417A CONF SET - 513 CABINET

237A AND B KEY TELEPHONE UNITS FOR CONFERENCING PBX LINES IDENTIFICATION, CONNECTIONS, AND OPERATION

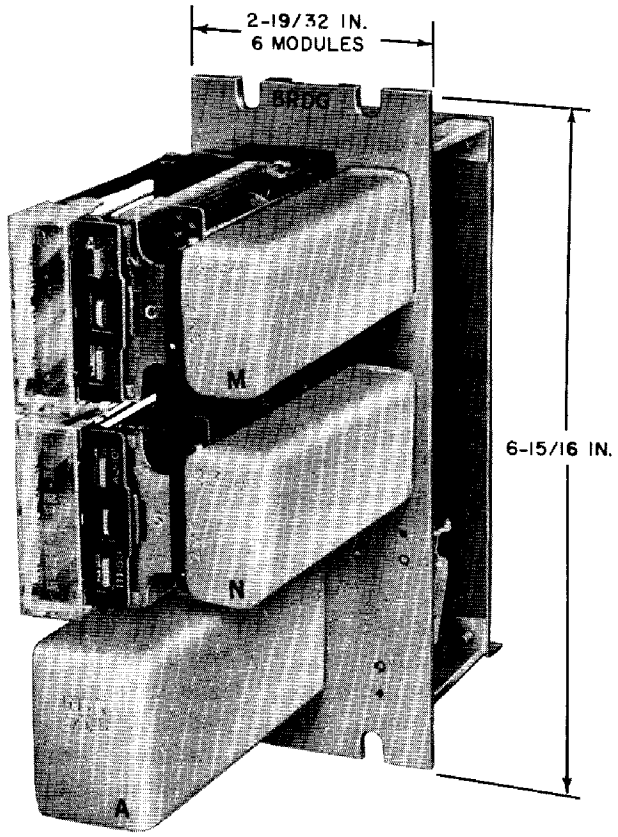


Fig. 1—237B Key Telephone Unit

1. GENERAL

1.01 This section is reissued to:

- Delete reference to CO line on Fig. 2 and 3.
- Combine schematic and connection information into Fig. 2 and 3
- Change title
- Bring section up to date

Since this reissue covers a general revision, arrows ordinarily used to indicate changes have been omitted.

1.02 The 237A or B KTU (Fig. 1) provides conferencing by bridging two PBX lines under control of an exclusion or nonlocking key. The bridging circuit may be controlled individually by two stations; both with similar equipment.

2. IDENTIFICATION

2.01 The 237-type KTU is intended for use with 540, 560, and 600 series telephone sets when used as control station sets. The control station set must be provided with the following features:

- Pickup of two PBX lines which are connected through the same 237-type KTU.
- Hold
- Exclusion key or nonlocking key.

2.02 The 237-type KTU provides the following features:

- Use with speakerphone
- Control for nonlocking key illumination when bridging circuit is in use
- Disconnect of a conference when handset is returned to on-hook or speakerphone is turned off.
- Disconnect of one conferenced line when exclusion key is returned to normal or a nonlocking key is operated.
- No operator assistance necessary

2.03 ***When a nonlocking key is used for bridging control circuit, a locally provided KS-15724, List 1 diode (or equivalent) must be installed in the A lead of the control station set. For KS-15724 diode connections, refer to "Station Busy Lamp" option for the particular set in the associated connection section. Failure to install the diode may cause damage to transistor Q3, a false hold condition, or both, in the 400D KTU line circuit. These conditions are caused when the control station goes on-hook after a conference is completed.***

3. CONNECTION INDEX

Fig. 2—237A (MD) KTU Schematic and Connections

Fig. 3—237B KTU Schematic and Connections

Fig. 4—Connections for Two-Station Control When Using Nonlocking Key.

4. DESCRIPTION OF OPERATION

Initiating A Conferencing Call

4.01 Initiate a conference as follows:

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

Leaving a Conference Call

4.02 The control party may leave the conference ***only by:***

(1) Operation of the hold key

(2) Operation of a third pickup key.

4.03 The control party may return to the conference by reoperating either of the two associated pickup keys. However; when a conference is placed on HOLD, transmission losses are introduced by the holding bridge which may prevent the remaining conferees from continuing the conference until the control party returns. ***The conference call is released if the control station:***

- Restores handset on-hook, or
- Returns the manual exclusion key to normal, or
- Operates the speakerphone OFF button.

Disconnecting a Conference Call

4.04 The control party can remain connected to either line after the conference has ended by releasing the bridging circuit, using the following step sequence:

(1) Depress the pickup key for the line which is to remain connected.

(2) Momentarily operate the nonlocking key or restore the exclusion key to normal.

Exclusion Key Control

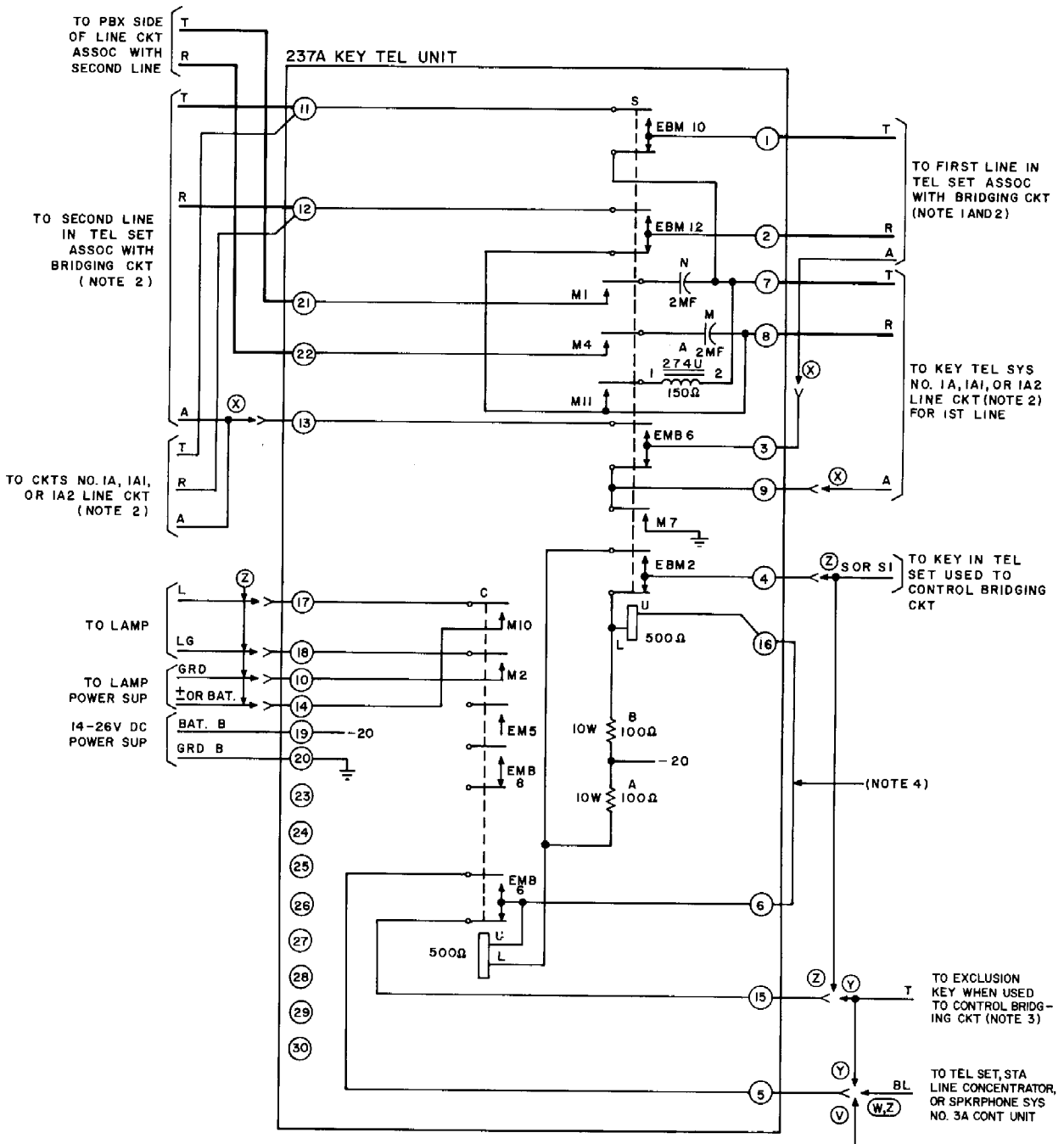
4.05 When the exclusion key is used for circuit control, only the key ***T*** and R leads remain connected. The remaining leads are removed, insulated, and stored. The ***R*** lead is connected to any convenient B ground. When the key is operated, ground is provided, causing C and S relays to operate and provide a holding path.

4.06 When the exclusion key is restored to normal, ground is removed which deenergizes the C and S relays.

Nonlocking Key Control

4.07 In a nonlocking key arrangement, ground is furnished through line switch contacts or operated speakerphone relay contacts. When the key is depressed:

- C relay operates; the nonlocking key lamp is illuminated by applied ground through normally closed contacts EMB6
- S relay is held deenergized by applied ground through normally closed contacts EMB2

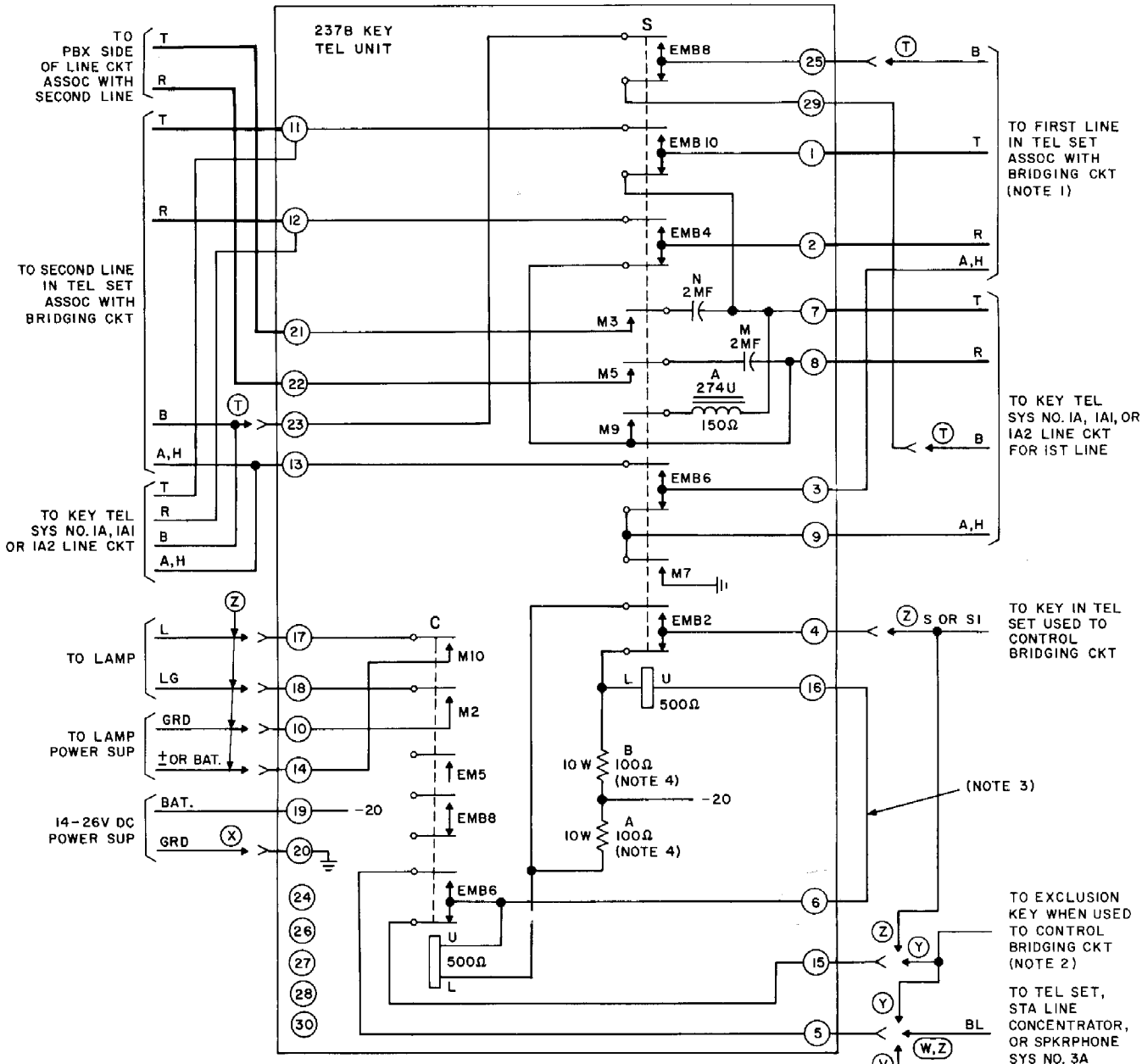


NOTES:

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.
2. THE A LEAD IS OMITTED IN KEY TEL SYS NO. IA.
3. WHEN THE CIRCUIT IS CONTROLLED BY THE EXCLUSION KEY, REMOVE G-Y AND R-Y LEADS FROM IT AND IR TERMINALS IN TELEPHONE SET AND INSULATE. B GROUND IS CONNECTED TO THE BK-BL LEAD ON THE EXCLUSION KEY.
4. REMOVE STRAP BETWEEN TERMINALS 6 AND 16 WHEN TESTING OR READJUSTING RELAY C OR S.
5. WHEN (Z) OPTION IS PROVIDED, SEE 2.03.

(Z) CONTROLLED BY NONLOCKING KEY (NOTE 5).
(Y) CONTROLLED BY EXCLUSION KEY.
(X) CONNECTED TO KEY TEL SYS NO. IAI OR IA2.
(W) CONNECTED TO SPKRPHONE SYS NO. 3A CONTROL UNIT.
(V) CONNECTED TO SPKRPHONE SYS NO. IA OR IAI CONTROL UNIT.

Fig. 2—237A (MD) KTU Schematic and Connections



NOTES:

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.
2. WHEN THE CIRCUIT IS CONTROLLED BY THE EXCLUSION KEY, REMOVE G-Y AND R-Y LEADS FROM IT AND IR TERMINALS IN TELEPHONE SET AND INSULATE. B GROUND IS CONNECTED TO THE BK-BL LEAD ON THE EXCLUSION KEY.
3. REMOVE STRAP BETWEEN TERMINALS 6 AND 16 WHEN TESTING OR READJUSTING RELAYS C OR S.
4. RESISTANCES A AND B ARE KS-14603,L2A.
5. WHEN (Z) OPTION IS PROVIDED, SEE 2.03.

(T) CONNECTED TO KEY TEL SYS NO. IA.

(V) CONNECTED TO SPEAKERPHONE SYSTEM NO. IA OR IAI CONTROL UNIT.

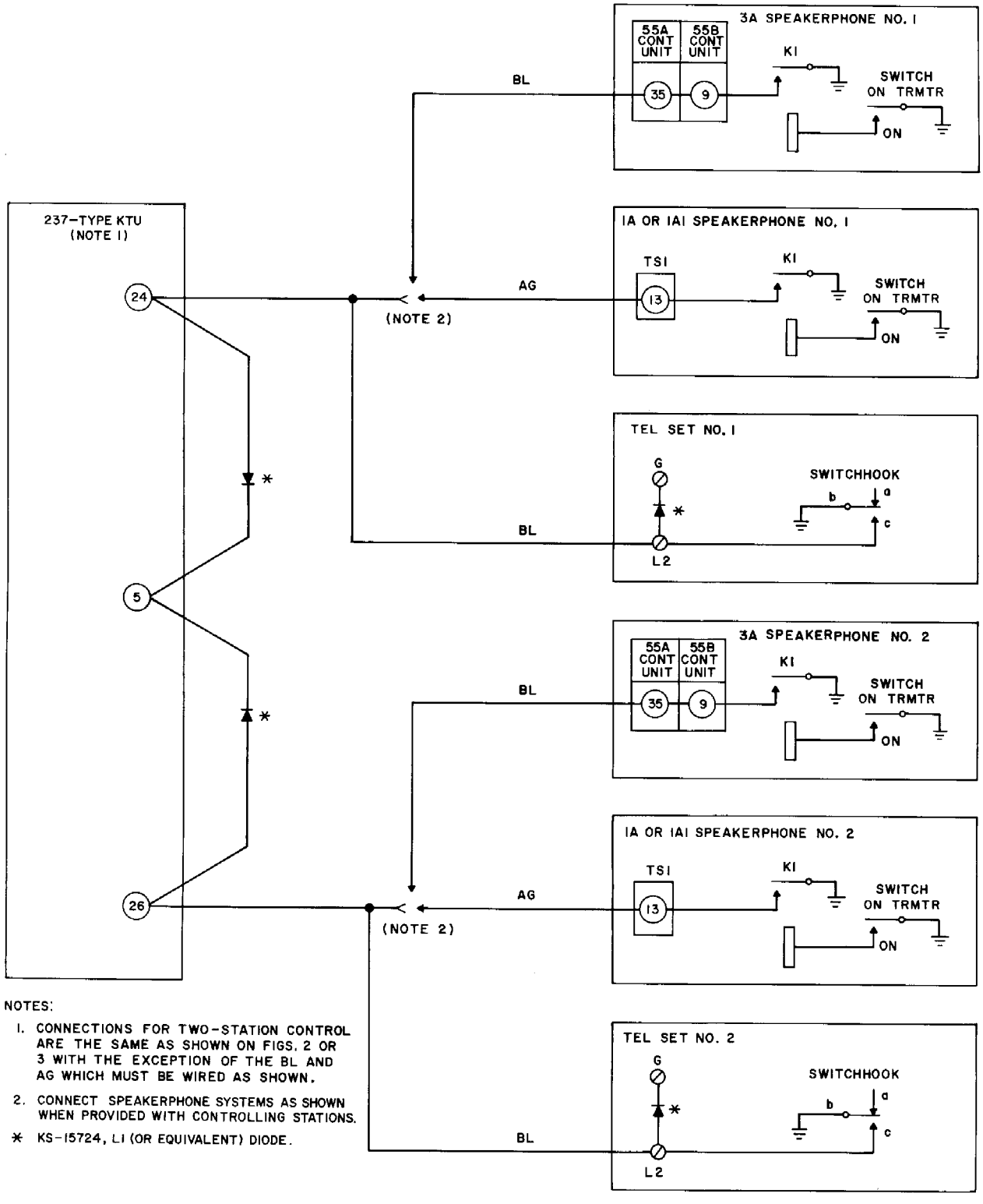
(W) CONNECTED TO SPEAKERPHONE SYSTEM NO. 3A CONTROL UNIT.

(X) CONNECTED TO KEY TEL SYS NO. IAI OR IA2.

(Y) CONTROLLED BY EXCLUSION KEY.

(Z) CONTROLLED BY NONLOCKING KEY (NOTE 5).

Fig. 3—247B KTU Schematic and Connections



NOTES:

1. CONNECTIONS FOR TWO-STATION CONTROL ARE THE SAME AS SHOWN ON FIGS. 2 OR 3 WITH THE EXCEPTION OF THE BL AND AG WHICH MUST BE WIRED AS SHOWN.
2. CONNECT SPEAKERPHONE SYSTEMS AS SHOWN WHEN PROVIDED WITH CONTROLLING STATIONS.

* KS-15724, L1 (OR EQUIVALENT) DIODE.

Fig. 4—Connections for Two-Station Control When Using Nonlocking Key

4.08 When the key is released:

- C relay is held operated through line switch contacts, or operated speakerphone relay contacts, and operated transfer contacts EMB6; nonlocking key lamp remains illuminated.

- S relay operates because its operating path is switched in parallel with C relay by normally open contacts EMB6. S relay contacts M1, M4, and M11 connect the talking bridge to the two lines.

4.09 When the nonlocking key is again operated to disconnect the conference, C relay deenergizes. Applied ground furnished by the key through operated S relay normally open contacts EMB2 causes C relay operating power to dissipate in resistor A and to deenergize. When C relay deenergizes, the nonlocking key lamp extinguishes and S relay holding path is transferred through normally closed contacts EMB6. S relay deenergizes when the key is released, allowing the circuit to return to normal.

TWO-STATION CONTROL

4.10 When two stations are connected to the bridging circuit, each of the station sets may independently or jointly control the circuit. When the circuit is connected to two station sets, operation is the same as when connected to only one station set.

4.11 ***When two station sets are to be provided with bridging circuit control by using nonlocking keys, two KS-15724, List 1 (or equivalent) diodes must be locally supplied and connected as shown in Fig. 4 and 2.03.***

4.12 When one of the two control stations is using the bridging circuit and the handset at the other station is placed off-hook, the BL leads from each telephone set will provide a locking path for the operated circuit. If the first station terminates the call before the second station, the nonlocking control key on the telephone set at the first station must be momentarily operated to release the bridging circuit.

4.13 When one station is using the bridging circuit and the other station is not in use, the circuit will release when the handset is placed on-hook or the speakerphone is turned off.

4.14 While the bridging circuit is operated, the 274U inductor holds line 1 and prevents its release. The telephone set shunt at the control station holds line 2 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.

4.15 When a conference call is in a held condition, the bridging circuit remains operated. Line 1 remains held under control of the operated S relay. Line 2 is held through the H relay in the associated KTU line circuit (see 3.03).

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