

## 1A AND 1A1 KEY TELEPHONE SYSTEMS

### BRIDGING CIRCUIT FOR CONFERENCING ON TWO PBX LINES

#### 237A AND B KEY TELEPHONE UNITS

#### 1.00 GENERAL

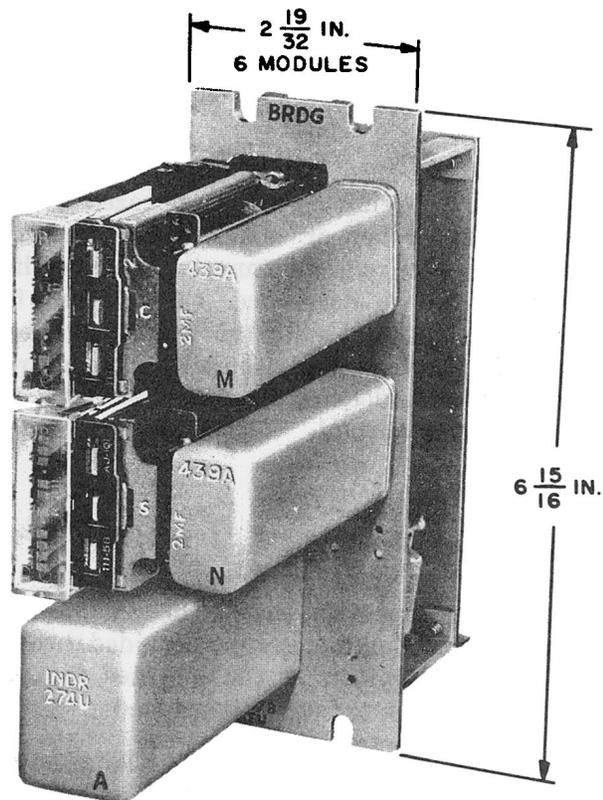
1.01 This section covers the description and connections for the 237A and B key telephone units.

1.02 It is reissued to include the 237B key telephone unit which replaces the 237A key telephone unit. The 237B key telephone unit is arranged so that either PBX line can be held on conference when used with the 1A or 1A1 key telephone system.

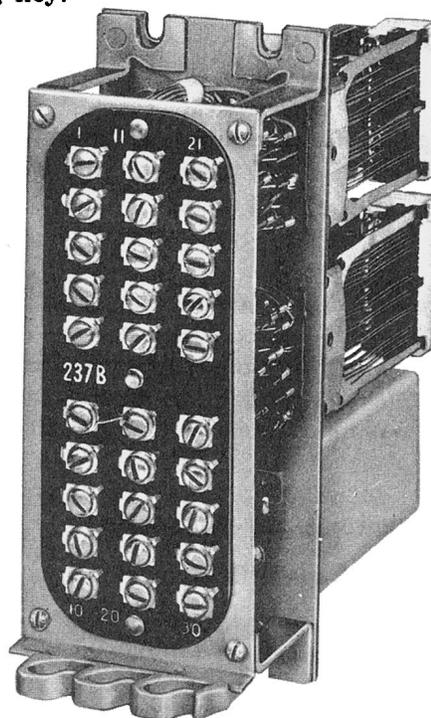
1.03 The 237A or B key telephone unit (Fig. 1) provides an arrangement for bridging two PBX lines for conferencing purposes under control of an exclusion key or nonlocking key at a key station. This can be accomplished without returning the handset to the mounting and without the assistance of an operator.

1.04 Conferencing may be done only on the two lines connected to the bridging circuit.

1.05 The lines associated with the bridging circuit must be equipped with a hold feature since one line must be placed on HOLD while the second line added to the conference is called. When the call on the second line has been established, the lines are bridged by operating the exclusion key or momentarily depressing the associated nonlocking key.



Front View



Rear View

Fig. 1 - 237B Key Telephone Unit

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**1.06** The circuit provides for illuminating the nonlocking key when the bridging circuit is in use.

**1.07** The circuit is designed primarily for telephone sets in the 540, 560, and 600 series to be used at the control station. This station may be equipped with the speakerphone feature, but must be equipped with the following features:

- Pickup of the two PBX lines associated with the bridging circuit.
- Hold.
- Exclusion key or nonlocking key.

*Note:* When the nonlocking key is used to control the bridging circuit, the telephone set must be arranged for station busy lamp.

↗ **1.08** When this station is equipped with the speakerphone feature, the nonlocking key arrangement should be used to control the bridging circuit. Do not use the exclusion key.

### 2.00 CONNECTIONS

**2.01** Fig. 2 and 3 are schematic drawings of the 237A and B key telephone units with wiring options and circuit notes.

**2.02** Fig. 4 and 5 are connection drawings of the 237A and B key telephone units showing the necessary terminations to be made for the two lines to be bridged, key cable and power connections, and wiring options.

### 3.00 DESCRIPTION OF OPERATION

#### Initiating a Conference Call

**3.01** To initiate a conference call, the controlling party shall:

- Establish a connection (either an incoming or outgoing call) on either one of the lines associated with the bridging circuit.
- Place this connection on HOLD.

- Establish a connection on the other line associated with the bridging circuit.
- Operate the bridging key (exclusion or nonlocking) when both parties are available, thereby connecting both lines.

#### Leaving a Conference Call

**3.02** The control party may leave the conference by operating the hold key and may return to the conference by reoperating either of the associated pickup keys.

*Note:* The control party must be careful not to restore the exclusion key to normal when it is used to control the bridging circuit. This would release the bridging circuit, in turn releasing the first line.

#### Disconnecting a Conference Call

**3.03** The conference can be disconnected by the controlling party by returning the handset to the mounting or turning off the speakerphone.

**3.04** If the bridging circuit is released by the nonlocking key or exclusion key, the controlling party can remain connected to either line after the conference has ended. First depress the pickup key associated with the desired line and then release the bridging circuit by momentarily operating the nonlocking key or restoring the exclusion key to normal.

#### Nonlocking Key Control

**3.05** The arrangement used with a nonlocking key has its holding ground provided through the switchhook contacts or the operated speakerphone relay. When the key is depressed:

- Relay *C* operates, lighting the lamp on the nonlocking key.
- Relay *S* is prevented from operating by the ground applied through its own break contact as a shunt.

When the key is released:

- Relay *C* is held by the ground provided through the switchhook contacts or speakerphone relay contacts and continues to light the lamp.
- Relay *S* operates in parallel with relay *C* connecting the talking bridge to the two lines.

**3.06** When the nonlocking key is operated to disconnect the conference, ground from the key through the make contact on relay *S* shunts relay *C*, causing it to release. Relay *C*, in releasing, extinguishes the lamp on the nonlocking key and transfers the holding path for relay *S* back to the pulse lead. When the key is released, relay *S* releases, returning the circuit to normal.

#### Exclusion Key Control

**3.07** When the exclusion key is used to control the circuit, only the *T* and *R* leads of the key remain connected. The remaining leads are removed from the key, taped, and stored. The *R* lead is connected to any convenient B ground. When the exclusion key is operated, this ground is used to operate both relays and provide their holding path.

**3.08** Releasing the exclusion key releases the relays.

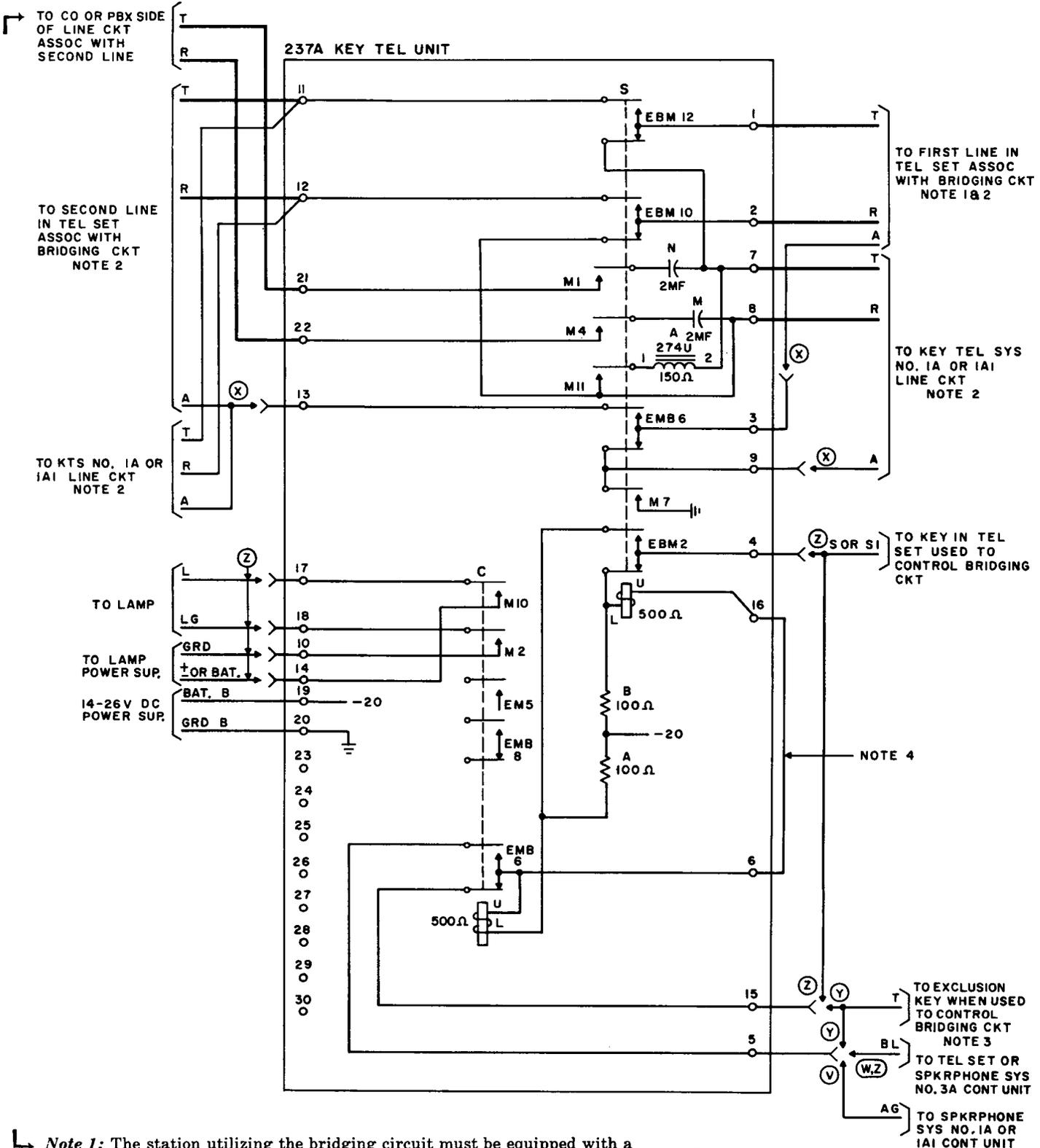
**3.09** While the bridging circuit is operated, the 274U inductor holds line one and prevents its release. The telephone set shunt at the control station holds line two regardless of which of the two pickup keys is operated. The operated *S* relay connects the *M* and *N* capacitors to the circuit, providing a talking path for the stations on conference.

**3.10** When a conference call is in a held condition, the bridging circuit remains operated. Line one remains held under control of the operated *S* relay. Line two is held through the *H* relay of its line circuit. The tip and ring of the second line connect directly to the bridging circuit, thus closing through a talking path for the two held parties.

**Note:** To minimize transmission losses, each line associated with the 237A or B key telephone units should be connected to the same type line equipment. This is necessary due to the variations in design of holding circuits.

**Reference:** SD-69412-01

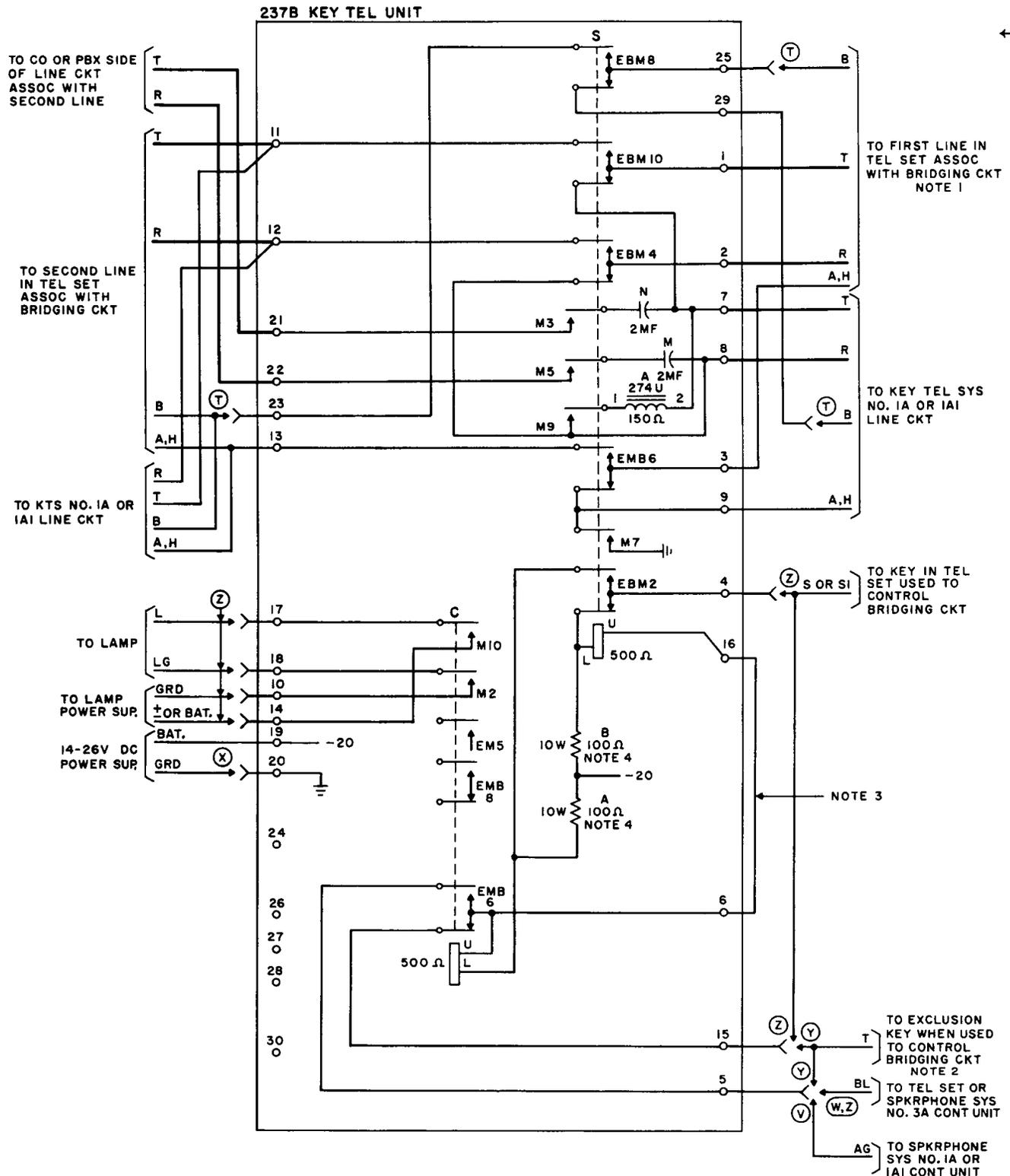
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- Note 1: The station utilizing the bridging circuit must be equipped with a hold key. The bridging circuit may be controlled by a nonlocking key or an exclusion key.
- Note 2: The A lead is omitted in Key Tel Sys No. 1A.
- Note 3: When the circuit is controlled by the exclusion key, remove G-Y and R-Y leads from 1T and 1R terminals in telephone set and insulate. B ground is connected to the BK-BL lead on the exclusion key.
- Note 4: Remove strap between terminals 6 and 16 when testing or readjusting relay C or S.

- Ⓩ Controlled by nonlocking key
- Ⓨ Controlled by exclusion key
- ⓧ Connected to Key Tel Sys No. 1A1
- Ⓦ Connected to Spkrphone Sys No. 3A Control Unit
- Ⓥ Connected to Spkrphone Sys No. 1A or 1A1 Control Unit

Fig. 2 - Schematic Drawing of 237A KTU



**Note 1:** The station utilizing the bridging circuit must be equipped with a hold key. The bridging circuit may be controlled by a nonlocking key or an exclusion key.

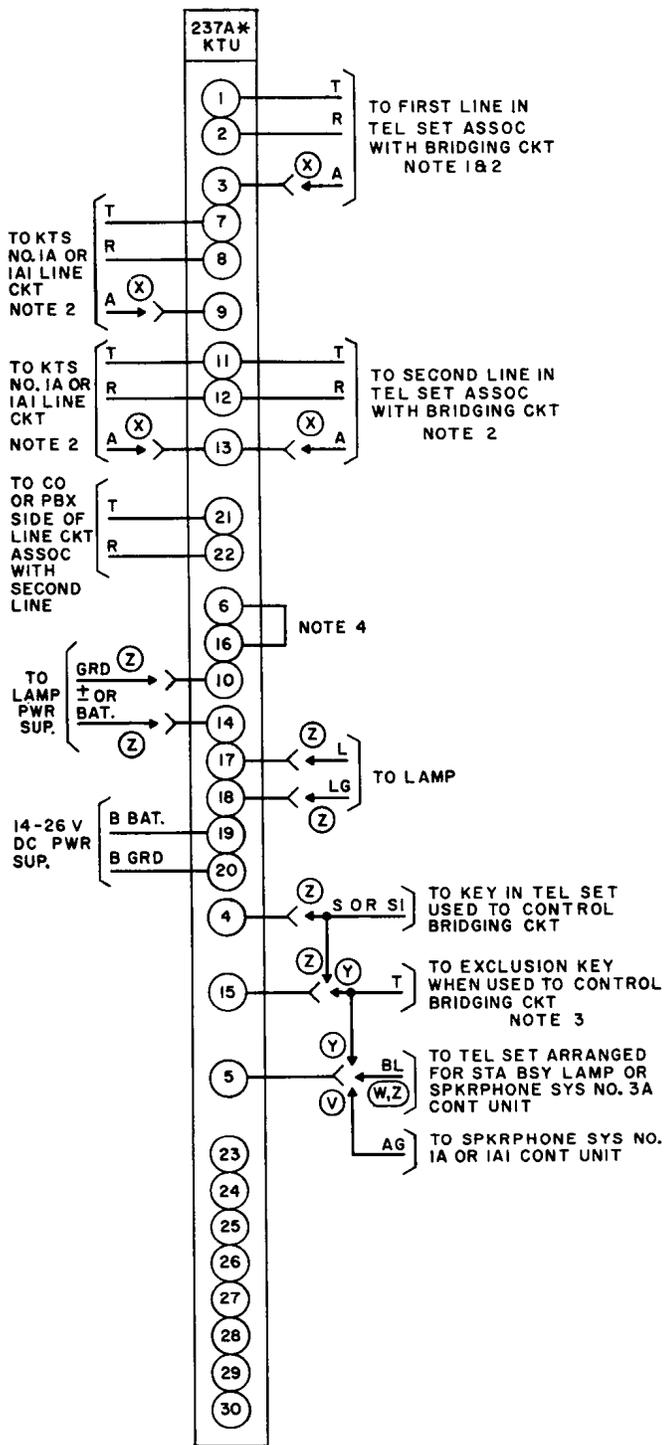
**Note 2:** When the circuit is controlled by the exclusion key, remove G-Y and R-Y leads from 1T and 1R terminals in telephone set and insulate. B ground is connected to the BK-BL lead on the exclusion key.

**Note 3:** Remove strap between terminals 6 and 16 when testing or readjusting relays C or S.

**Note 4:** Resistances A and B are KS-14603, L2A.

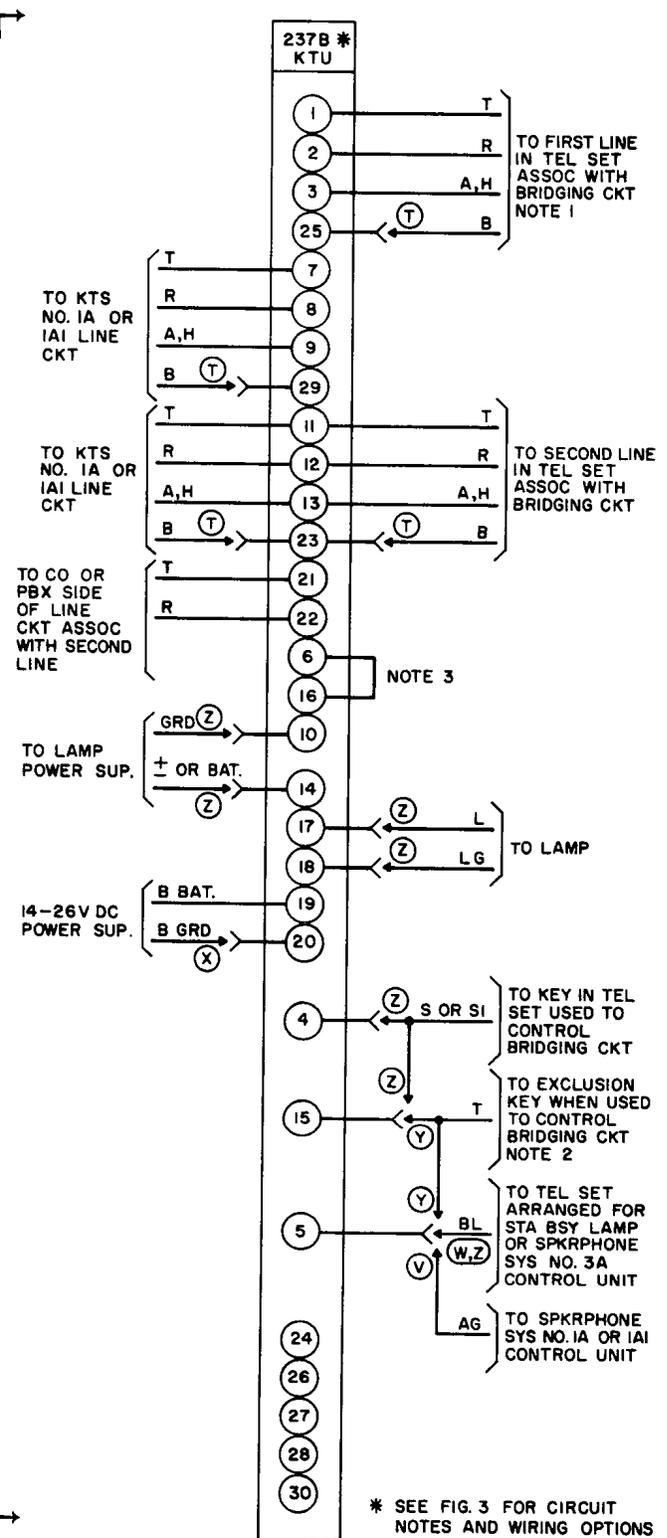
- Ⓣ Connected to Key Tel Sys No. 1A
- Ⓥ Connected to Spkrphone Sys No. 1A or 1A1 Control Unit
- Ⓦ Connected to Spkrphone Sys No. 3A Control Unit
- Ⓧ Connected to Key Tel Sys No. 1A1
- Ⓨ Controlled by exclusion key
- Ⓩ Controlled by nonlocking key

Fig. 3 - Schematic Drawing of 237B KTU



\* SEE FIG. 2 FOR CIRCUIT NOTES AND WIRING OPTIONS.

Fig. 4 - Connection Drawing for 237A KTU



\* SEE FIG. 3 FOR CIRCUIT NOTES AND WIRING OPTIONS.

Fig. 5 - Connection Drawing for 237B KTU