608CW AND 618BW TELEPHONE SETS

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1. GENERAL

1.01 This section presents description, operation, modification, and installation information for the WECo Type 608CW and 618BW CALL DIRECTOR® Telephone Sets (Figures 1 and 2). This set can be used with the GTE Automatic Electric Type 10A, 10A1, 10A2, and 16A key telephone systems or comparable systems of other manufacturers. The telephone set is designed to originate, answer, signal, and hold calls on central office lines, PABX lines, tie lines, and intercommunication circuits associated with these key telephone systems. The telephone sets are equipped with a relay (P-20E559) that provides facilities for switching from two- to four-wire operation, and headset jacks.

1.02 This section is reissued to include the reconfiguration of WECo CALL DIRECTOR Telephone Sets and other miscellaneous changes. Marginal arrows are used to identify the new material. Remove the previous issue of this section from the binder or microfiche file and replace it with this issue.

2. DESCRIPTION

2.01 The WECo Type 608CW telephone set (Figure 1) measures 15-1/4 inches long, 8-1/4 inches deep, and 4-1/4 inches high. The WECo Type 618BW (Figure 2) telephone set measures 12-1/2 inches long, 8 inches deep, and 4-1/4 inches high. The telephone sets are equipped with 517D jacks for accepting either a 52S or 53A headset. A Type 8C dial is mounted on the left side of the housing. The keys used for the various switching functions are located on the right side of the housing (Figure 3). The Type 608CW telephone set is equipped with a 599A keystrip unit in the first (left side) module position and 598A keystrip unit in the second through fifth module positions. The Type 618BW telephone set is equipped with a 599A keystrip unit in the first module position and 598A keystrip units in the second and third positions. Red flash and amber release pushbuttons are located above and adjacent to the dial.

2.02 The handset cradle and headset jacks are located on the left side of the telephone set. A ringer volume adjusting lever protrudes from the lower left side of the housing.

2.03 The plastic housing (P-84C2-60) for the Type 618BW, the plastic housing (P-84C3-60) for the Type 608CW, and the handsets are beige in color. The handset is equipped with a retractile cord which enters the telephone set through the lower front of the housing. Three face mats (silver, gold, and coordinated color) are provided with each telephone set. Each face mat has the dial numbers and corresponding letters printed on it so that when it is placed on the housing, the letters and numbers encircle the dial. A clear plastic faceplate is fitted on the front of the housing to secure and protect the face mat.

2.04 Each keystrip unit is equipped with a 50-terminal receptacle (Figure 4). All connections to the keystrip unit are made to this receptacle. These receptacles connect directly to 50-terminal plugs, one for each key (Figure 5). Not all terminals on each plug are used.

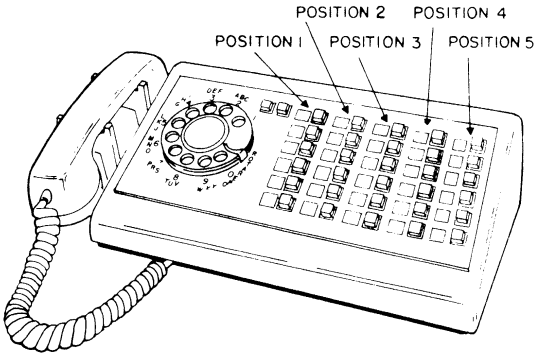

Figure 1. WECo Type 608CW Telephone Set.

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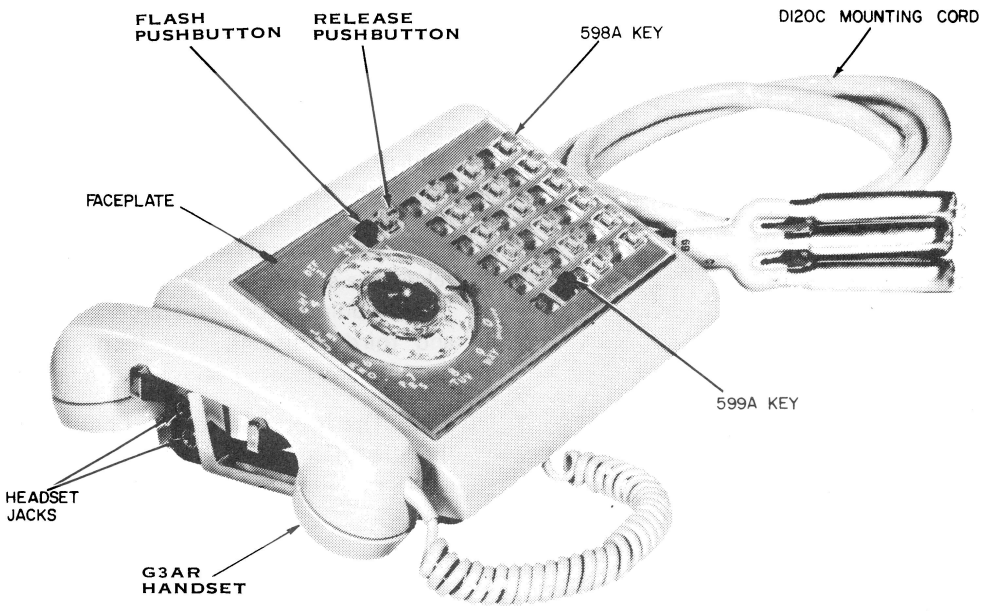


Figure 2. WECo Type 618BW Telephone Set.

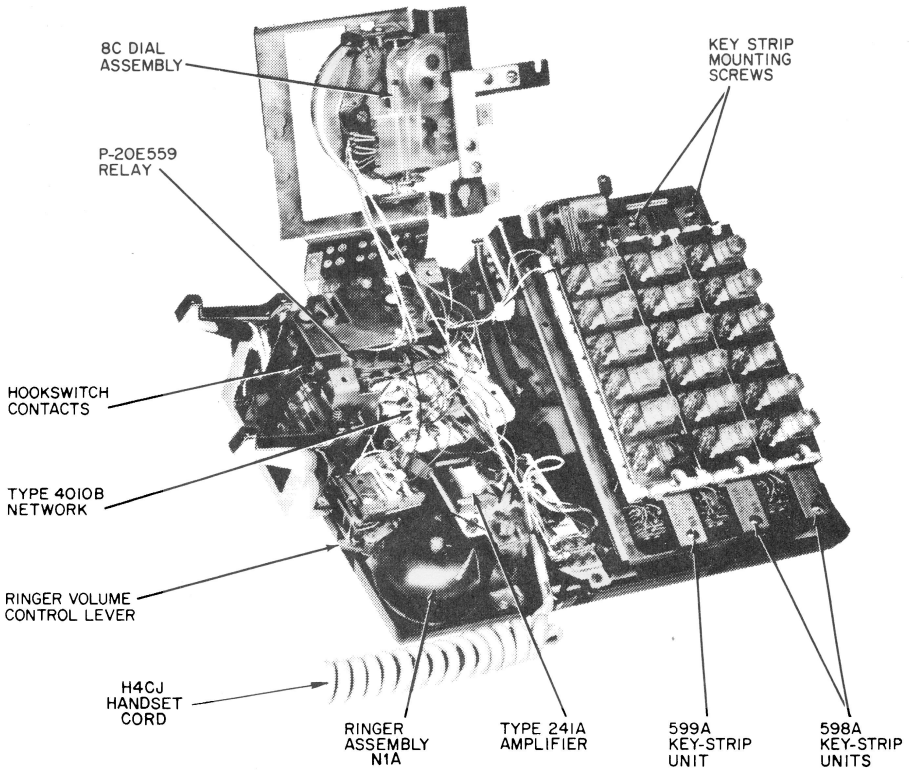


Figure 3. WECo Type 618BW Telephone Set with Housing Removed and Dial Assembly Raised and Inverted.

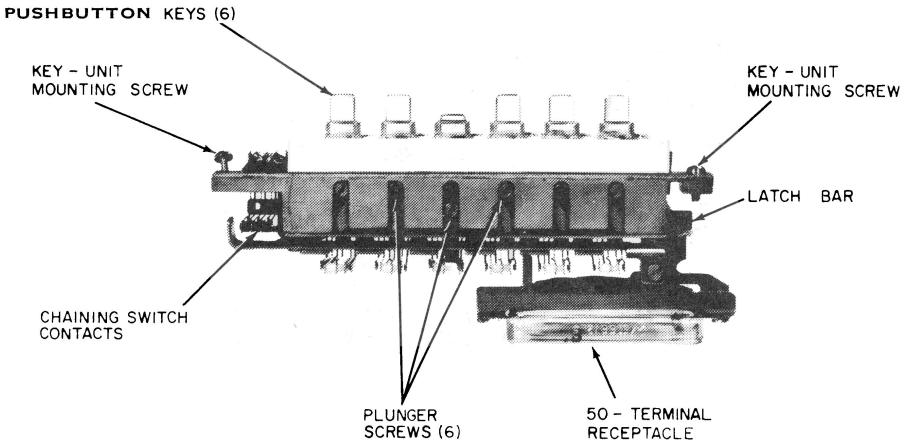


Figure 4. 598-A Keystrip Unit Showing Six Line Pickup Keys.

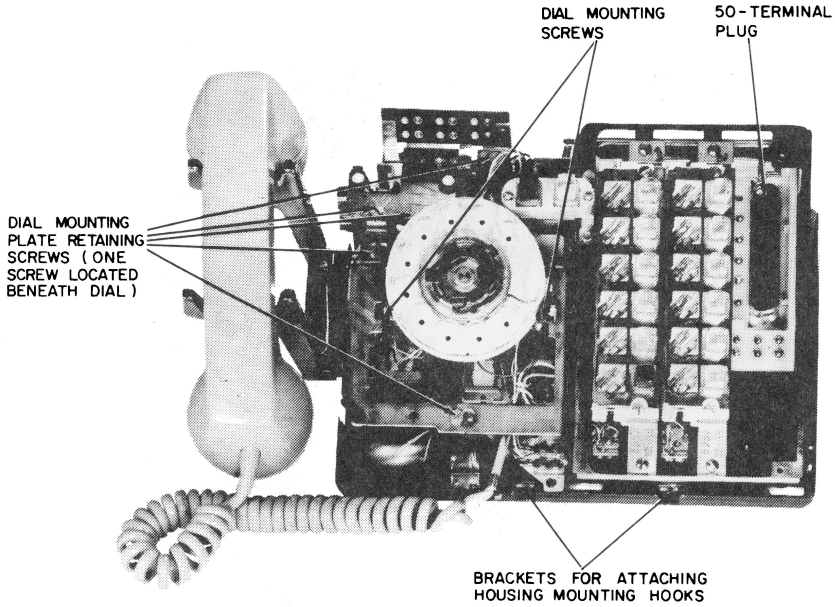


Figure 5. Telephone Set with One Keystrip Unit Removed.

2.05 A few conductors from each 50-terminal plug on the key frame are connected to other plugs or to the 4010B transmission network of the WECo Type 608CW and 618BW telephone sets (Figure 6); however, most of the conductors from the 50-terminal plugs are grouped and enter a plastic cable sheath known as the mounting cord, which is equivalent to the line cord of the conventional telephone set. The mounting cord also includes a number of conductors (spade tipped) that either connect directly to the transmission components or are insulated, taped, and stored for possible future use (Figure 7) with optional or additional features.

2.06 The mounting cord (D120C) of the Type 618BW contains 120 conductors encased in a plastic sheath of the same color as the telephone set. The Type 608CW uses a D200F cord that has 200 conductors. The conductors are arranged in groups of 40 conductors each. Each group is identical as to conductor color coding but is identified by a different color-coded binder. The mounting cord is approximately five-eighths inch in diameter and 8 feet long. At the end away from the telephone set, the mounting cord conductors terminate on 50-terminal plugs. Each group of 40 conductors terminates on a plug; not all of the terminals are used.

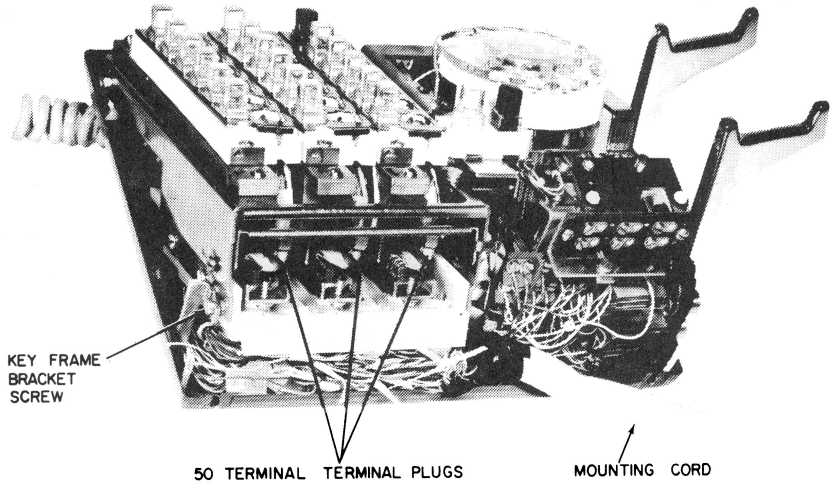


Figure 6. Rear View of Telephone Set.

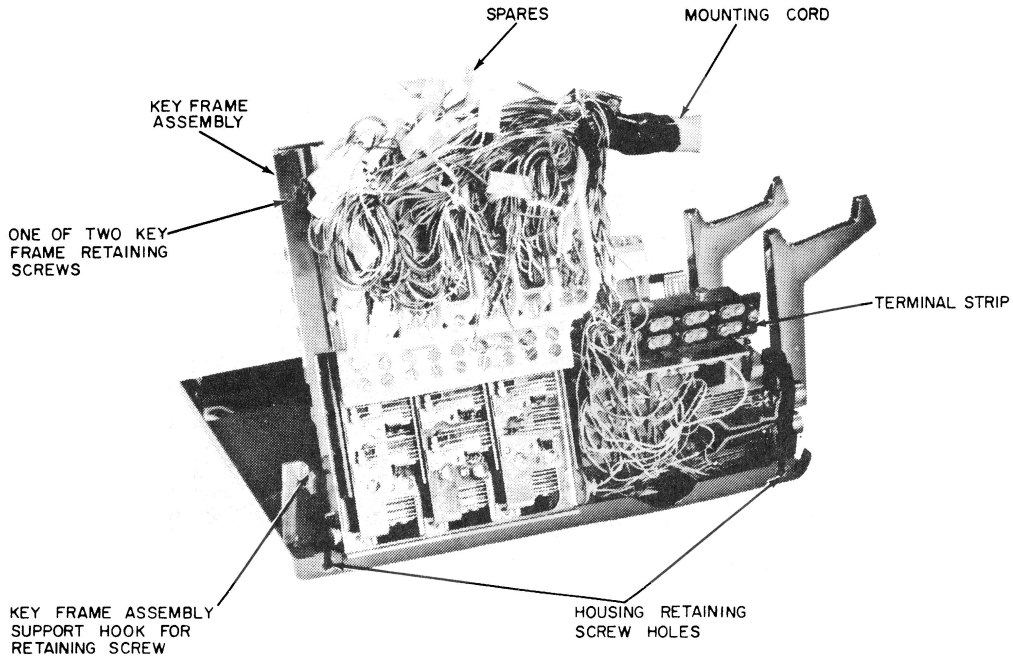


Figure 7. Rear View of WECo Type 618BW Telephone Set Showing Underside of Key Frame Assembly.

3. OPERATION

3.01 The following paragraphs describe the operation of the WECo Type 608CW and 618BW Telephone Sets. The telephone set can be used with the handset as a conventional telephone set or a headset can be plugged into the headset jacks. The use of the headset provides hands free operation. The release pushbutton located adjacent to the dial is used to release a call when the headset mode of operation is used. The flash key, also located adjacent to the dial, is used to flash the operator when the telephone set is in the headset mode of operation. Both methods of operation are explained in the following steps:

(a) Placing a Call (Handset and Headset Operation):

(1) Pick up the handset or plug the headset into the headset jacks.
(2) Depress an unlighted line pick up key (the key lights steadily).
(3) When dial tone is heard, dial the desired number.

(b) Answering a Call (Handset or Headset Operation):

(1) A flashing line pickup key denotes an incoming call.

(2) Depress the flashing line pickup key (the key lights steadily) and converse by using either the handset or headset.

(c) Terminating Call (Headset Operation):

Depress the nonlocking release pushbutton. The pickup key remains operated, but the lamp extinguishes.

(d) Terminating Call (Handset Operation):

Replace handset onto cradle hook. The line pickup key remains operated but the lamp extinguishes.

(e) Operator Flash (Headset Operation):

To flash the operator, momentarily depress and release the amber-colored flash pushbutton.

(f) Operator Flash (Handset Operation):

To flash the operator, move the cradle hook up and down.

(g) Holding a Call (Handset and Headset Operation):

To place an incoming call on hold, depress the red hold pushbutton. The lamp of the held line lights steadily. If the key system is equipped with the optional wink feature, the lamp of the held line winks.

Pickup Keys

3.02 The line pickup keys of each keystrip unit are mechanically interlocked to prevent operation of more than one line pickup key in a keystrip at the same time. The operation of the locking key within a keystrip unit restores any other operated locking key in that unit. An additional interlocking mechanism is provided between the keystrip units. Thus, when a locking key is operated in one keystrip unit, any operated locking keys in the other keystrip units are released. The nonlocking hold key (red key) also performs this function.

3.03 One locking key (line pickup or intercom) in each keystrip unit may be operated simultaneously, and each locks operated; however, an electrical "chaining switch" that is a part of each keystrip unit prevents the electrical connection of more than one line (or other voice channel) to the transmission circuit of the telephone. Operation of a locking key in the first keystrip unit (nearest the dial) operates the chaining switch and opens the circuits to the chaining switch of the second position, etc.

3.04 A lamp winking feature may also be provided to cause the pickup key lamps associated with a held line, at every station where the line appears, to wink on and off as long as the hold condition is maintained. This is to attract attention to the holding condition. The wink feature is a function of the key telephone system.

Hold Keys

3.05 Each WECo Type 608CW and 618BW telephone set is provided with one red plastic hold key. The hold feature may be applied to all lines except tie lines and intercom circuits. When connected to any central office, PABX, or similar line, operation of the nonlocking hold key disconnects the WECo telephone transmission network from that line and causes the associated relay equipment to place a holding bridge across the line until released by any telephone associated with that line. The telephone set is then free to be connected to other lines.

3.06 The hold key of the telephone sets can be modified to provide station busy indication. A lamp is placed into the hold position to give a visual indication that the line is in use. For example, if an executive's telephone set is on the same line with other key telephone sets, the hold positions of the other telephone sets are equipped with lamps that light whenever the executive is using the line. When the executive station seizes the line, the hold lamps at the other station lights automatically and remain lit until the line becomes idle. When the line becomes idle, the hold lamps extinguish automatically. This field modification, which may be made by the installer, is described in paragraph 4.05.

Signal Keys

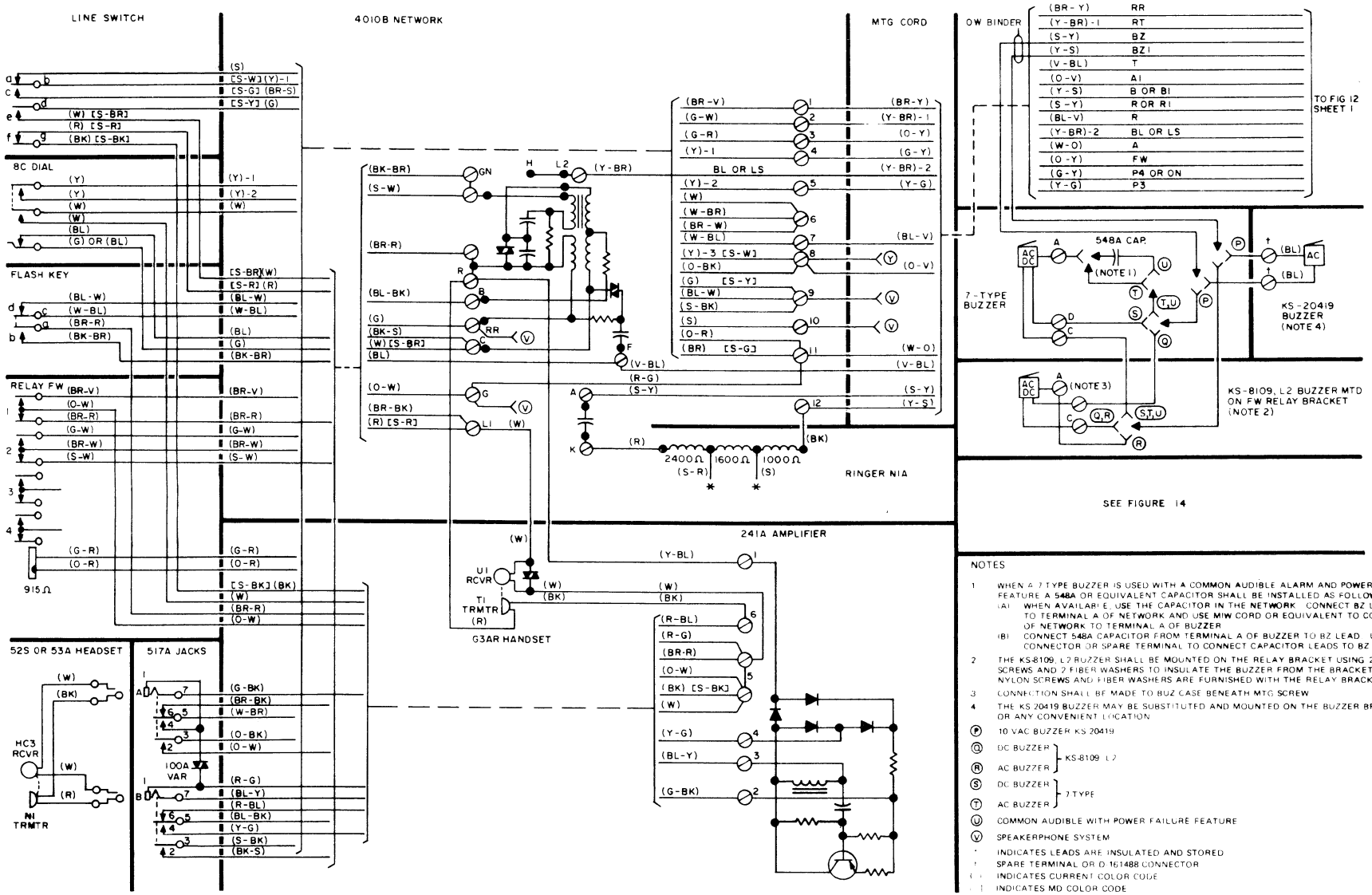
3.07 Any line pickup keys not used for connecting to voice circuits may be converted to nonlocking, non-interlocking signal keys. Signal keys are used mainly for direct signaling of intercom stations. This avoids the necessity for dialing frequently called stations. Signal keys may also be used to signal a group of stations simultaneously for a conference call on an intercom circuit. Tie lines that do not have automatic ringing start must also have a nonlocking signal key to start the ringing. Nonlocking, noninterlocking signal keys may be wired to perform a wide variety of special services, depending upon the type of relay equipment used.

FW Relay

3.08 The FW relay (Figure 8) switches the receiver from two- to four-wire circuitry as follows:

(a) On two-wire lines, the nonoperated relay connects the receiver to the network.

(b) On four-wire lines, the relay operates and disconnects the receiver from the network and connects it to the RR and RT leads. The transmitter and network then function in the usual manner as a common battery transmitter circuit. The receiver leads are switched by relay to impedance-matching repeating coils in associated line circuits.



NOTES

1. WHEN A 7 TYPE BUZZER IS USED WITH A COMMON AUDIBLE ALARM AND POWER FAILURE FEATURE A 548A OR EQUIVALENT CAPACITOR SHALL BE INSTALLED AS FOLLOWS
   (A) WHEN AVAILABLE, USE THE CAPACITOR IN THE NETWORK. CONNECT BZ LEAD TO TERMINAL A OF NETWORK AND USE M1W CORD OR EQUIVALENT TO CONNECT K OF NETWORK TO TERMINAL A OF BUZZER
   (B) CONNECT 548A CAPACITOR FROM TERMINAL A OF BUZZER TO BZ LEAD. USE D161488 CONNECTOR OR SPARE TERMINAL TO CONNECT CAPACITOR LEADS TO BZ LEAD
2. THE KS-8109, L2 BUZZER SHALL BE MOUNTED ON THE RELAY BRACKET USING 2 NYLON SCREWS AND 2 FIBER WASHERS TO INSULATE THE BUZZER FROM THE BRACKET. THE NYLON SCREWS AND FIBER WASHERS ARE FURNISHED WITH THE RELAY BRACKET
3. CONNECTION SHALL BE MADE TO BUZ CASE BENEATH MTG SCREW
4. THE KS-20419 BUZZER MAY BE SUBSTITUTED AND MOUNTED ON THE BUZZER BRACKET OR ANY CONVENIENT LOCATION

(P) 10 VAC BUZZER KS-20419
(Q) DC BUZZER } KS-8109 L2
(R) AC BUZZER } KS-8109 L2
(S) DC BUZZER } 7 TYPE
(T) AC BUZZER } 7 TYPE
(U) COMMON AUDIBLE WITH POWER FAILURE FEATURE
(V) SPEAKERPHONE SYSTEM
* INDICATES LEADS ARE INSULATED AND STORED
† SPARE TERMINAL OR D 161488 CONNECTOR
( ) INDICATES CURRENT COLOR CODE
[ ] INDICATES MD COLOR CODE

Figure 8. Wiring Diagram of Telephone Set.

4. MODIFICATIONS

4.01 Type 598A pickup keys may be converted to individual and common signaling. Type 599A and 599B keys (Figures 9 and 10) and their associated cables are readily adaptable for individual signaling but not common signaling. Type 598A pickup keys (Figure 11) may be converted to individual and common signaling. See Table 1 for wiring changes.

Supplementary Hold Circuit (Optional)

4.02 For supplementary hold, a 599H (MD)/657L key must be placed in the first module. No set wiring changes are required unless a 599B key is replaced. Refer to Table 2 for connections.

4.03 The 657L keys have only four line pickup keys since there are two hold keys. If the set has five lines appearing in the first module position, one of these lines has to be transferred to another key module when the 567L key is installed.

4.04 To provide I hold, rewire the set as shown in Table 3. Since only one hold key is required, no lines have to be transferred.

Station Busy Lamp Circuit (Optional)

4.05 The P-90D033 Printed Wiring Card Assembly (PWC), required for this conversion mounts under the right-hand dial mounting screw.

4.06 Only the WECo Type 618BW telephone sets with a D120C cord bearing date of manufacture of III, 68 or later are wired to use the P-90D033 PWC. Sets manufactured earlier must use the 6C KTU station busy lamp circuit (Figure 12). All WECo Type 608CW Telephone Sets can be converted. See Table 4 for wiring changes.

4.07 To install the P-90D033 PWC for station busy lamp control:

(a) Remove the set housing.
(b) Remove the dial mounting plate.
(c) Remove the right-hand dial mounting screw.
(d) Place the PWC under this screw so that board components face outward and so that the PWC does not interfere with other set components when the dial is replaced.
(e) Replace the dial mounting screw.
(f) Replace the dial mounting plate and make connections.
(g) Replace housing.

5. INSTALLATION

Placement

5.01 The WECo Type 608CW and 618BW Telephone Sets should be located as directed by the customer. The telephone mounting cord has three 50-terminal plugs at the end away from the telephone for direct connection to the receptacles of the running cable. This connection between the mounting cord plugs and the running cable receptacles may be enclosed and protected by an aluminum housing. Attach one-half of this fitting to some convenient surface (wall or floor); install the plugs and receptacles, place the cover half of the fitting in position, and fasten. An over-the-floor duct, just large enough to accommodate a running cable, is also available.

Running Cables

5.02 The running cable extends the leads from the telephone sets to the relay equipment. Running cables are normally 50 feet long, although the 100-foot lenghts are available with receptacles at both ends; these may be cut to provide one running cable longer than 50 feet and one shorter than 50 feet for a particular installation. The telephone set and relay equipment should be installed within 100 feet of each other or, where possible, within 50 feet of each other. If it is necessary to locate one or more telephone sets more than 100 feet from the relay equipment, it is recommended that an intermediate terminal box be used within 50 or 100 feet of the telephones. From this box, regular multiconductor installation cable or cables should be extended to the relay housing and power units; this cable should have sufficient conductors for the number of circuits served. Circuits common to more than one WECo Type 608CW or 618BW telephone set may be multipled at this box to reduce the number of conductors required between this box and the relay equipment. When this is done, care should be taken so that the wire size is adequate for the current and distance.

Cable Connections

5.03 The end of the running cable away from the telephone set and mounting cord is for connection to the relay equipment, and has no spade tips. Each lead in the running cable appears as an individual, insulated, color-coded conductor in one on the color-coded binder groups. Connections at the end, either to the relay equipment or to some intermediate terminal, can be made only after the cable sheath is cut back and removed, the individual conductors identified, and their insulation removed.

5.04 Figure 13 shows the plug and receptacle terminal numbers, lead designations, and color code so that proper connections can be made between the running cable conductors and the relay equipment terminals. (It is necessary to have information about the relay equipment in order to make these connections).

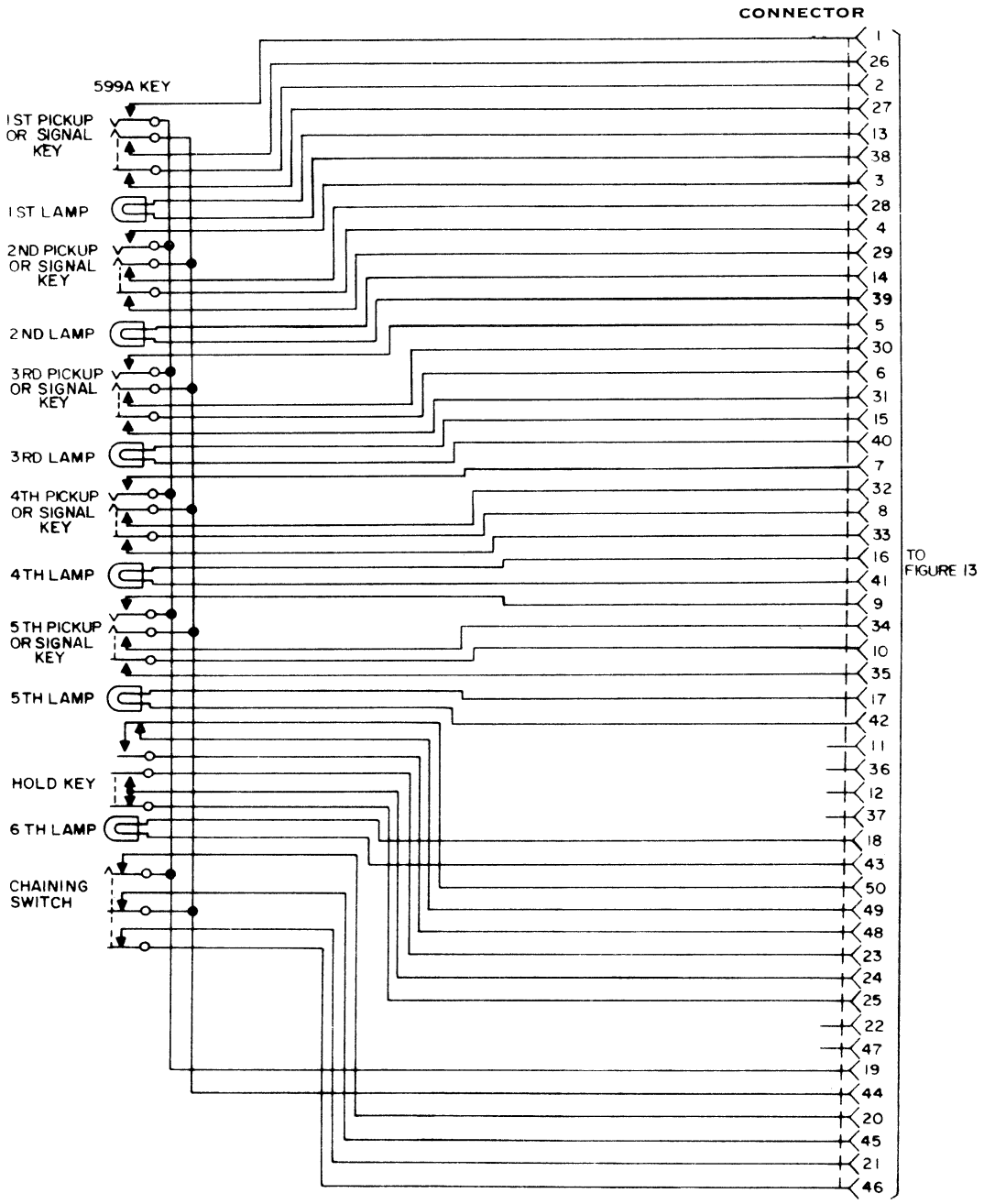


Figure 9. Connections for WECo 599A Keystrip Unit

Key Designation Strips

5.05 A sheet of six designation strips is provided with each telephone set. The strips may be detached from each other by tearing along the perforations separating them. The spares should be saved for future use. Each strip contains six squares, one for each lamp in a keystrip unit. The line or extension number or other identifying letters assigned to each key in the keystrip should be printed, stamped, or typed in the squares.

5.06 Remove the clear plastic faceplate over the dial and keys, and remove the face mat. Peel the protective covering off the adhesive-covered back of each key designation strip, place the strip face up on the light shield over the lamps, and press it firmly into place. Then, replace the face mat and the faceplate. Should it become necessary in the future, the original key designation strips can be removed in the same manner and replace with the spares provided in the sheet.

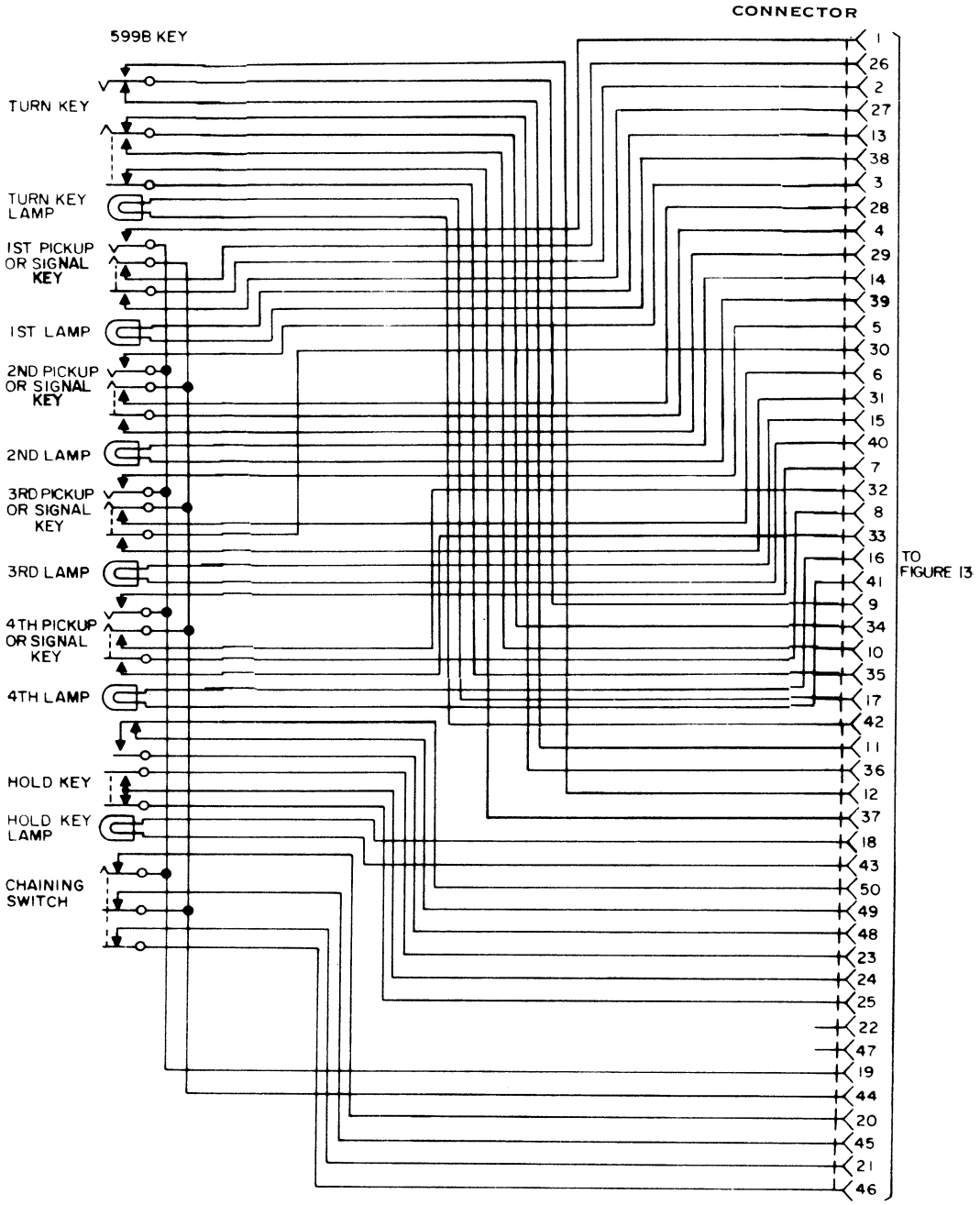


Figure 10. Connections for WECo 599B Keystrip Unit.

Stamping Dial Number Card

5.07 The dial number card is enclosed within the finger wheel. If the dial is equipped with a one-piece clear plastic finger wheel, the finger wheel must be removed to gain access to the dial number card. For dial number card removal, refer to the appropriate section in the 473-820 division of GTE Practices.

Setting Ringer Volume Adjusting Lever

5.08 The ringer volume adjusting lever (Figure 3) projects from the lower left front of the telephone set. It is a mechanical device which moves the ringer gong-silencing arm, located inside the gong, away from or toward the gong wall. As the clapper arm travel is reduced, the vibrations of the gong, when struck by the clapper, are decreased; this decreases the volume of sound produced. Similarly, when clapper arm travel is increased, by moving the gong-silencing arm away from the gong wall, the vibrations of the gong increase, thus, increasing the volume of sound. The ringer volume adjusting lever may be adjusted to obtain the ringer volume desired. The installer should point out this feature to the customer.

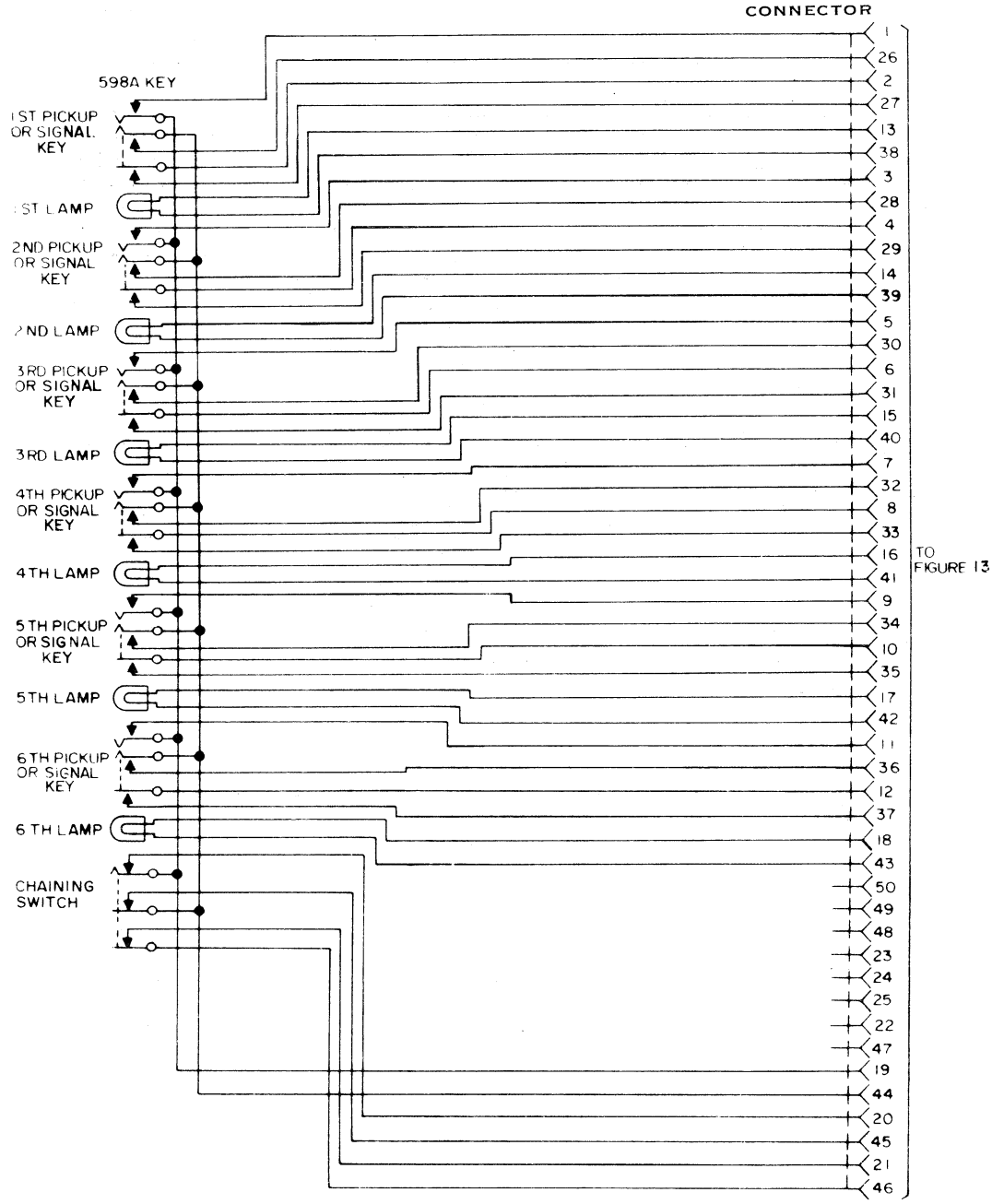


Figure 11. Connections for WECo 598A Keystrip Unit.

NOTE: Adjustment of the ringer volume adjusting lever has no effect on the sound volume produced by the buzzer if a buzzer is used. To adjust buzzer volume remove the buzzer cover and move the adjustable tone arm until the desired volume is attained.

6. MAINTENANCE

Lamp Replacement

6.01 To replace a keystrip lamp, remove the clear plastic faceplates and face mat from the telephone housing. Also, remove the light shield from the keystrip unit in which the lamp is to be replaced. With a thin-bladed screwdriver, turn the lamp until the flat portion of the wedge-shaped lamp base is facing up. Then, either work the blade of the screwdriver under the lamp base and pry the lamp out of the clips, or press down on the flat portion of the lamp base until the opposite portion of the lamp pops up. After the lamp pops up, it can be removed by gently prying it up with a screwdriver blade, pencil, or any convenient pointed instrument. Insert a new 10ESB6 lamp in the clip, pressing it firmly into place.

NOTE: Press only on the glass portion of the lamp, not the base, or the lamp may break. In order, replace the light shield, face mat and faceplates.

Table 1. Conversion of Pickup Keys to Signaling.

KEY	CONVERSION OPTION (NOTE)	KEY LEADS						
		O-W	S-W	G-R	BL-BK	BR-BK	Y-O	O-Y
599A	HPPPPP	A-H†	A-H†	A-H†	A-H†	A-H	‡	‡
	HPSSSS	A-H†	SG	SG	SG	SG	‡	‡
599B	HPPPPC	A-H†	A-H†	A-H†	A-H†	‡	‡	‡
	HPSSSC	A-H†	SG	SG	SG	‡	‡	‡
	PPPPPP	A-H†	A-H†	A-H†	A-H†	A-H†	A-H	G†
	SSSSSS	SG	SG	SG	SG	SG	SG	G†
598A	PPPPP*S*	A-H†	A-H†	A-H†	A-H†	C	C	A-H†
	PPPP*P*S*	A-H†	A-H†	A-H†	C	C	C	A-H†
	PPP*P*P*S*	A-H†	A-H†	C	C	C	C	A-H†
	PP*P*P*P*S*	A-H†	C	C	C	C	C	A-H†

NOTE: To convert from pickup (locking), to signaling (nonlocking), remove P-10E837 screw from plunger at key position being converted.

* These arrangements use line switch controlled ground for common signal key used with private or intercommunicating lines. Common signal should be used to operate a common signal relay. Do not wire directly to a buzzer.

† Terminal board associated with key.

‡ Not a pickup key.

Dial Replacement

6.02 If the dial requires replacement, a screwdriver and a new dial are needed.

6.03 Use the following procedures to replace the dial:

(a) Remove the face plate and face mat.
(b) Remove the telephone housing by loosening the two rear housing lock screws and lifting the rear of the housing and moving it forward to disengage the housing mounting hooks at the front of the unit (Figure 5).
(c) Loosen the dial mounting plate screws, move the dial mounting assembly toward the rear of the unit and lift it clear.
(d) Disconnect dial wires.
(e) Loosen dial mounting screws and remove dial from mounting plate.
(f) Place new dial in dial mounting plate and fasten with screws.
(g) Reconnect dial leads (Figure 8) and reassemble dial mounting plate.
(h) Replace telephone housing, face mat, and faceplate.

Key Frame Assembly Removal

6.04 If the key frame assembly needs to be removed, remove the key telephone housing (paragraph 6.03) and loosen the right and left key frame bracket screws at the rear of the telephone (Figure 7). Raise the rear of the key frame assembly and lift the front end out of the hinge slots, in which it rests. The assembly is now free of the telephone unit. To replace the key frame assembly, reverse this procedure.

Table 2. Connections for 599B Key Strip (Turnkey).

FEATURE	PICKUP KEY LEADS						SPADE-TIPPED LEADS IN SET				
	R G-BK	T BK-G	A BK-BR	R BL-Y	T Y-BL	A Y-O	BL-Y†	Y-BL†	O-Y	Y-O	BR-BK
Cutoff Station on 1A1 and 1A2 KTS	To Equipment		To Extension Station				Insulate and Store		TB1 G	TB6-X	
Cutoff Station on 4-Wire Line (Auxiliary Relay Required)	To Equipment Ground	To Equipment Auxiliary Relay				Insulate and Store	Insulate and Store			TB1 G	TB1 G
Cutoff Extension Ringer or Buzzer	To Equipment		To Extension Ringer or Buzzer				Insulate and Store				
Cutoff Bell in Set	To Equipment			*	*		TB1‡ 7	TB1‡ 8	Insulate and Store		
Cutoff Buzzer in Set	To Equipment			*	*		D A Cap.	C C C	Insulate and Store		
Monitoring	To Monitor Equipment						R TB1	T TB1			

* Insulate and store the BL-Y and Y-BL leads at the equipment when spade tipped leads are used in set.
† Must be insulated and stored when replacing 599B key with 599H key.
‡ Insulate and store BZ and BZ1 leads from TB1.

Table 3. I-Hold Conversion*.

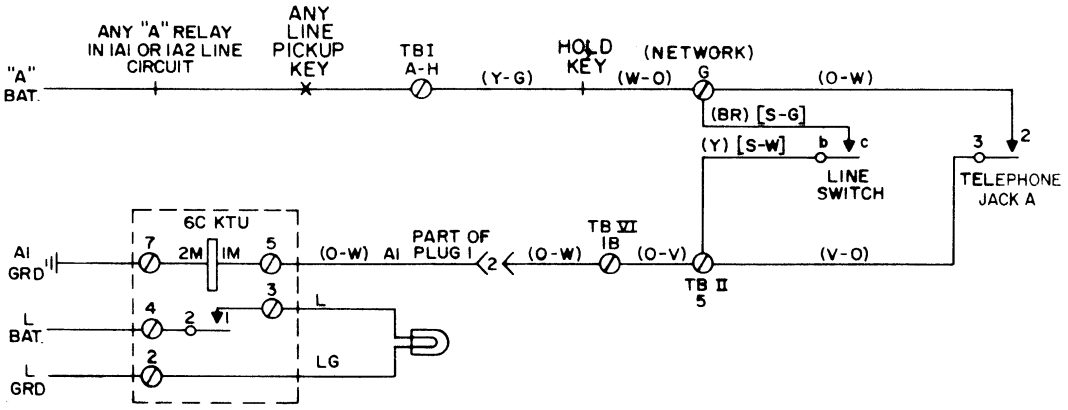
LEAD	OPERATION
(BR-V) from plug at first key module†	Remove insulator on spade tip and connect to R1 on TBV1
Any accessible unused mounting cord conductor	Connect to R1 on TBV1—use as SP lead to key equipment for I-hold

* Use either 599A (MD), 599B (MD or 657L) key.
† Optional and unused conductors are insulated and stored in the telephone set. When removing insulators, be careful not to damage the conductor or pull off the spade tip.

Table 4. Station Busy Lamp Conversion*.

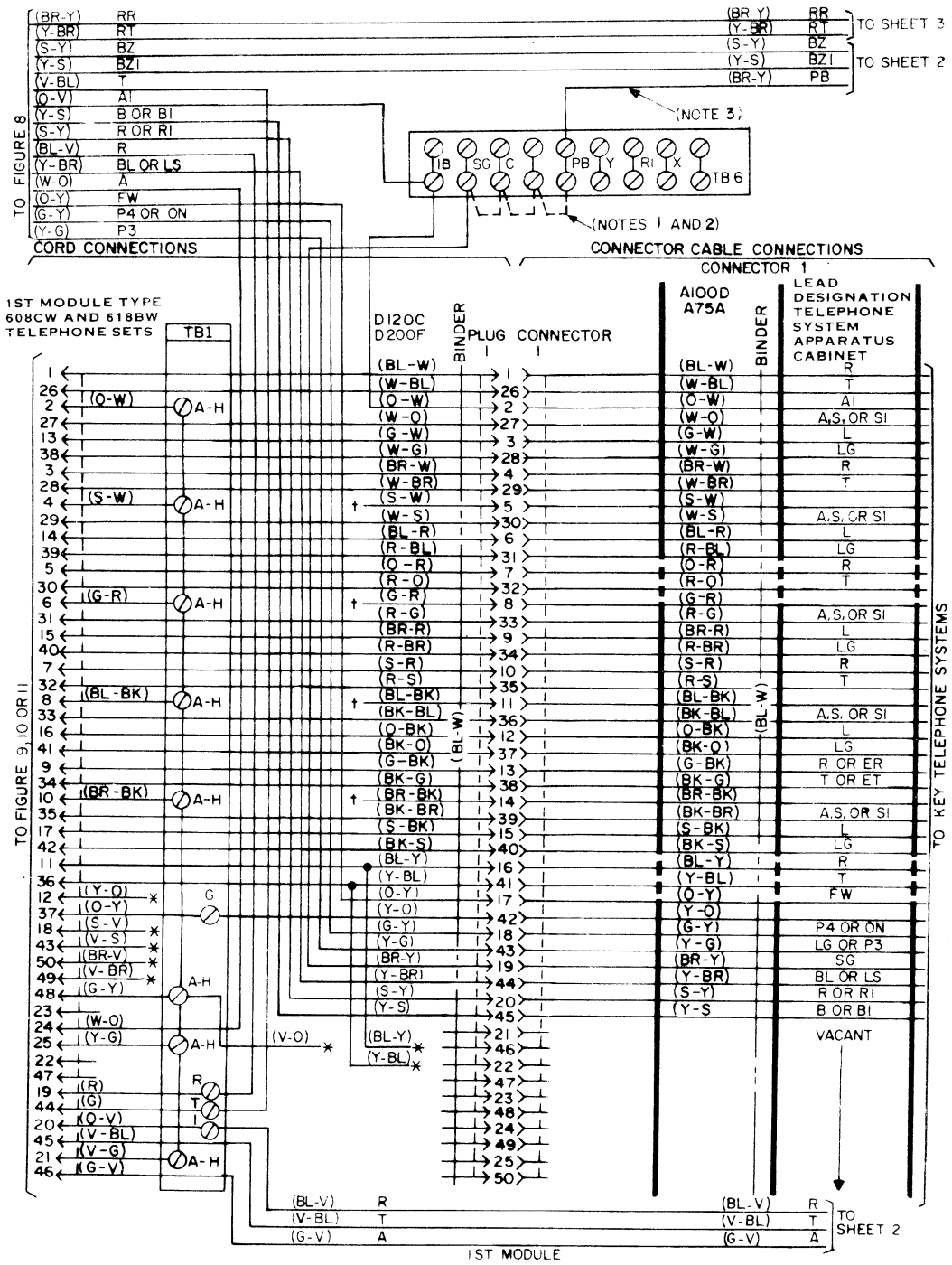
LEAD		REMOVE FRM	CONNECT TO
P-90D033 PWC	(BL)		L2†
	(O)		Y–TBVI
	(BK)		X–TBVI
	(Y)		G†–608B 11‡–608C or 618B*
(G-V) Lead from right-hand module plug			Y–TBVI
(W-O)hold key lead		G†–608B 11‡–608C or 816BW	X–TBVI

*This conversion table covers only the Type 618BW telephone sets with D120C mounting cords, with date of manufacture of III-68, or later. For telephone sets with cords manufactured prior to III-68, see Figure 11 for station busy lamp circuit. This table covers all Type 608CW Telephone Sets.
†Netword terminal.
‡Terminal on set terminal board.



RANGE OF "A" RELAY AND 6C KTU
14 VOLTS FOR 190 OHMS MAXIMUM TO OPERATE BOTH RELAYS IN SERIES.
20 VOLTS FOR 520 OHMS MAXIMUM TO OPERATE BOTH RELAYS IN SERIES.
26 VOLTS FOR 840 OHMS MAXIMUM TO OPERATE BOTH RELAYS IN SERIES.
( ) INDICATES CURRENT COLOR CODE
[] INDICATES MANUFACTURED DISCONTINUED COLOR CODE

Figure 12. Busy Lamp Control Circuit Controlled by 6C KTU.



NOTES

1 WHEN SIGNALING KEYS OTHER THAN THE 617A ARE PROVIDED, CONNECT THE SPADE TIPPED LEADS ASSOCIATED WITH THE CONVERTED PICKUP KEYS TO THE SG TERMINAL ON TERMINAL BLOCK 6. IF ADDITIONAL TERMINALS ARE REQUIRED, PROVIDE AN MIW STRAP, OR EQUIVALENT, BETWEEN THE C OR R AND SG TERMINALS ON TERMINAL BLOCK 6.

2 WHEN MORE THAN FIVE PRIVATE AND INTERCOMMUNICATING LINES WITH COMMON SIGNAL KEY ARE REQUIRED PER TELEPHONE SET, AND WHERE THE 617A KEY IS NOT USED, STRAP TOGETHER C TERMINALS OF RESPECTIVE 6-BUTTON KEY UNITS REQUIRING COMMON SIGNALING FEATURE.

3 THE PB LEAD IS FOR ADD-ON CONFERENCE CONTROL OF THE TYPE 6A KEY TELEPHONE SYSTEM.

CIRCUIT SYMBOLS

* INDICATES LEADS ARE SPADE TIPPED, INSULATED AND STORED.

† INDICATES LEADS ARE DEAD ENDED.

‡ INDICATES LEADS ARE SPADE TIPPED, INSULATED AND STORED IN 3RD MODULE OF 18-BUTTON SETS AND DEAD ENDED IN 30-BUTTON SETS.

§ DEAD ENDED IN 30-BUTTON SETS.

ø LEADS NOT PROVIDED IN 18-BUTTON SETS WITH D120C CORDS MANUFACTURED PRIOR TO III-68.

OPTIONS

USE "M" WIRING WITH 18-BUTTON SETS
USE "N" WIRING WITH 30-BUTTON SETS

Figure 13. Cord and Cable Connections (Sheet 1 of 3).

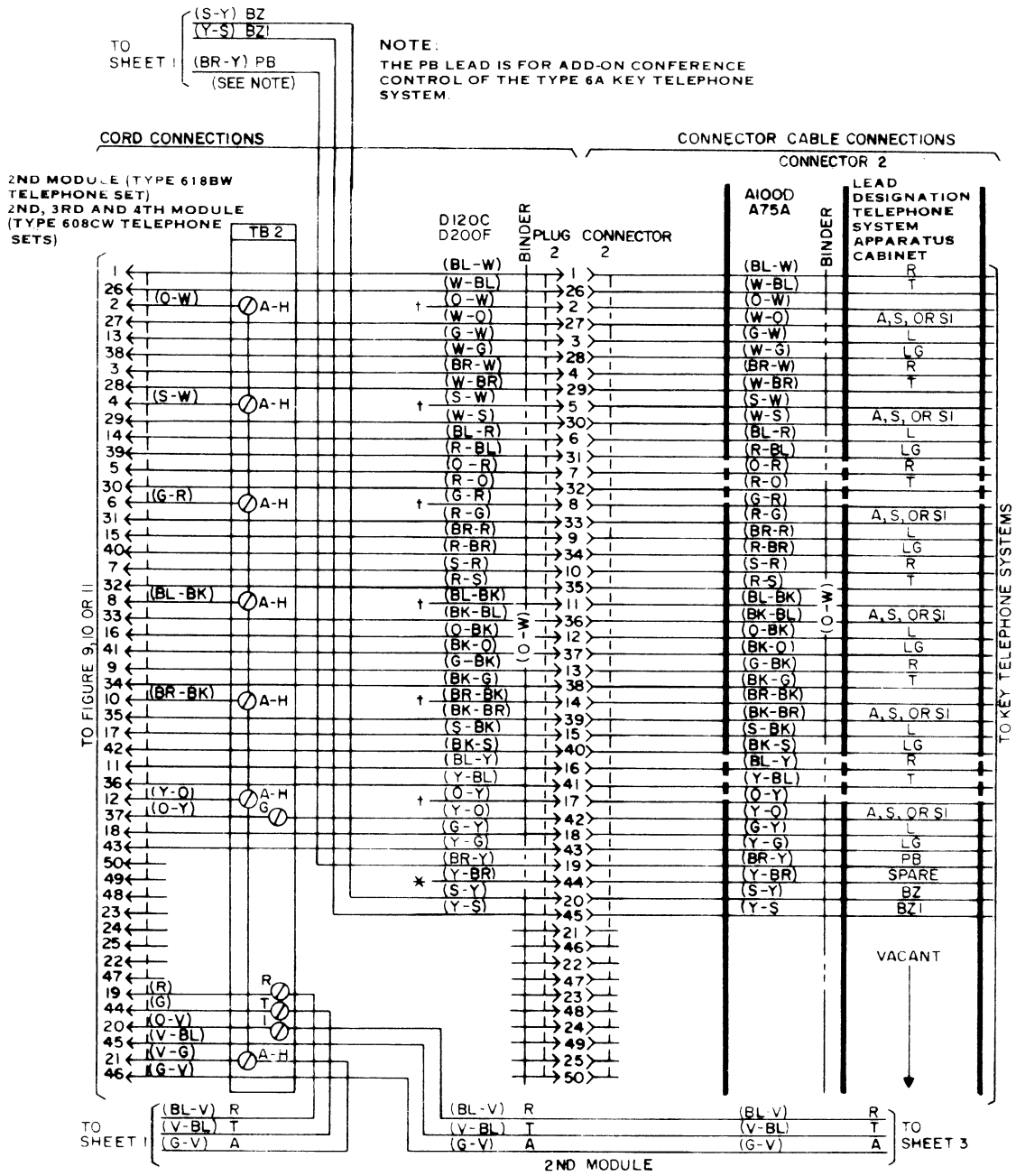


Figure 13. Cord and Cable Connections (Sheet 2 of 3).

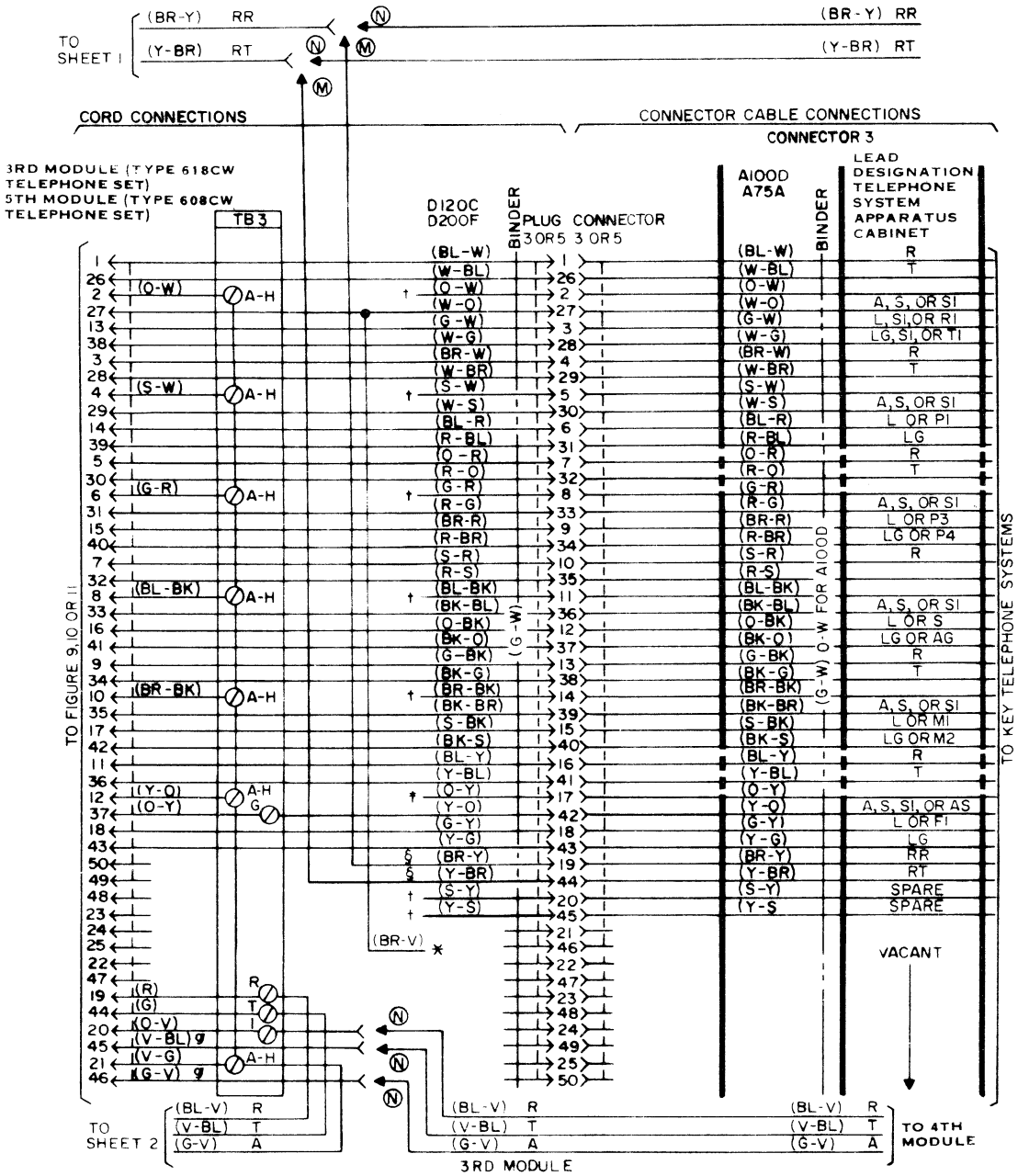


Figure 13. Cord and Cable Connections (Sheet 3 of 3).