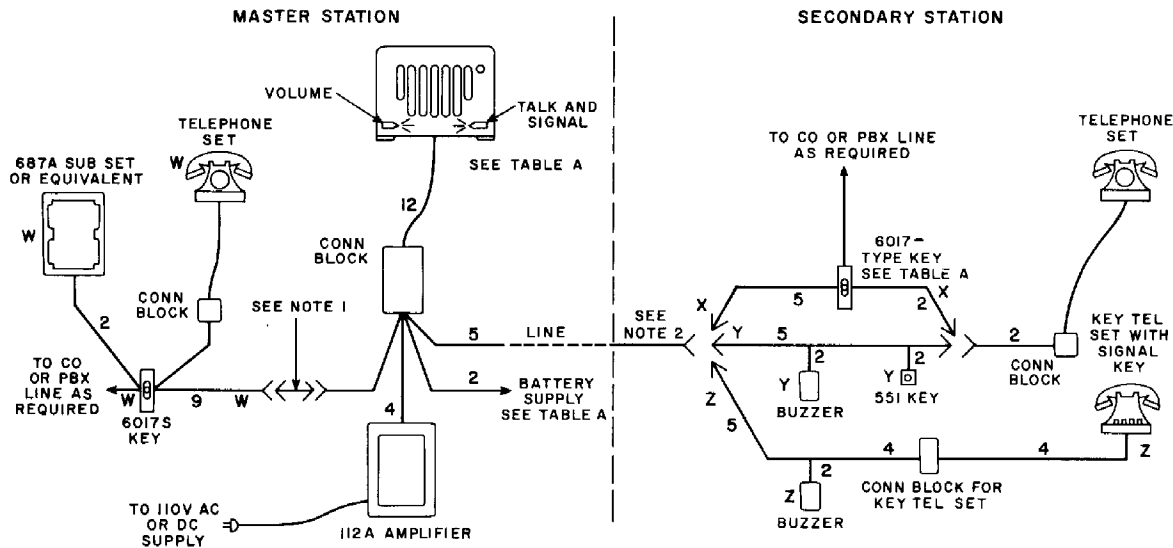
phone system uses a 330A telephone set at the master station.

1.03 Telephone sets of 300, 400, or 500 types are used with a 6017S key to transfer intercommunicating line from loudspeaking set to regular set at master station. Telephone set apparatus at secondary station need not be restricted to single-line type.

1.04 While the systems are intended primarily for a 2-station arrangement, with one master and one secondary station, it is also feasible to provide two or more secondary stations. However, if more than one secondary station is in use with the 321-type or 330A telephone set, transmission is likely to be unsatisfactory and howling may result.

1.05 The 321-type and 330A telephone sets are for use only with an intercommunicating line. They should not be connected to a PBX or central office line.

1.06 General arrangement of apparatus and optional features for 2A and 2B key telephone systems are illustrated in Fig. 1 and 2, respectively.

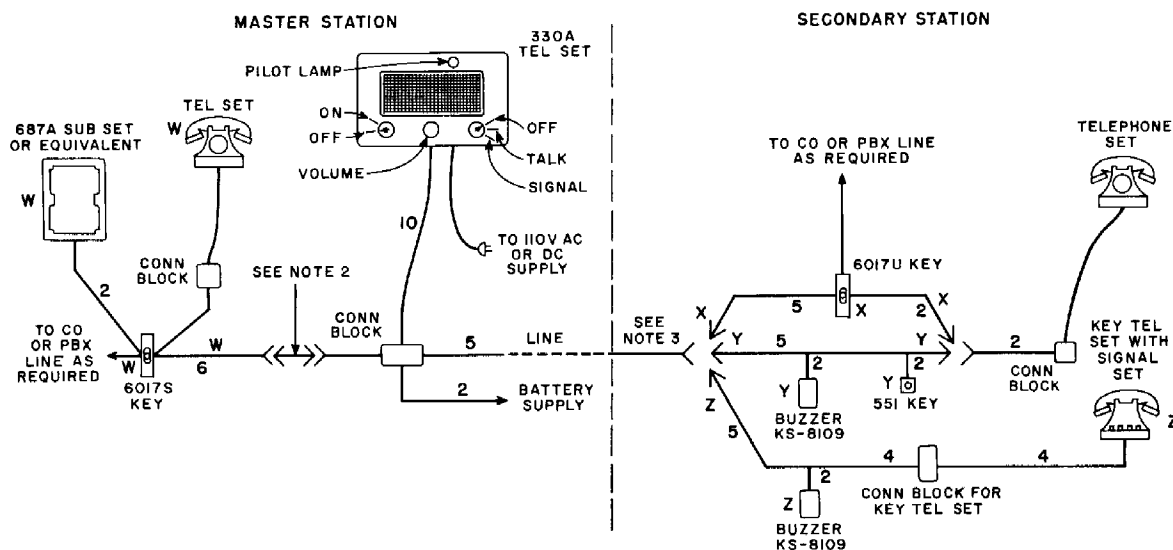


Note 1: When the optional use of a regular telephone set at the master station is not required, W wiring and apparatus may be omitted.

Note 2: Use X wiring and apparatus to make telephone set at secondary station available for other services. Use Z wiring to provide for key telephone set at station; otherwise, use Y wiring and apparatus.

Note 3: Numerals on the lines connecting the apparatus indicate the number of leads required.

Fig. 1 - 2A Key Telephone System



Note 1: When battery voltage is 30 to 50 volts, change A3 pilot lamp to K2.

Note 2: When optional use of a regular telephone set at the master station is not required, W wiring and apparatus may be omitted.

Note 3: Use X wiring and apparatus to make telephone set at secondary station available for other services. Use Z wiring to provide for key telephone set at station; otherwise, use Y wiring and apparatus.

Note 4: Numerals on the lines connecting the apparatus indicate the number of leads required.

Fig. 2 - 2B Key Telephone System

2.00 APPARATUS

2.01 A 321-type telephone set furnishes loudspeaking and distant-talking facilities at the master station (Fig. 3).

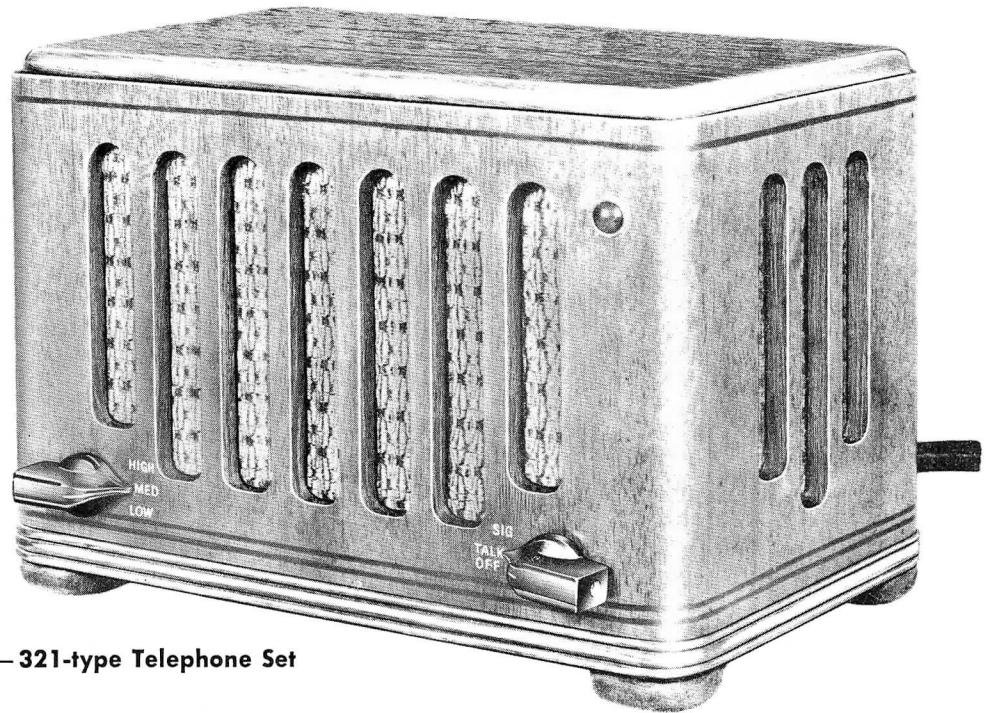


Fig. 3 — 321-type Telephone Set

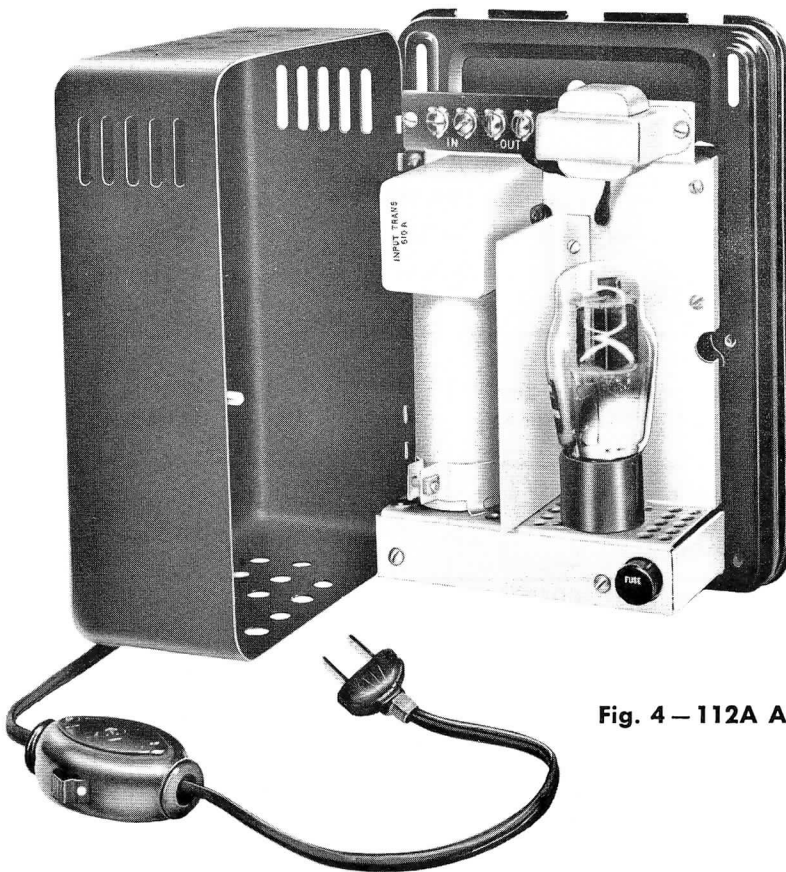
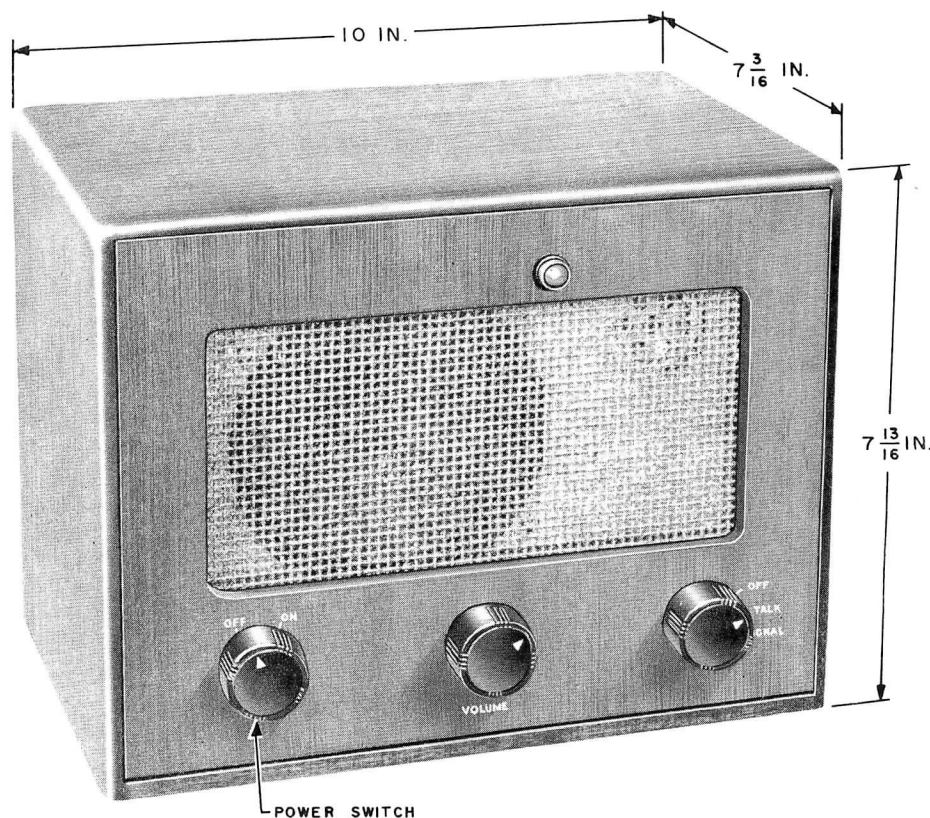


Fig. 4 — 112A Amplifier, Internal View

2.02 The 112A amplifier is required with the 321-type telephone set to provide satisfactory loudspeaker volume (Fig. 4).

2.03 The amplifier is mounted in a modified 534-type subscriber set housing. It is furnished with a power cord, equipped with an ON-OFF switch, for connecting to a 110-volt ac or dc power outlet supplied by customer.

Fig. 5 — 330A Telephone Set



2.04 A 330A telephone set incorporates the amplifier within the set. This amplifier differs from 112A amplifier in that it amplifies speech in both directions (Fig. 5).

2.05 Both sets are furnished in walnut-finished wooden cabinets. 321C, D and 330A telephone sets have a pilot lamp located on front.

2.06 Optional wiring is provided for voice signaling from secondary station. This option permits master station to be signaled by voice through loudspeaker when set is in OFF position.

2.07 If a transfer key is employed at master station, it must be left in normal position for voice-signaling feature to operate.

2.08 When key telephone set is employed at secondary station, transfer key is not required. However, a separate buzzer for receiving signals will be required.

2.09 Table A covers information on 321-type and 330A telephone sets, power requirements, pilot lamps, 6017-type keys, and buzzers.

TABLE A

Telephone Set*	Battery Supply	Switching Arrangement	Secondary Transfer Key	Buzzer at Secondary Station	Pilot Lamp
	volts				
321C	4-1/2	Locking Talk Key with Pilot Lamp	6017T	KS-8108	F1
321D†	14 to 30		6017U	KS-8109	A1
	24 to 50		6017W	KS-8110	C1
321A	4-1/2	Nonlocking Talk Key without Pilot Lamp	6017T	KS-8108	
321B†	14 to 30		6017U	KS-8109	
	24 to 50		6017W	KS-8110	
330A	14 to 30	Locking Talk Key with Pilot Lamp	6017U	KS-8109	A3
	30 to 50		6017U	KS-8109	K2

* 110-volt ac or dc current required at each installation.

† Set is furnished wired for 14 to 30 volts.

2A AND 2B KEY TELEPHONE SYSTEMS

INSTALLATION AND MAINTENANCE

1.00 INSTALLATION

1.01 In locating 321-type or 330A telephone sets be guided by:

- Customer's selection.
- Location approximately 3 to 5 feet from operator.
- Room noise.
- Acoustic qualities of the room.
- Availability of power outlet for the 330A telephone set.

1.02 Locate and mount telephone sets, subscriber sets, keys, buzzers, and connecting blocks in accordance with sections covering this work.

1.03 Mount 112A amplifier with base of electron tube down. Locate amplifier within reach of a power outlet. There is a 1-ohm wiring limit between 321-type telephone set and 112A amplifier. Additional cable conductors may be used if necessary to meet this requirement.

1.04 Avoid locating 112A amplifier where it will be subjected to vibration.

1.05 When mounting 112A amplifier or buzzers on a metal surface, provide a wooden back-board for insulating purposes.

1.06 The pilot lamp furnished with 321-type telephone set is for operation up to 6 volts. Pilot lamp furnished with 330A telephone set is for operation at 14 to 30 volts. When higher voltages are used, these lamps must be changed.

1.07 Correct poling of ac and dc power supplies is necessary. To test dc poling, place a test set across *T* and *R* leads from secondary station at connecting block of master station and test for sidetone. Reverse power supply if sidetone is not heard. The ac polarity can be tested in same manner except that a humming sound will be heard in place of sidetone. Leave power plug in position giving minimum hum.

1.08 On occasion, the secondary station may be terminated in key telephone sets associated with other systems. In such instances, signaling button used with 2A or 2B systems must not be electrically associated with any other signaling buttons within key telephone set.

1.09 Where a transfer key is provided at master station of 2B key telephone system, each secondary station equipped with F-type handset will require a 37B varistor connected across the receiver circuit.

2.00 MAINTENANCE

Maintenance of telephone sets, subscriber sets, keys, relays, and buzzers shall be in accordance with sections covering these items.

2A AND 2B KEY TELEPHONE SYSTEMS

CONNECTIONS

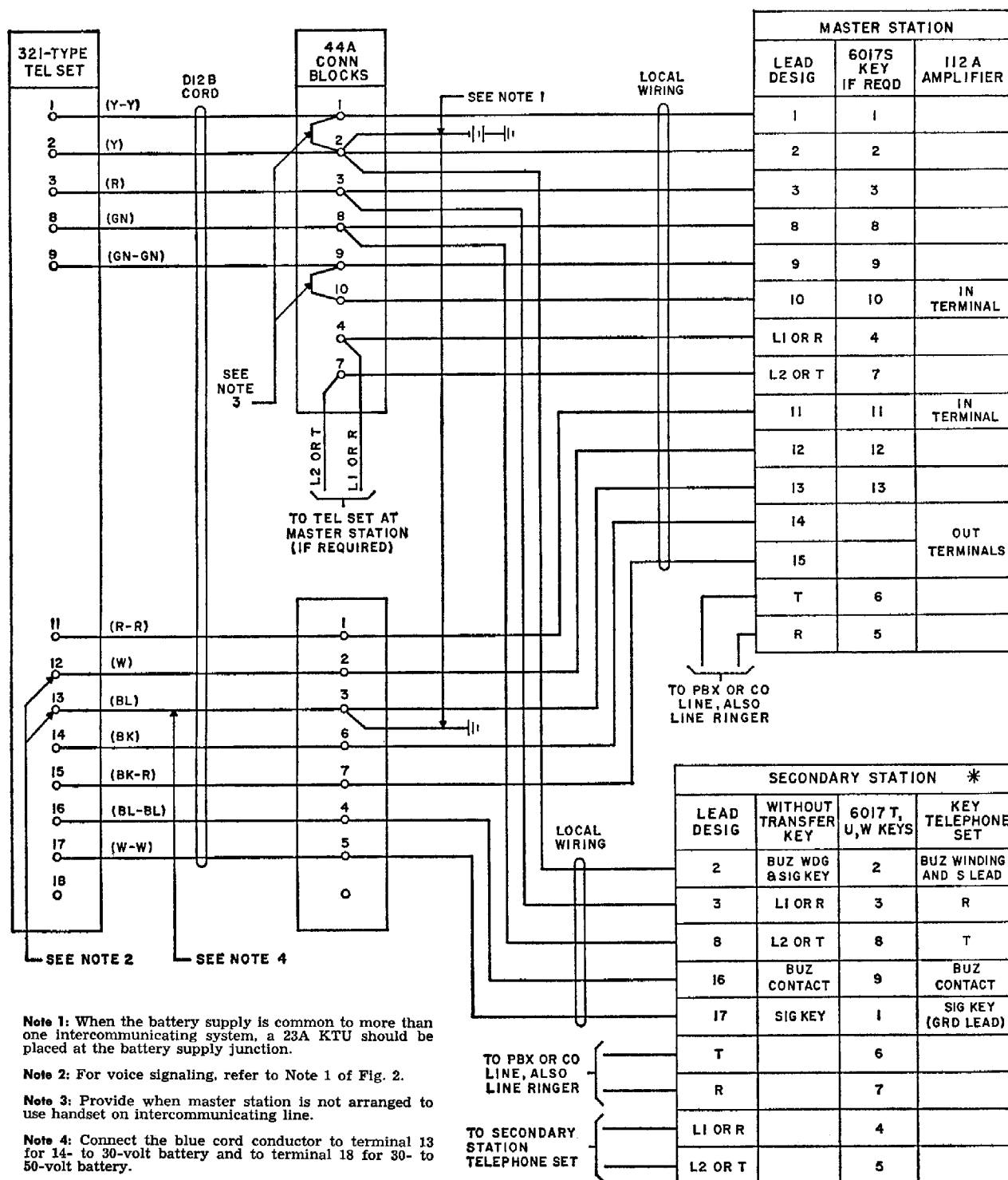
1.00 GENERAL

This section covers connections for master station and secondary station of 2A and 2B key telephone systems.

2.00 CONNECTIONS

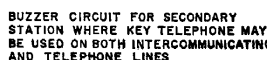
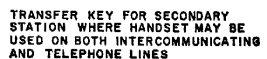
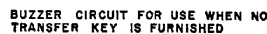
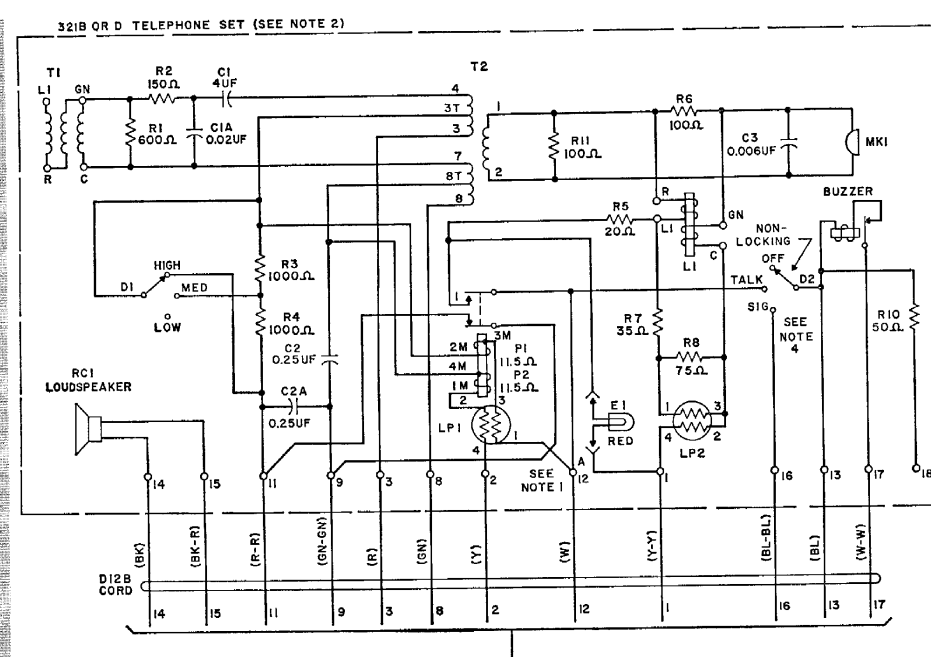
2.01 Connection drawings show necessary terminations to be made for incoming lines, power, cross connections between equipment, and termination of local wiring (Fig. 1 and 3).

2.02 Connection drawings are supplemented by circuit drawings (Fig. 2 and 4). These drawings have been included as an aid in installation and maintenance.



* SELECT ONE

Fig. 1 - 2A Key Telephone System Connections



TO KEY TELEPHONE SET
ARRANGED TO PICK UP
TWO OR MORE LINES
WITH SIGNALING

Note 1: When arranged for secondary station to call master station by voice signal when master station key is in OFF position, connect lead A to terminal 13. When not arranged to call by voice signal, connect lead A to terminal 12.

Note 2: The E1 pilot lamp is not furnished in the 321A and B telephone sets.

Note 3: Provide when master station is not arranged to use handset on intercommunicating line.

Note 4: In the 321C and D telephone sets, the order of the positions of the talk switch is as shown. In the 321A and B sets, the order of positions is TALK, OFF, and SIG; and the TALK and SIG positions are nonlocking.

Note 5: The 321B and D telephone sets are manufactured with the blue cord conductor connected to terminal 13 for operation on 14- to 30-volt battery. The blue cord should be moved to terminal 18 by the installer for 30- to 50-volt battery.

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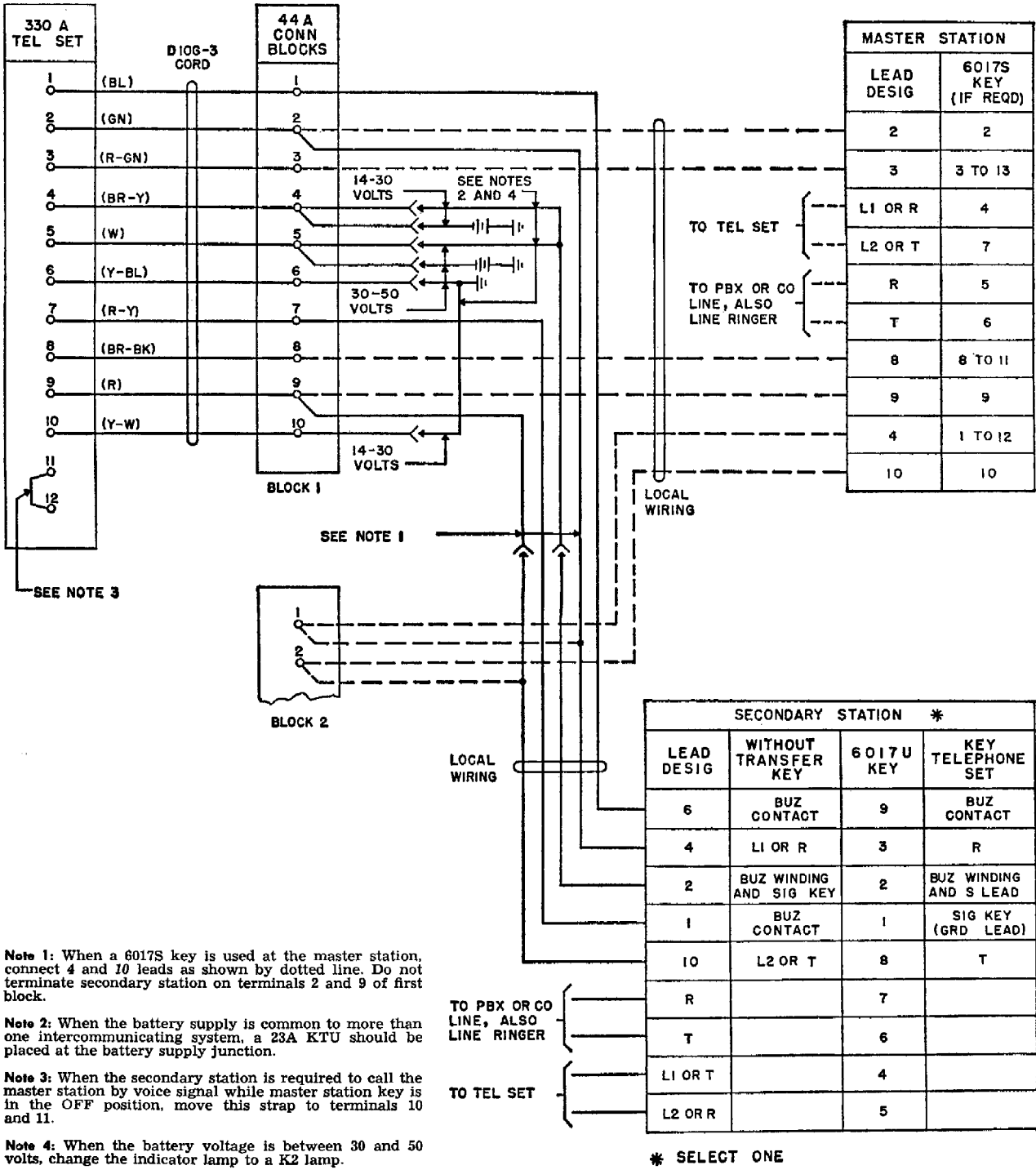
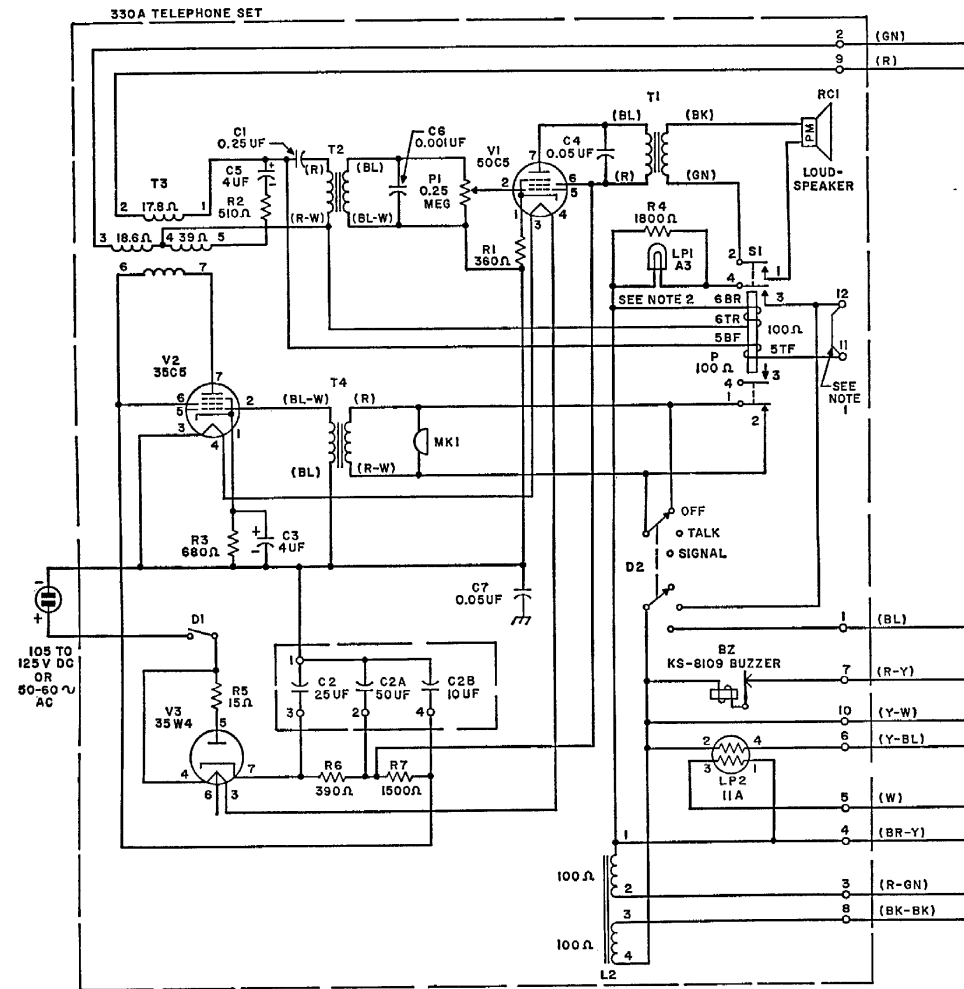
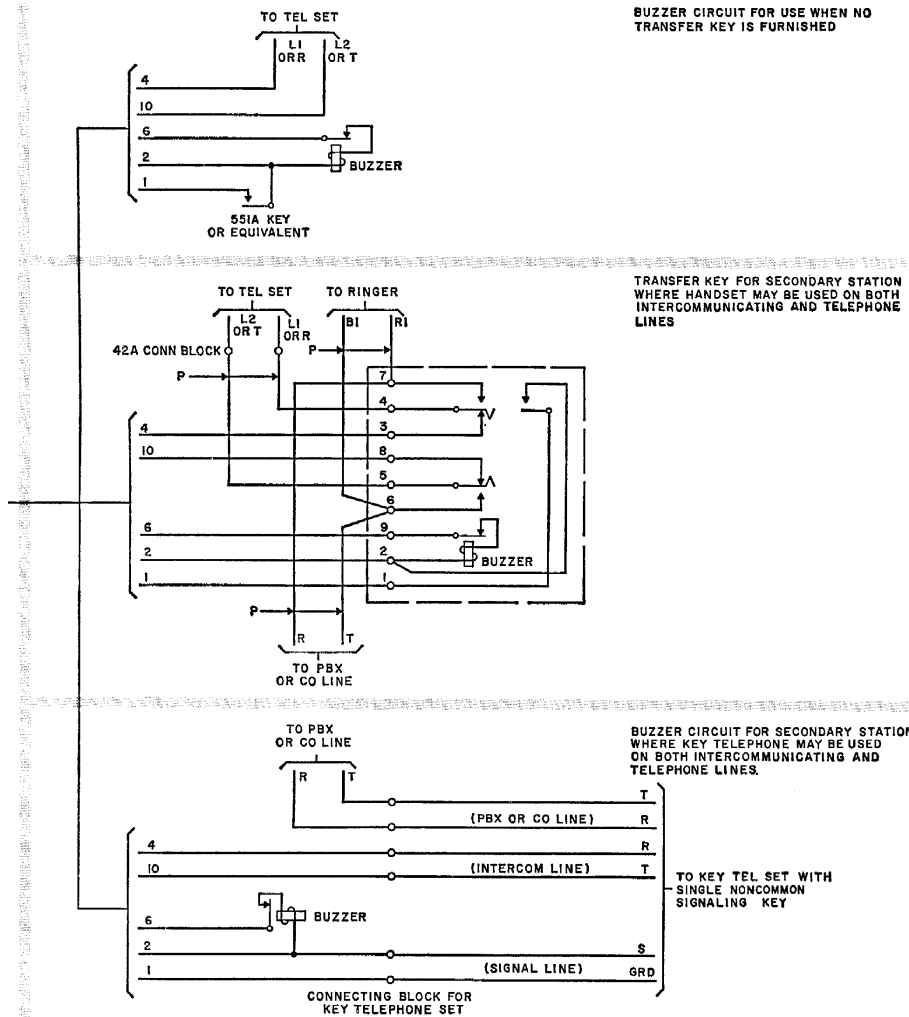
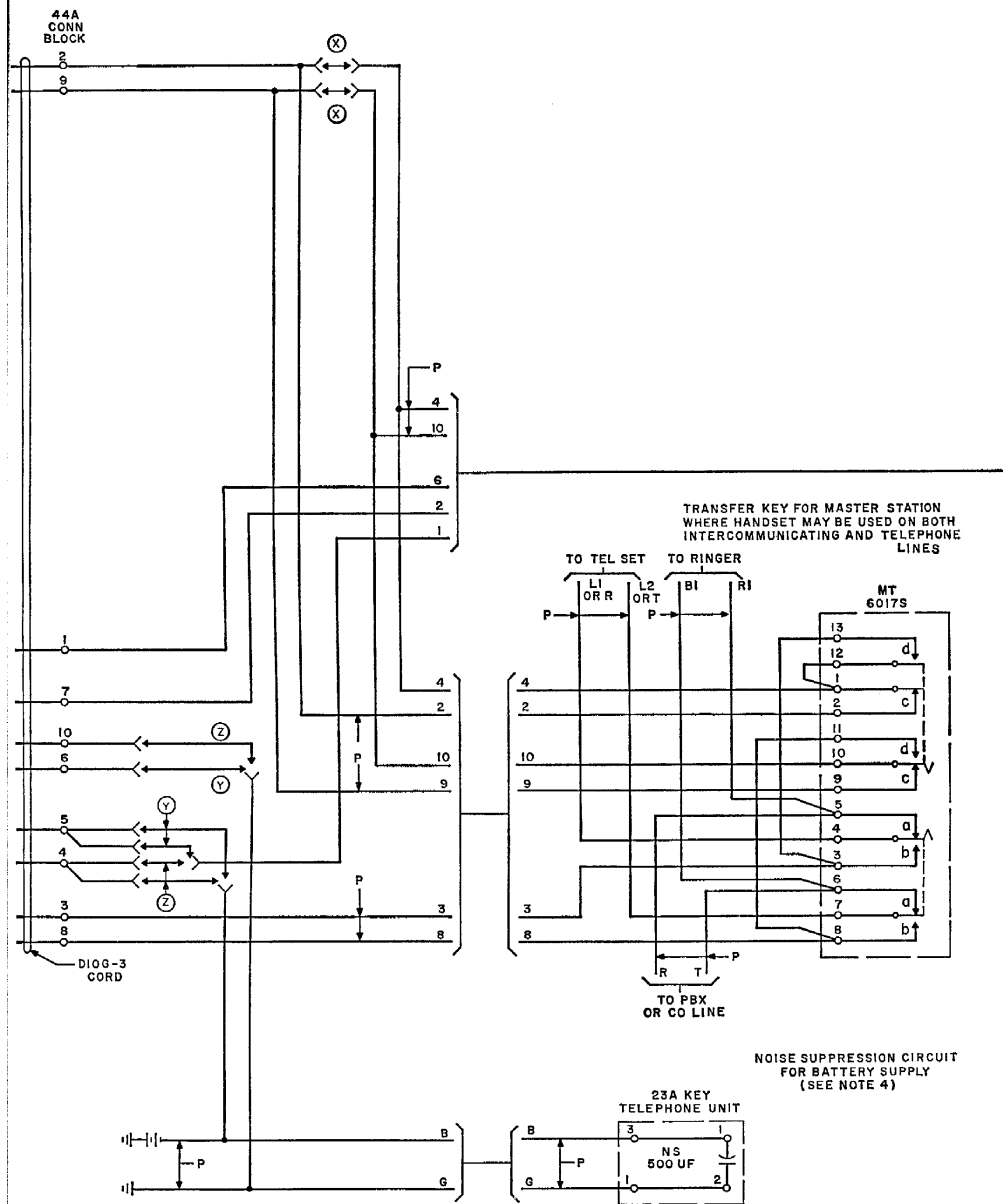


Fig. 3 - 2B Key Telephone System Connections



Battery Supply	14 to 30 volts	Z
	30 to 50 volts (See Notes 2 and 3)	Y
No transfer key is required at master station.		X



Note 1: The 330 telephone sets are furnished with a strap connected to terminals 11 and 12. When the secondary station is required to call the master station by voice signal while master station key is in the OFF position, move this strap to terminals 10 and 11.

Note 2: When the battery feed voltage is between 30 and 50 volts, change the LP1 lamp from an A3 to a K2 lamp.

Note 3: When the voltage is between 30 and 50 volts (Y wiring), the maximum number of buzzers that can be operated in multiple is three.

Note 4: When the 23A KTU is used, it should be connected where the battery supply is common with other systems.

Fig. 4-28 Key Telephone System Circuits