

S-C 1800 AND 2800 SERIES, DESK, ROTARY-DIAL AND TONE-DIAL®,  
3-LINE TELEPHONES

CONNECTIONS AND MAINTENANCE

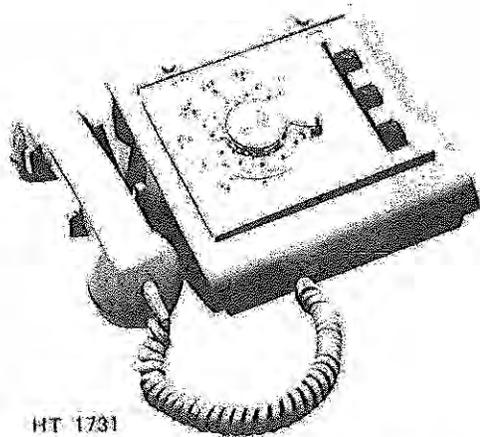


Figure 1. S-C 1800-3B3(LR)00 Desk, Rotary-Dial,  
3-Line Telephone



Figure 2. S-C 2800-3B3(LR)00 Desk, TONE-DIAL,  
3-Line Telephone

CONTENTS

Par.		Page	Par.		Page
1.	Introduction	2	5.03	Line and Hold Key Assembly Replacement	16
2.	Related Information	2	5.04	Line and Hold Release Adjustment	17
3.	Description and Identification	2	5.05	Dial Replacement	17
3.01	Description	2	5.06	Hookswitch Assembly Replacement	17
3.02	Identification	2	5.07	Signal Key Assembly, Replacement and Adjustment	18
4.	Installation and Connections	3	5.08	Recall Key Assembly, Replacement and Adjustment	19
4.01	Precautions	3	5.09	Network Assembly Replacement	19
4.02	Housing Removal and Replacement	3			
4.03	Telephone Line Connections	3			
4.04	Ringer and Buzzer Installation	5			
4.05	Busy Lamp Power Connections	7			
4.06	Busy-Station Number Display Connections	10			
4.07	Speakerphone Connections	10			
4.08	Manual Exclusion Feature	14			
4.09	Call Transfer With PABX	15			
4.10	Polarity Guard Installation	15			
5.	Maintenance	16			
5.01	Busy Lamp Replacement	16			
5.02	Line Lamp Replacement	16			

ILLUSTRATIONS

Fig.		Page
1.	S-C 1800-3B3(LR)00 Desk, Rotary-Dial, 3-Line Telephone	1
2.	S-C 2800-3B3(LR)00 Desk, TONE-DIAL, 3-Line Telephone	1
3.	S-C No. 95 Tone Ringer, Mounting	6

Copyright 1975 by Stromberg-Carlson Corporation. All rights reserved. This Practice or parts thereof may not be reproduced in any form without the express written permission of Stromberg-Carlson Corporation.

ILLUSTRATIONS (Cont)

Fig.		Page
4.	S-C Series 20 Ringer, Mounting	6
5.	S-C 96A Multiline Audible Signal, Mounting	7
6.	S-C Q-20 Buzzer, Mounting	7
7.	Typical Busy Lamp Power Connections, 44A Connecting Blocks	8
8.	Typical Busy Lamp Power Connections, 66-Series Connecting Blocks	9
9.	Speakerphone Connections for S-C 1800 Series Telephones	12
10.	Speakerphone Connections for S-C 2800 Series Telephones	13
11.	Manual Exclusion Switch, Mounting Details	14
12.	Polarity Guard Mounting	15
13.	S-C Line Lamp and Lampholder	16
14.	S-C 425E-1 Telephone Network	19
FO-1.	S-C 1800 3-Line Telephone Wiring Diagram	21
FO-2.	S-C 2800 3-Line Telephone Wiring Diagram	22

TABLES

No.		Page
1.	Typical S-C 1800 and 2800 Series, Desk, 3-Line Telephone Conductor Assignment (With Spade-Tipped Line Cord) Using 44A Connecting Blocks	4
2.	Typical S-C 1800 and 2800 Series, Desk, 3-Line Telephone Conductor Assignments (With Plug-Ended Line Cord) Using 66-Series Connecting Blocks	5
3.	S-C 1800 Series Telephone Connections for W.E. Speakerphone	11
4.	S-C 2800 Series Telephone Connections for W.E. Speakerphone	11

1. INTRODUCTION

1.01 This section provides connections and maintenance information on the S-C 1800 and

2800 series, desk, rotary-dial and TONE-DIAL, 3-line telephones (fig. 1 or 2).

2. RELATED INFORMATION

2.01 General.

A Sales and Instructional Literature Index, which lists the latest publications available from Stromberg-Carlson Corporation, can be obtained from your Stromberg-Carlson sales representative or from Publications Services, Stromberg-Carlson Corporation, 100 Carlson Road, Rochester, New York 14603.

2.02 Related Publications.

Other publications applicable to this equipment are:

T-916 Telephones and Components Catalog

T-917 Telephones and Telephone Components Repair Parts Catalog

3. DESCRIPTION AND IDENTIFICATION

3.01 Description.

a. S-C 1800 and 2800 series, desk, rotary-dial and TONE-DIAL 3-line telephones have 4-conductor, color-matching, soft-pull handset cords and color-coordinated line cords for ash, cocoa brown, orange, and white models. Color-matching line cords are provided with beige, green, and black models.

b. Incoming calls are signaled by visual and audible devices. Illuminated pushbutton keys on the telephone indicate line-hold and line-busy conditions.

c. A signaling button, for secretarial signaling, door release, etc., and an attendant recall button are standard. All models listed in paragraph 3.02 can be equipped with an optional manual line exclusion feature.

3.02 Identification.

The telephones described in this section provide 3-line rotary-and pushbutton-dial telephone service without the aid of external key telephone equipment. Models can be ordered in a wide variety of colors, with spade-tipped or plug-ended line cords as follows:

<i>S-C</i>		
<u>MODEL NO.</u>	<u>*STOCK NO.</u>	<u>DESCRIPTION</u>
1800-3A3(LR)00	703076-4XX	Rotary-dial with spade-tipped line cord
2800-3A3(LR)00	703076-6XX	Pushbutton-dial with spade-tipped line cord
1800-3B3(LR)00	703076-5XX	Rotary-dial with plug-ended line cord
2800-3B3(LR)00	703076-7XX	Pushbutton-dial with plug-ended line cord

\* The last two digits of the telephone stock number are color significant. For specific stock numbers, refer to Telephones and Components Catalog (T-916).

#### 4. INSTALLATION AND CONNECTIONS

##### 4.01 Precautions.

The following precautions should be taken when working on the telephone:

- a. Remove bezel with facemat and faceplate before removing or replacing housing (par. 4.02).
- b. Avoid disarranging wiring or bending components.
- c. Spade tips and skinned wires must make contact only with designated terminals. Electrical contact between unprotected wire ends and metal base or other metallic components will result in malfunctioning of the telephone.
- d. Ensure all wiring is carefully dressed away from ringer components and all moving parts of the telephone.
- e. Use electricians scissors or diagonal cutting pliers to remove the spade tip insulators from spare leads to avoid pulling spade tips from wire.

##### 4.02 Housing Removal and Replacement.

a. To remove housing, proceed as follows:

1. Remove the bezel, facemat, and faceplate by lifting the bezel out from the top of the telephone housing. Use care to avoid marring the housing.
2. Loosen the two housing screws located at the rear of the telephone.
3. Lift housing up from the rear of the telephone and disengage clip from the base at the front of the telephone.

b. To replace housing, proceed as follows:

1. Hook housing clip into slot at the front of the telephone base.
2. Slide housing down over the telephone until housing screws engage with slots in the rear of the telephone base. Tighten screws.
3. Insert bezel clips into slots at the bottom of the housing, swing bezel down to engage top clips in the housing.
4. If bezel does not seat properly or is loose, check clips on bezel and reform as necessary.

##### 4.03 Telephone Line Connections.

- a. The total number of telephones for a practical installation is seven. The neon lamp load across the tip and ring of each line can cause false ring trip in installations with more than seven telephones.
- b. Telephones with spade-tipped line cords require the use of type 44A connecting blocks. Refer to table I and figure FO-1 or FO-2 to terminate the line cord at the connecting blocks.
- c. Telephones with plug-ended line cords use Amphenol connector equipped cables (or adapters) and plug into the appropriate 66-series

Table 1. Typical S-C 1800 and 2800 Series, Desk, 3-Line Telephone Conductor Assignment (With Spade-Tipped Line Cord) Using 44A Connecting Blocks

<i>PAIR NO.</i>	<i>CONDUCTOR COLOR</i>	<i>TERMINAL BLOCK</i>	<i>CONNECTING BLOCK TERMINAL</i>	<i>LEAD DESIG.</i>	<i>LINE CORD CONDUCTOR</i>	<i>TERM. BOARD TERM.</i>	
1	WHT-BLU BLU-WHT	A	6	Line 1 Tip	WHT-BLU	9	
			1	Line 1 Ring	BLU-WHT	12	
2	WHT-ORN ORN-WHT		7	Line 2 Tip	WHT-ORN	8	
			2	Line 2 Ring	ORN-WHT	11	
3	WHT-GRN GRN-WHT		8	Line 3 Tip	WHT-GRN	7	
			3	Line 3 Ring	GRN-WHT	10	
4	WHT-BRN		9	Signal	WHT-BRN	14	
			4	Signal	BRN-WHT	13	
5	WHT-SLT SLT-WHT		10	Buzzer	WHT-SLT	24	
			5	Buzzer	SLT-WHT	1	
6	RED-BLU BLU-RED	6	Excl Tip	RED-BLU	6		
		1	Excl Ring	BLU-RED	5		
7	RED-ORN ORN-RED	7	Transformer	RED-ORN	21		
		2	Transformer	ORN-RED	19		
8	RED-GRN GRN-RED	B	8	Line 2 Lamp	RED-GRN	17	
			3	Line 1 Lamp	GRN-RED	18	
9	RED-BRN BRN-RED		9	Earth GRD	RED-BRN	15	
			4	Line 3 Lamp	BRN-RED	16	
10	RED-SLT SLT-RED		10	Spare	RED-SLT	—	
			5	Spare	SLT-RED	—	
11 to N (Spare)			C				

\* When intercom is arranged for selective signaling, SLT-WHT lead must be insulated and stored.

connecting blocks. Refer to table 2 and figure FO-1 or FO-2 for connecting block wiring and lead identification.

d. Related connecting block wiring information for upgraded service is contained in Bulletin T-1162 (S-C 3-Line Telephone - Typical Installations).

Table 2. Typical S-C 1800 and 2800 Series, Desk, 3-Line Telephone Conductor Assignments (With Plug-Ended Line Cord) Using 66-Series Connecting Blocks

66E-TYPE CONNECTING BLOCK			CONNECTOR	TELEPHONE		
PAIR NO.	CLIP TERM. NO.	CONDUCTOR COLOR	PIN NO.	LEAD DESIG.	LINE CORD CONDUCTOR	TERM. BOARD TERM.
1	1	WHT-BLU	26	Line 1 Tip	WHT-BLU	9
	2	BLU-WHT	1	Line 1 Ring	BLU-WHT	12
2	7	WHT-ORN	29	Line 2 Tip	WHT-ORN	8
	8	ORN-WHT	4	Line 2 Ring	ORN-WHT	11
3	13	WHT-GRN	32	Line 3 Tip	WHT-GRN	7
	14	GRN-WHT	7	Line 3 Ring	GRN-WHT	10
4	37	WHT-BRN	44	Signal	WHT-BRN	14
	38	BRN-WHT	19	Signal	BRN-WHT	13
5	33	WHT-SLT	42	Buzzer	WHT-SLT	24
	34	SLT-WHT	17	Buzzer	SLT-WHT	1
6	41	RED-BLU	46	Excl Tip	RED-BLU	6
	42	BLU-RED	21	Excl Ring	BLU-RED	5
7	47	RED-ORN	49	Transformer	RED-ORN	21
	48	ORN-RED	24	Transformer	ORN-RED	19
8	12	RED-GRN	6	Line 2 Lamp	RED-GRN	17
	6	GRN-RED	3	Line 1 Lamp	GRN-RED	18
9	50	RED-BRN	25	Earth GRD	RED-BRN	15
	18	BRN-RED	9	Line 3 Lamp	BRN-RED	16
10	46	RED-SLT	23	Spare	RED-SLT	—
	45	SLT-RED	48	Spare	SLT-RED	—
11 to N (Spare)						

\* When intercom is arranged for selective signaling, SLT-WHT lead must be insulated and stored.

#### 4.04 Ringer and Buzzer Installation.

Various ringers and buzzers are available for use with the S-C 1800 and 2800 series, desk, 3-line telephones. Install the audible signaling device as described in the following paragraphs.

*NOTE.* To provide access to various audible signal mounting and wiring points, the telephone dial should be removed. This task, however, is optional by the installer. Removal of the dial assembly is described in paragraph 5.05.

SECTION 81-042-72

a. S-C No. 95 Tone Ringer.

To install an S-C No. 95 tone ringer in the telephone, proceed as follows:

1. Remove telephone housing (par. 4.02a).
2. If desired, remove dial (par. 5.05). Do not disconnect dial leads.
3. Mount the tone ringer to the telephone base (fig. 3). Use the two No. 2-32 self-tapping screws provided with the ringer.
4. Make tone-ringer connections using the information provided on the instruction sheet packed with the ringer. Connection information for the S-C No. 95 tone ringer is also contained in section 89-937-70.
5. Replace dial (if removed) and telephone housing (par. 4.02b).

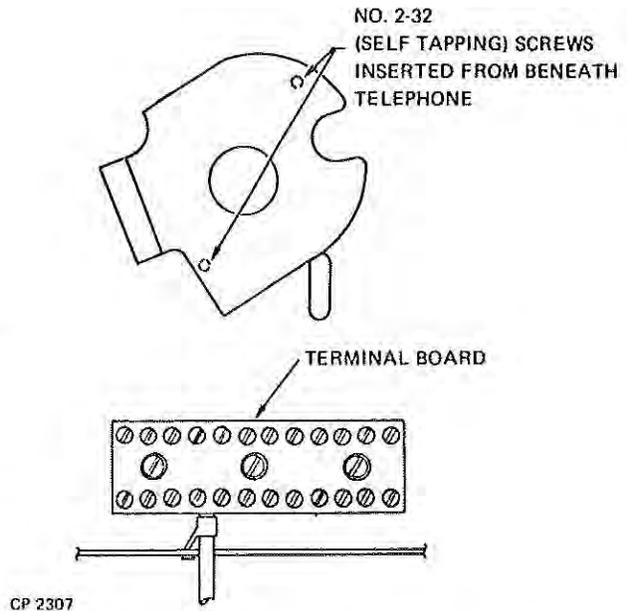


Figure 3. S-C No. 95 Tone Ringer, Mounting

b. S-C Series 20 Ringer.

To install an S-C Series 20 ringer in the telephone, proceed as follows:

1. Remove telephone housing (par. 4.02a).
2. If desired, remove dial (par. 5.05). Do not disconnect dial leads.
3. Mount the ringer to the telephone base (fig. 4). Use the two mounting screws provided with the ringer.
4. Refer to appropriate figure and make connections as shown. Connection information for S-C series 20 ringers is also contained in section 89-931-70.
5. Replace dial (if removed) and telephone housing (par. 4.02b).

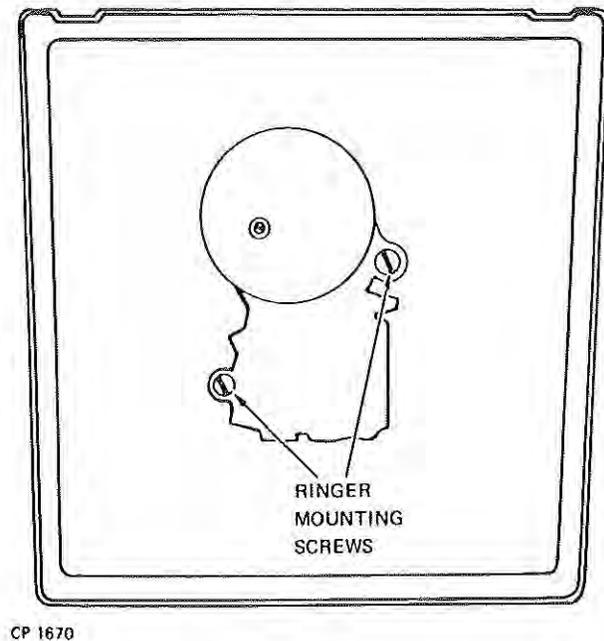


Figure 4. S-C Series 20 Ringer, Mounting

c. S-C 96A Multiline Audible Signal.

To install an S-C 96A multiline audible signal in the telephone, proceed as follows:

1. Remove telephone housing (par. 4.02a).

2. If desired, remove dial (par. 5.05). Do not disconnect dial leads.
3. Mount the multiline audible signal to the telephone base (fig. 5). Use the two mounting screws provided.
4. Refer to appropriate figure and make connections as shown. Connection information is also covered in section 89-932-70.
5. Replace dial (if removed) and telephone housing (par. 4.02b).

d. S-C No. Q-20 Buzzer.

To install an S-C No. Q-20 buzzer in the telephone, proceed as follows:

1. Remove telephone housing (par. 4.02a).
2. Mount the buzzer to the telephone hookswitch mounting bracket (fig. 6). Use screw packed with the buzzer.
3. Refer to appropriate figure and make connections as required.
4. Replace telephone housing (par. 4.02b).

e. S-C 687 Audible Signal Assemblies.

Certain installations may require the use of an externally-mounted audible signal. S-C 687 audible signal assemblies are available in an attractive mounting box and provide termination points for a wide variety of audible signals. For assembly identification and installation requirements, refer to section 89-938-70.

#### 4.05 Busy Lamp Power Connections.

A 10-Vac source is required for the telephone busy lamps. If a 10-Vac source is unavailable, install an S-C stock No. 202897-642 transformer in the vicinity of the telephone connecting blocks and connect as shown in figure 7 or 8 (as applicable).

*NOTE. On long cable runs, it may be necessary to tie several conductors (spares) together to maintain lamp brilliancy.*

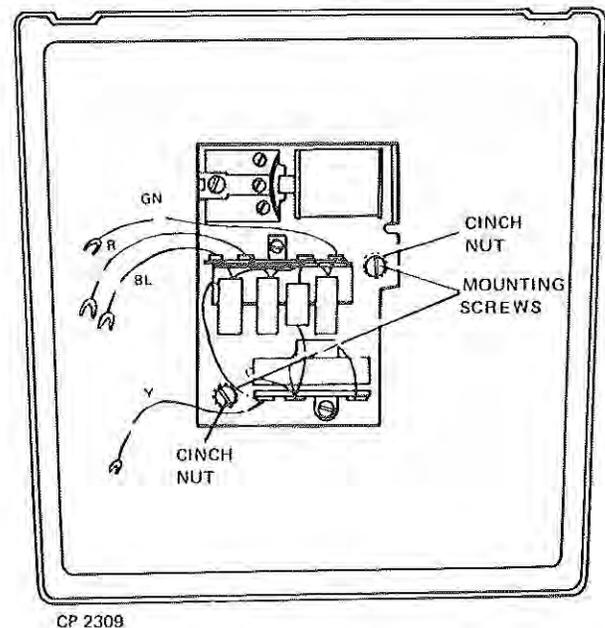


Figure 5. S-C 96A Multiline Audible Signal, Mounting

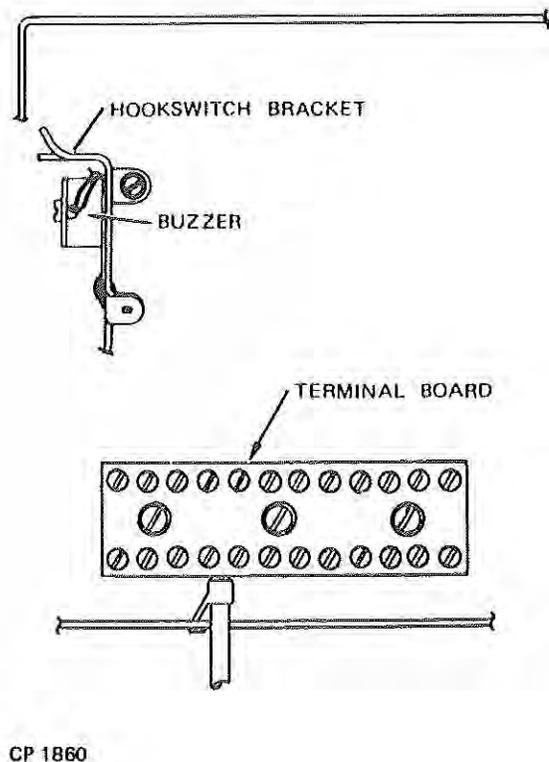


Figure 6. S-C Q-20 Buzzer, Mounting

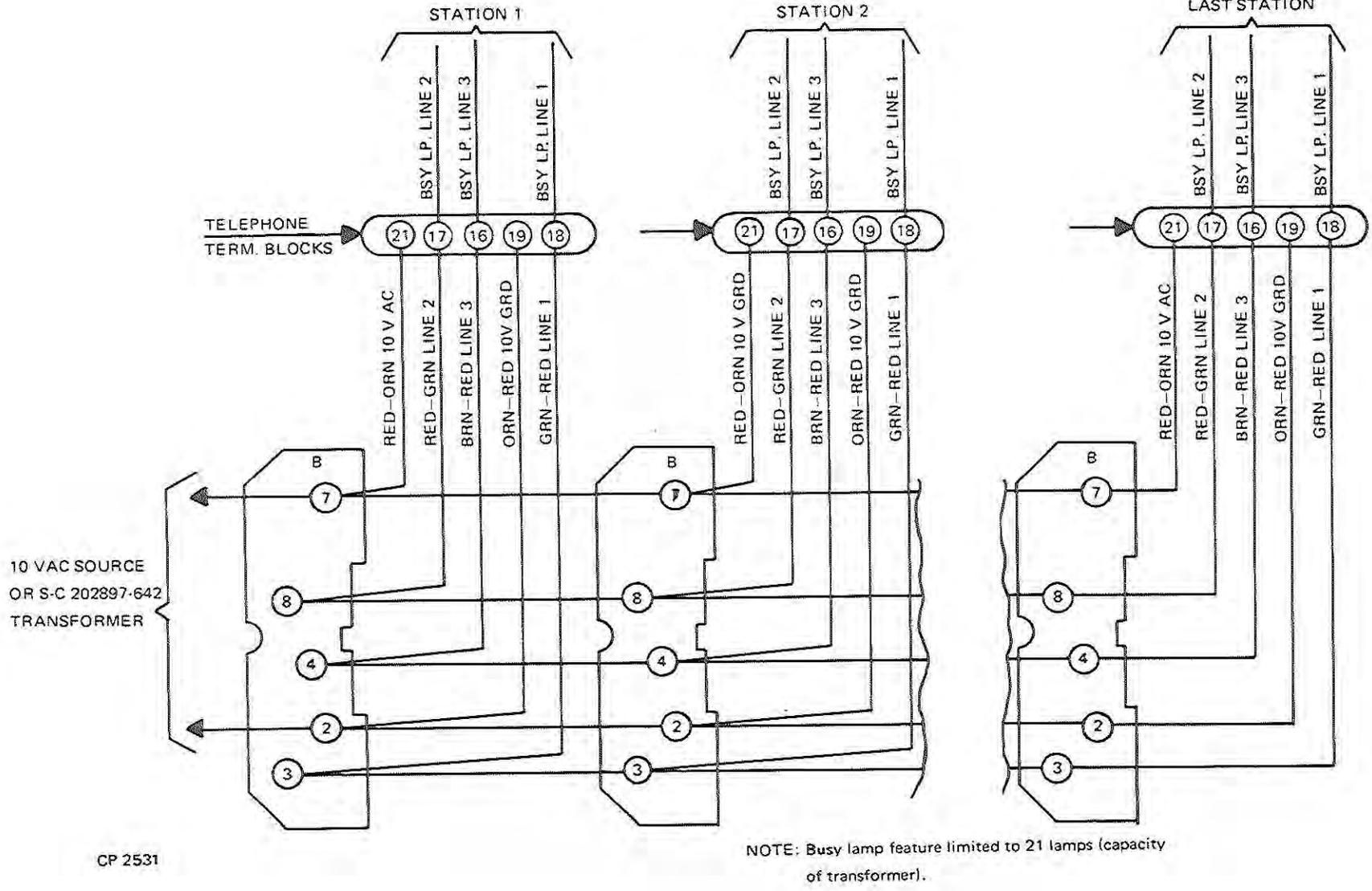
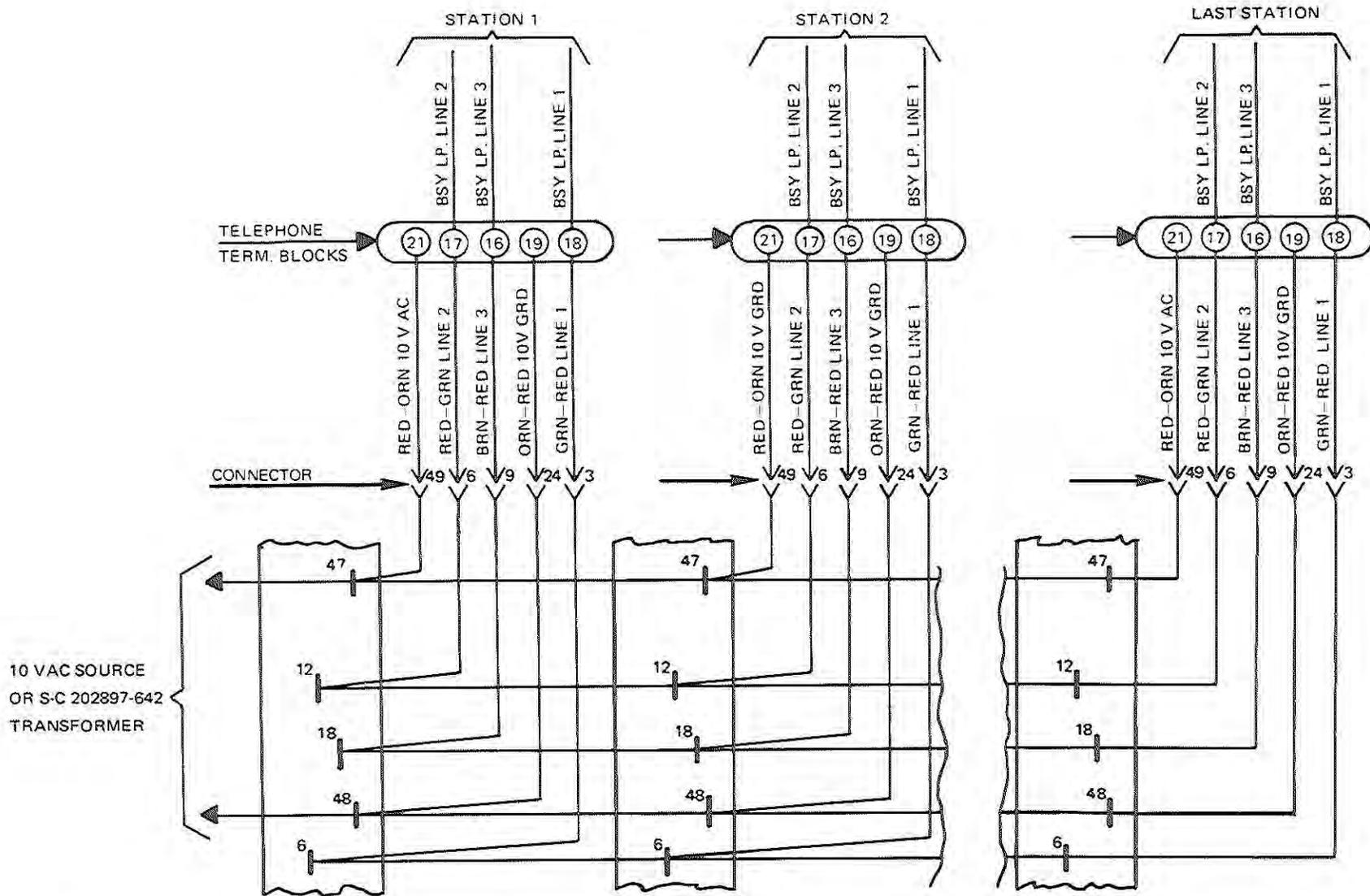


Figure 7. Typical Busy Lamp Power Connections, 44A Connecting Blocks



NOTE: Busy lamp feature limited to 21 lamps (capacity of transformer).

CP 2532

Figure 8. Typical Busy Lamp Power Connections, 66-Series Connecting Blocks

**4.06 Busy-Station Number Display Connections.**

- a. Remove telephone housing (par. 4.02a).
- b. When the telephone is to be connected to a BSND using 10-Vac or 24-Vdc power, connect as follows:

1. Remove three screws securing telephone terminal board to baseplate and lift terminal board up and away from its mounting.

2. Cut bare strap between terminals 22 and 23. Bend remaining portions of strap back around terminal lugs to prevent contact with adjacent terminals.

3. Remove WHT-BLU dial lead from terminal 22 and connect to terminal 23.

4. Remove spade-tip insulator from spare RED-SLT line cord lead and connect to terminal 22.

5. Remove insulator from stored BLU hookswitch lead and connect to terminal 22.

6. Secure terminal board to baseplate with screws removed in step 1. Before tightening screws, ensure leads are not pinched between terminal board and baseplate components.

7. Refer to table 1 or 2 (as applicable) and enter the designation BL in the LEAD DESIG column opposite the RED-SLT line cord conductor. Enter terminal 22 in the TERM. BOARD TERM. COLUMN. These entries provide a record for future reference.

8. At the connecting block, connect appropriate busy lamp lead (BL) from BSND to RED-SLT telephone line cord lead.

9. Replace telephone housing (par. 4.02b).

- c. When the telephone is to be connected to a BSND using 18-Vac power, connect as follows:

1. Remove three screws securing telephone terminal board to baseplate and lift the terminal board up and away from its mounting.

2. Cut bare strap between terminals 22 and 23. Bend remaining portions of strap back around

terminal lugs to prevent contact with adjacent terminals.

3. Remove WHT-BLU dial lead from terminal 22 and connect it to terminal 23.

4. Remove spade-tip insulator from spare RED-SLT line cord and connect to terminal 22.

5. Connect cathode of an S-C type 827 diode (S-C stock No. 202852-138) to telephone terminal-board terminal 22. Connect the anode to a D-type connector (or equivalent).

6. Remove insulator from stored BLU hookswitch lead and connect to the D-type connector. Insulate connector and diode as required to prevent contact with metal telephone parts.

7. Refer to table 1 or 2 (as applicable) and enter the designation BL in the LEAD DESIG. column opposite the RED-SLT line cord conductor. Enter terminal 22 in the TERM. BOARD TERM. column. These entries provide a record for future reference.

8. At the connecting block, connect appropriate busy lamp lead (BL) from BSND to RED-SLT telephone line cord lead.

9. Replace telephone housing (par. 4.02b).

**4.07 Speakerphone Connections.**

The S-C 1800 and 2800 series, desk, 3-line telephones can be used with a W.E. speakerphone. It is necessary to add an appropriate dial and provide connections to the speakerphone by way of a 6-foot adapter cable. Termination points not available on the telephone terminal board are provided by way of three D-type connectors included in the package assembly. To make connections, proceed as follows:

*NOTE. Due to number of available hookswitch contacts, speakerphone cannot be used if BSND is used with the telephone.*

- a. Remove housing (par. 4.02a).

- b. Remove dial (par. 5.05).

- c. Replace with appropriate dial (S-C 35C3A or 9-2H).

- d. Connect dial leads as indicated in table 3 or 4 and figure 9 or 10.

Table 3. S-C 1800 Series Telephone Connections for W.E. Speakerphone

<i>DIAL LEADS (S-C 9-2H)</i>	<i>NETWORK TERMINAL</i>	<i>TELEPHONE TERM. BOARD</i>	<i>ADAPTER CABLE LEADS</i>	<i>CONNECTING BLOCK IDENT.</i>	<i>SPEAKER-PHONE LEAD</i>
GRN BLU WHT WHT YEL YEL	F RR R GN  L2	  4 *  * * 15	GR  WHT SLT RED YEL BLU BLK		T1  P3 P4 R1 AG LK A1

\* Indicates connection made by way of D-type connector.

Table 4. S-C 2800 Series Telephone Connections for W.E. Speakerphone

<i>DIAL LEAD (S-C 35C3A)</i>	<i>CONNECT TO NETWORK TERMINAL</i>	<i>TELEPHONE TERM. BOARD</i>	<i>ADAPTER CABLE LEADS</i>	<i>CONNECTING BLOCK IDENT.</i>	<i>SPEAKER-PHONE LEAD</i>
ORN GRN BLK	G RR		GRN		T1
RED-GRN GRN-WHT	R C				
ORN-BLK WHT	C GN				
WHT-BLU RED		22 4			
BLU VIO		3 *	SLT		1R
		BLU** SLT**	YEL BLU		AG LK
	L2	15	BLK RED		A1 R1

\* Indicates connection made using D-type connector.

\*\* Hookswitch leads: connection made using D-type connector.

SECTION 81-042-72

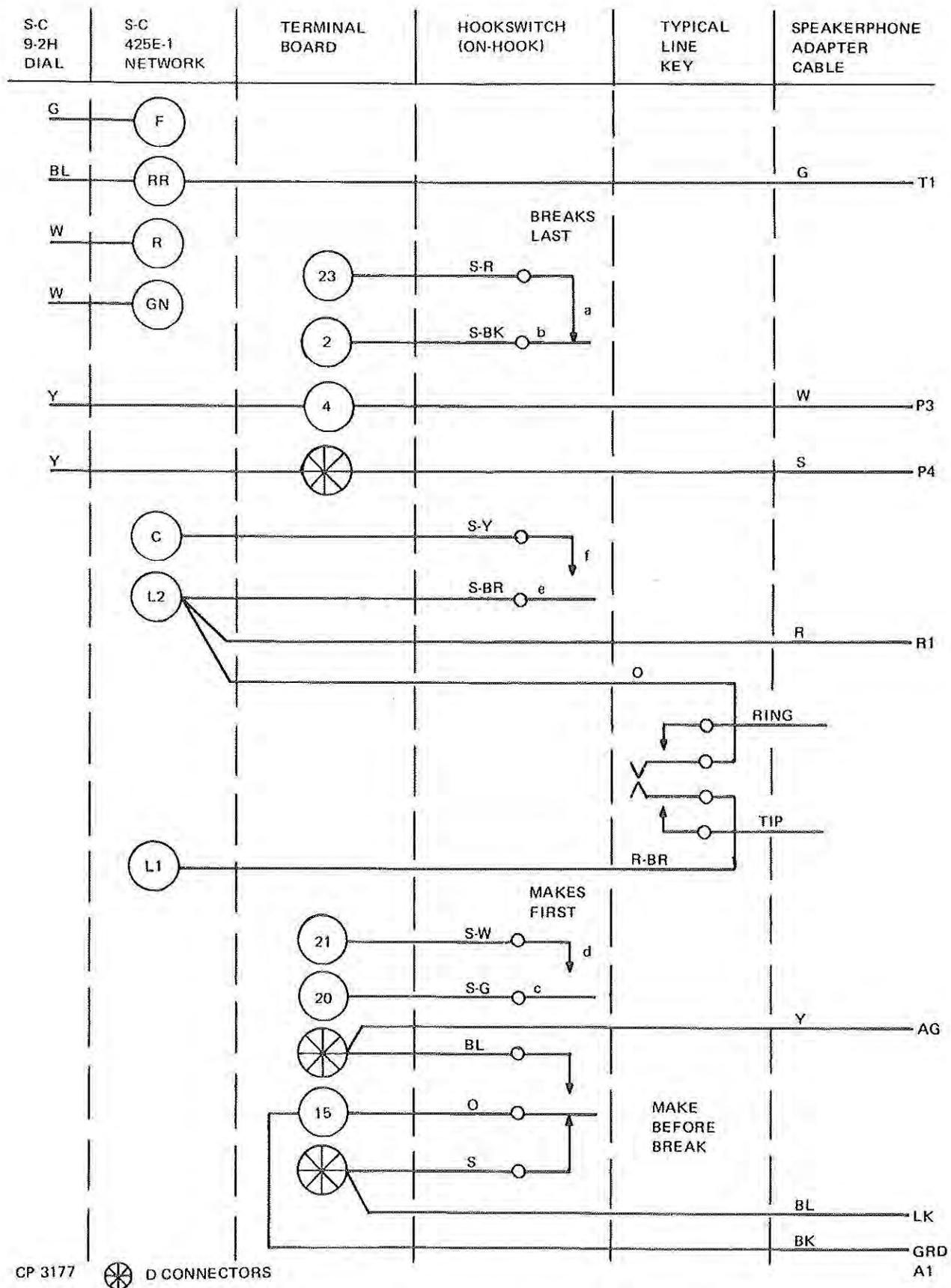


Figure 9. Speakerphone Connections for S-C 1800 Series Telephones

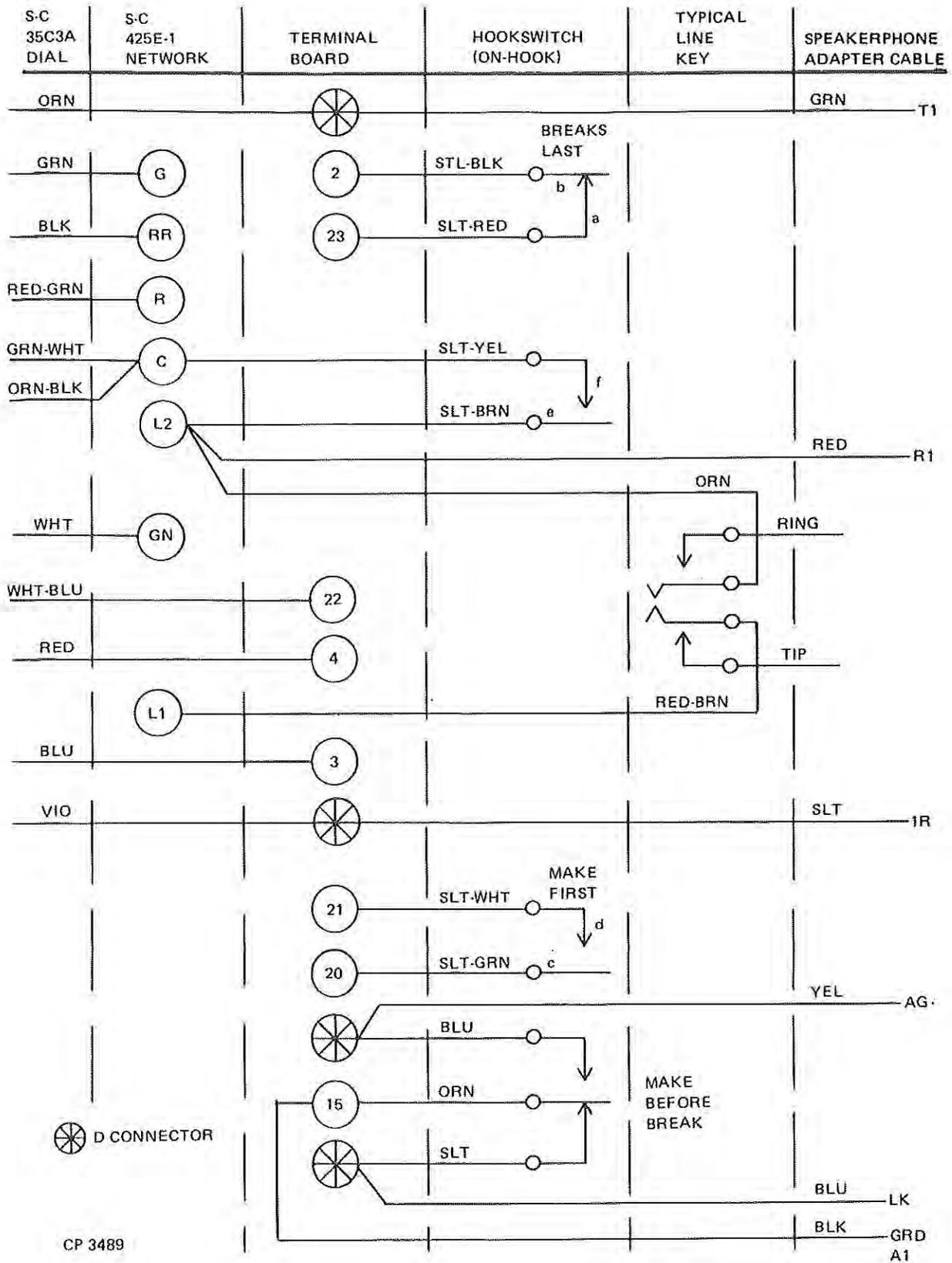


Figure 10. Speakerphone Connections for S-C 2800 Series Telephones

e. Connect leads from 6-foot adapter cable to the telephone terminal-board terminals, network terminals, and D-connectors as shown in table 3 or 4.

f. Terminate other end of adapter cable on connecting block assigned to speakerphone leads. Enter terminal assignments in table 3 or 4 as appropriate. Figures 9 and 10 show speakerphone terminations in the telephone with dial installed.

*NOTE. Insulate D-type connectors to avoid contact with metal parts of telephone.*

g. Insulate and store adapter cable leads not used.

h. Replace telephone housing (par. 4.02b).

**4.08 Manual Exclusion Feature.**

To provide manual exclusion, order package assembly S-C stock No. 204793-891 and proceed as follows:

a. Remove telephone housing (par. 4.02a).

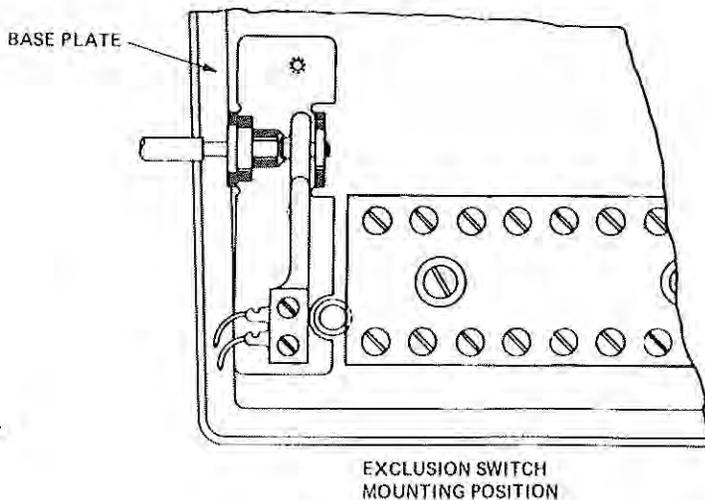
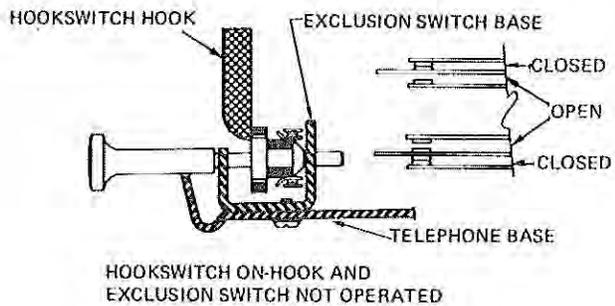
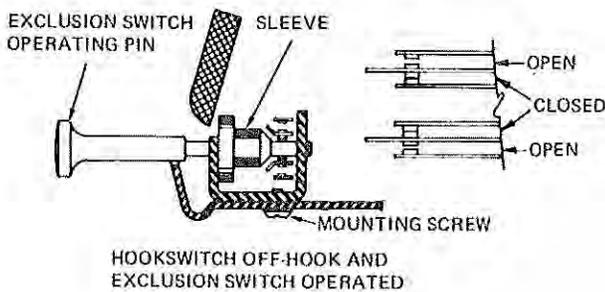
b. Mount exclusion switch on lower left-hand portion of telephone base plate with the screw provided (fig. 11). Do not tighten screw.

c. Adjust the exclusion switch position so that the hookswitch rests on its stop before the exclusion switch operating pin rests against the exclusion switch base. Tighten exclusion switch mounting screws.

d. With the telephone handset off-hook and the exclusion switch operating pin pulled out (operated), the sleeve attached to the operating pin should move from between the switch pile-up springs to open and close the contacts.

e. Place the handset on-hook. The hookswitch hook should return the exclusion switch operating pin to the unoperated position. The switch pile-up spring should close and open as shown in figure 11.

f. If switch does not operate correctly, adjust as required.



**NOTE:**  
Connect exclusion switch leads as shown in Figure FO-1 or FO-2

CP 1858A

Figure 11. Manual Exclusion Switch, Mounting Details

g. Refer to appropriate figure and connect the exclusion switch leads as required (insulate and store the SLT switch lead). Dress leads so they do not interfere with moving parts of the telephone.

h. Connect the tip and ring leads of stations to be excluded to the EXCL. TIP and EXCL. RING leads of the telephone line cord as shown in figure FO-1 or FO-2.

i. Replace telephone housing (par. 4.02b).

#### 4.09 Call Transfer with PABX.

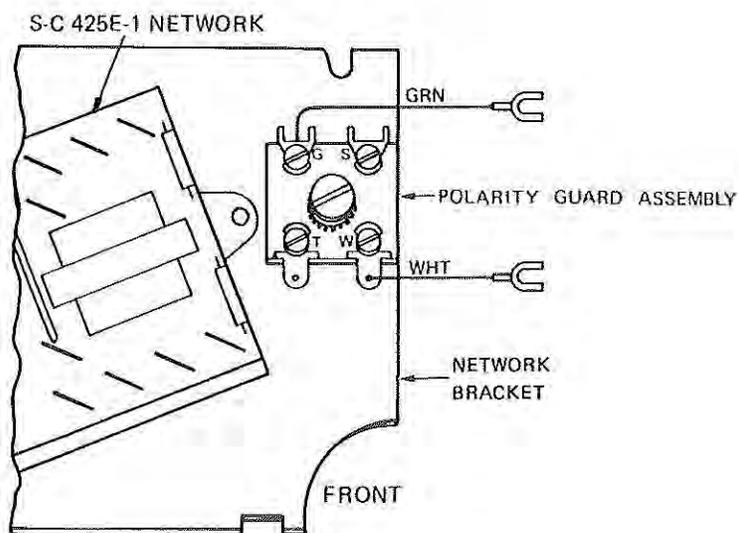
When the telephone is used with a PABX, the SIGNAL pushbutton can be connected to provide call transfer on any line. To include this feature, proceed as follows:

a. Remove telephone housing (par. 4.02a).

b. Connect a strap between telephone terminal-board terminals 14 and 15.

c. Remove the BLK signal switch lead from telephone terminal-board terminal 13 and connect the lead to network terminal C.

d. Replace telephone housing (par. 4.02b).



CP 1632B

#### 4.10 Polarity Guard Installation.

To install a polarity guard in the S-C 2800 series telephone, proceed as follows:

a. Remove telephone housing (par. 4.02a).

b. Mount the polarity guard to the right of the network assembly (fig. 12) on the network mounting bracket with the screw supplied with the polarity guard.

c. Remove the WHT recall switch lead from network terminal G and connect to polarity guard terminal T.

d. Remove the SLT-YEL hookswitch lead from network terminal C and connect to polarity guard terminal S.

e. Connect the GRN polarity guard lead to network terminal G.

f. Connect the WHT polarity guard lead to network terminal C.

g. Replace telephone housing (par. 4.02b).

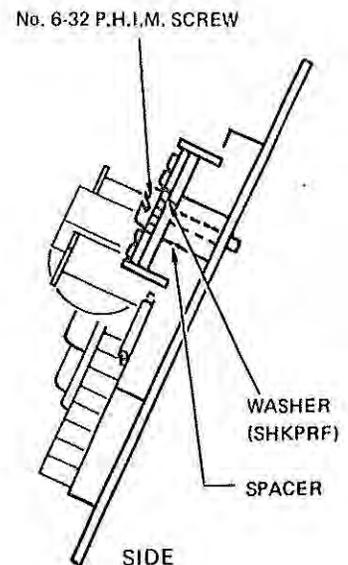


Figure 12. Polarity Guard Mounting

## 5. MAINTENANCE

*NOTE. For replacement parts, refer to the telephones and telephone components repair parts catalog, T-917.*

### 5.01 Busy Lamp Replacement.

To replace telephone busy lamps, proceed as follows:

- a. Remove bezel, facemat, faceplate and key cap from telephone (par. 4.02a).

*CAUTION. Use an insulated tool to remove or straighten lamps.*

- b. Remove defective busy lamp from the key strip contact springs with suitable lamp extractor (S-C stock No. 896264-000 or equivalent).

- c. Clean the metal lamp spring contact surface and check spring tension and alignment. Adjust if required.

- d. Insert new lamp with glass end up (towards key button). Position lamp terminals to ensure contact with spring surfaces.

- e. Replace bezel, facemat, faceplate, and key cap (par. 4.02b).

### 5.02 Line Lamp Replacement.

*CAUTION. Before performing the following work, ensure that all tools used are insulated to prevent damage to the telephone.*

As provided from the factory, neon line lamps (S-C stock No. 200162-309) are inserted in a plastic lamp holder (S-C stock No. 703017-458). The lamp and holder are inserted into the contact springs and excessive lamp lead length is removed. To replace defective neon line lamps, proceed as follows:

- a. Remove bezel, facemat and faceplate from telephone (par. 4.02a).
- b. Remove lamp cap.
- c. Press line key (to expose neon line lamp).

- d. Using needle-nose pliers (insulated handles), grasp neon lamp lead and carefully extract lamp and lampholder.

- e. Remove old lamp from lampholder and replace with new lamp.

- f. Bend lamp leads along guides in lampholder and clip excessive lamp lead length. (Allow approximately 1/8-inch of lead wire to extend above lampholder as shown in figure 13.)

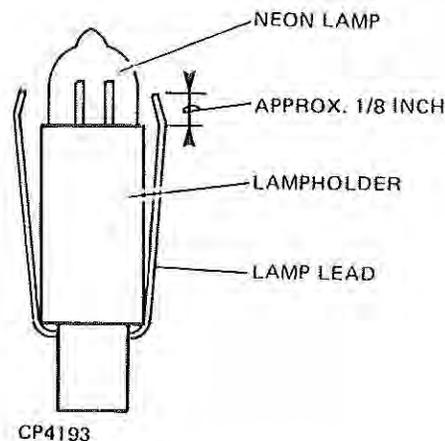


Figure 13. S-C Line Lamp and Lampholder

- g. Insert new lamp and lampholder into keystick.

- h. Replace key cap, bezel, facemat, and faceplate (par. 4.02b).

### 5.03 Line and Hold Key Assembly Replacement.

To replace a defective line and hold key assembly, proceed as follows:

- a. Remove telephone housing (par. 4.02a).
- b. Disconnect key assembly plug located at the rear of the telephone.
- c. Unscrew the two captive mounting screws at the top and bottom of the key assembly.
- d. Disengage the connecting rod from the key assembly hold-return connecting cam and lift the key assembly from the telephone.

- e. Replace with new assembly, making sure that the connecting rod is connected to the hold-return connecting cam.
- f. Insert key assembly plug at rear of telephone and secure the assembly to the mounting bracket by tightening the two captive mounting screws.
- g. Remove handset from cradle. Press two hold keys and return handset to cradle. Weight of handset will restore hold keys to normal; if not, adjust as described in paragraph 5.04.
- h. Replace telephone housing (par. 4.02b).

#### 5.04 Line and Hold Release Adjustment.

To ensure hold key release when the handset is placed on-hook, proceed as follows:

- a. Remove telephone housing (par. 4.02a).
- b. Loosen the connecting rod plate retaining screw located under the key assembly on the upper right-hand corner of the base plate.
- c. While holding the hookswitch depressed, move the connecting rod plate toward the handset cradle.
- d. Tighten the connecting rod plate retaining screw.
- e. Remove handset from cradle. Press two hold keys and return handset to cradle. Pressure of handset will restore hold keys to normal.
- f. If hold keys do not restore properly, repeat adjustment procedure.
- g. Replace telephone housing (par. 4.02b).

#### 5.05 Dial Replacement.

*NOTE. For repair and replacement parts of S-C 35-type pushbutton dials refer to section 89-922-70. For repair and replacement parts of S-C rotary-dials refer to section 89-925-70.*

- a. Remove telephone housing (par. 4.02a).
- b. Loosen wing screw on right side of dial and slotted screw on left side of dial.

- c. Disconnect dial leads from network and terminal board.
- d. Lift dial from mounting brackets and remove from telephone.
- e. Install new dial assembly and tighten mounting hardware. Ensure small metal dimples on dial assembly mate with holes in dial mounting brackets before tightening screws.
- f. Reconnect dial leads as shown in figure FO-1 (rotary-dial) or figure FO-2 (pushbutton-dial). If speakerphone dial is used, refer to figure 9 (rotary-dial) or figure 10 (pushbutton-dial).
- g. Replace telephone housing (par. 4.02b).

#### 5.06 Hookswitch Assembly Replacement.

The hookswitch assembly consists of a spring combination mounted on a bracket with a pusher and spring stop. To replace the assembly, proceed as follows:

- a. Remove telephone housing (par. 4.02a).
- b. Loosen wing screw securing dial assembly to the right-hand mounting bracket. Loosen the screw securing the dial to the left-hand mounting bracket.
- c. Lift dial assembly from mounting brackets and place dial assembly to one side of telephone away from hookswitch assembly.
- d. Remove hookswitch leads from the terminal board and network terminals.
- e. Remove tape from around leads connecting the network to the terminal board. This is required since hookswitch leads are included in the binding.
- f. Remove the three screws securing the hookswitch assembly to the network mounting bracket and telephone baseplate. Remove the top screw first and move the network mounting bracket back to provide access to the rear assembly mounting screw.
- g. Withdraw hookswitch assembly and attach hook from telephone.

- h. Remove spring, shaft, stop plate, and hook from the hookswitch assembly as follows. (These items will be reassembled to the new hookswitch assembly.)
1. Disengage spring connected between the hookswitch mounting bracket and stop plate.
  2. Disengage slotted end of shaft from the hookswitch mounting bracket and withdraw shaft from assembly.
  3. Apply slight pressure to the spring combination pusher in the direction of the hook and stop plate. Carefully withdraw the hook and attached stop plate from the hookswitch assembly.
- i. Assemble hook and stop plate, shaft, and spring to the new hookswitch assembly as follows:
1. Apply slight pressure to the spring combination pusher in the direction of the hook mounting points. Use care to avoid damage to the pusher and spring combination.
  2. Carefully insert hook and attached stop plate around the slot in the pusher and into the hookswitch assembly. When properly inserted, the pusher will rest inside the T-shaped slot in the stop plate.
  3. Insert the unslotted end of the shaft through the elongated hole in the hookswitch assembly and through the holes in the hook. When shaft is fully inserted, the slotted end will fit into the small end of the elongated hole.
  4. Connect spring between stop plate and hookswitch assembly arms.
- j. Check the spring combinations for proper adjustment. The c-d contacts must make first and the a-b contacts must break last. The upper springs of the combination should have a slight follow when operating. When adjusting, ensure that the bar contacts on the lower spring of the combination simultaneously engage the bar contacts of the upper springs.
- k. Insert hookswitch assembly into telephone and secure to baseplate and network mounting bracket with the screws removed in step f. Ensure that long connecting rod end is between the stop plate and the hookswitch assembly mounting bracket.
- l. Refer to figure FO-1, FO-2 or figures 9 or 10 as appropriate and connect terminal-board terminals. Dress leads so they do not interfere with moving parts of telephone and replace tape removed in step e.
  - m. Check hookswitch spring tension by operating hookswitch. Hook should move rapidly to the off-hook position. If not, increase spring tension by moving spring to a higher setting on the stop plate arm.
  - n. Replace dial assembly. Before tightening mounting hardware, ensure small metal dimples on dial assembly engage with holes in the mounting brackets.
  - o. Replace telephone housing (par. 4.02b).
- 5.07 Signal and Recall Key Assembly Replacement and Adjustment.**
- Signal and recall key assemblies require replacement when spring pile-ups fail. Failure is usually due to mishandling, improper adjustment, or ordinary spring fatigue. Replacement of spring pile-up assemblies is as follows:
- a. Remove telephone housing (par. 4.02a).
  - b. Disconnect the yellow and black leads from the terminal board (SIGNAL key); or the red and white leads from the network assembly (RECALL key).
  - c. Remove the two mounting screws that secure the assembly to its mounting bracket.
  - d. Install the new spring pile-up; secure to mounting bracket; and connect the leads.
    1. RECALL key - White lead to terminal G and red lead to terminal L1 on the network assembly.
    2. SIGNAL key - Black lead to terminal 13 and yellow lead to terminal 14 on the terminal board.
  - e. When replacing individual pile-up assemblies, adjust as follows:

1. RECALL switch - Insert a 0.015-inch gauge between the top of the bushing and the underside of the key button, switch contacts should open. Using a 0.075-inch gauge above, switch contacts should remain closed.
  2. SIGNAL switch - Insert a 0.015-inch gauge between the top of the bushing and the underside of the key button, switch contacts should close. Using a 0.075-inch gauge above, switch contacts should remain open.
- f. When replacing the complete assembly, remove the two screws which secure it to the network bracket.
  - g. Replace with new assembly, secure to network bracket and connect the leads (d above). No contact adjustment should be necessary when the entire assembly is replaced.
  - h. Replace telephone housing (par. 4.02b).

#### 5.08 Recall Key Assembly, Replacement and Adjustment.

- a. To replace the recall key assembly, proceed as follows:
  1. Remove telephone housing (par. 4.02a).
  2. Disconnect recall key assembly WHT and RED leads from telephone network terminal F and L1.
  3. Remove two screws securing recall key assembly to mounting bracket.
  4. Mount new spring pile-up and connect WHT lead to telephone network terminal F and RED lead to telephone network terminal L1.
  5. Adjust spring as necessary (par. 5.08b).
  6. Replace telephone housing (par. 4.02b).
- b. To adjust the recall key assembly, proceed as follows:
  1. Remove telephone housing (par. 4.02a).

2. Insert a 0.015-inch gauge between the underside of the recall key button and the top of the metal bushing.
3. Press the RECALL button. The spring contacts should open.
4. If the spring contacts do not open with the gauge inserted and the RECALL button pressed, bend the spring contacts as necessary.
5. Insert a 0.075-inch gauge between the underside of the recall key button and the top of the metal bushing.
6. Press the RECALL button. The spring contacts should close.
7. If the spring contacts are not closed with the gauge inserted and the RECALL button pressed, bend the spring contacts as necessary.
8. Repeat entire adjustment procedure to ensure both adjustments are as specified.
9. Replace telephone housing (par. 4.02b).

#### 5.09 Network Assembly Replacement.

To replace a defective telephone network assembly (S-C 425E-1), proceed as follows (fig. 14):

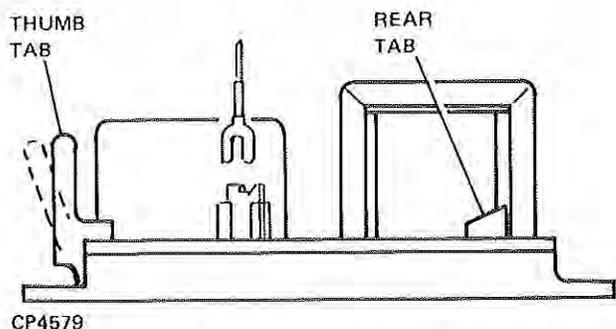


Figure 14. S-C 425E-1 Telephone Network

- a. Remove telephone housing (par. 4.02a).
- b. Remove spade terminals.
- c. Carefully pull thumb tab away from network and lift front end of transformer frame (capacitor-end

SECTION 81-042-72

of network will release and lift approximately 1/4-inch).

d. Grasping transformer, slide network toward thumb tab (two rear tabs will unhook).

e. Grasping transformer, lift network out of collar.

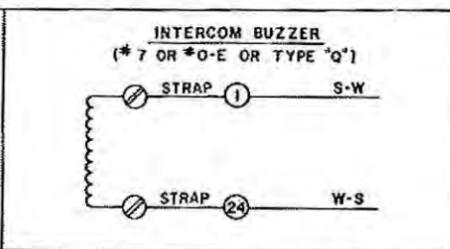
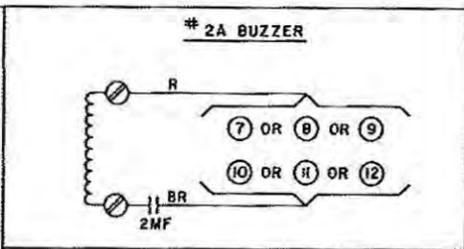
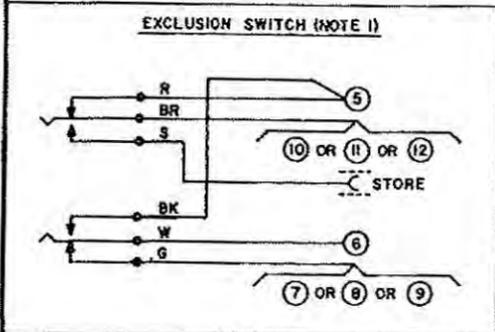
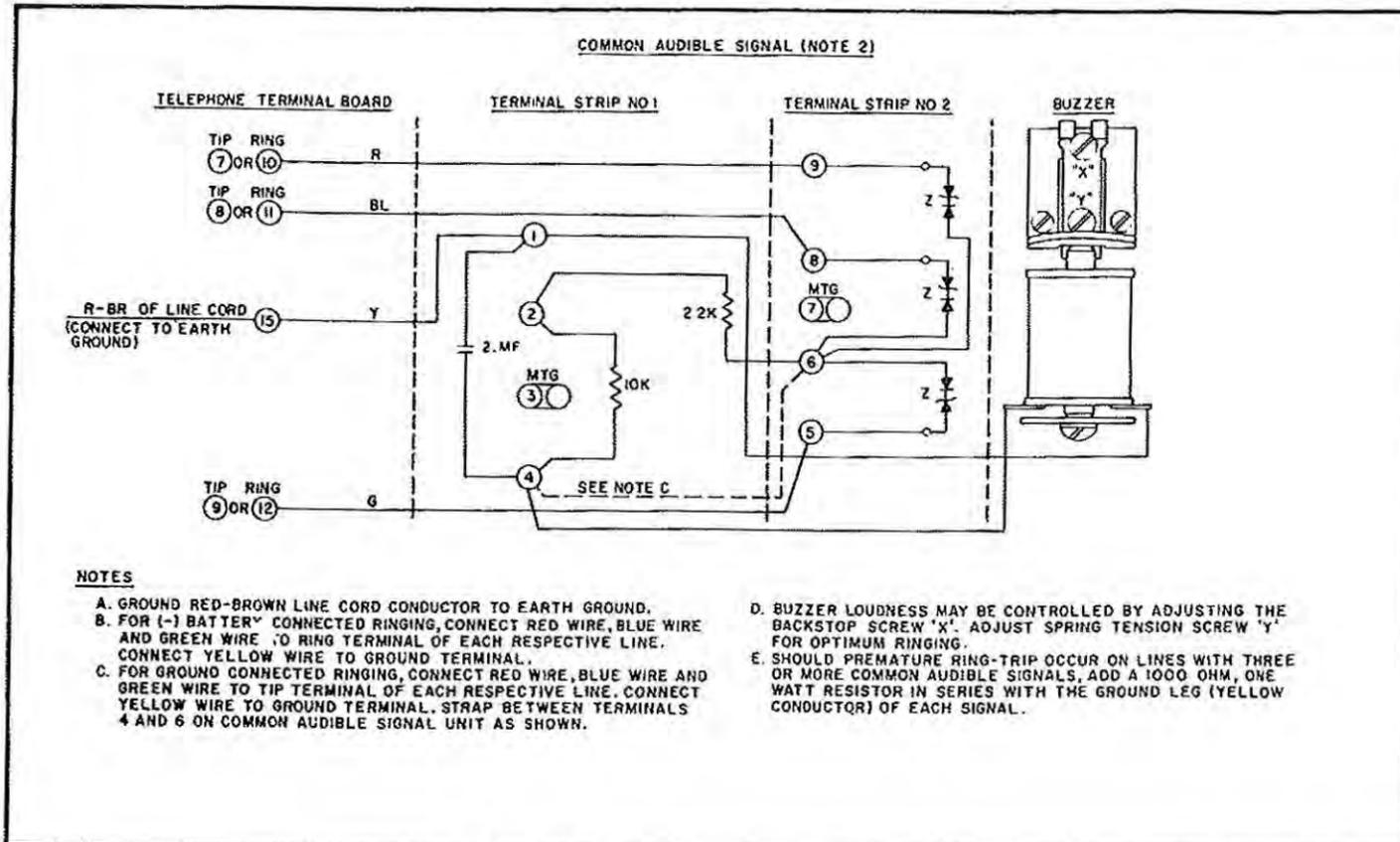
f. Place new network over two rear tabs.

g. Grasping transformer, depress network and slide into collar (two rear tabs will hook over board).

h. Carefully pull thumb tab away from network and push down front end of transformer. Network will snap in place.

i. Connect spade leads to network terminals (fig. FO-1, FO-2, 9 or 10 as appropriate).

j. Replace telephone housing (par. 4.02b).



- NOTES**
- WHEN MANUAL EXCLUSION FEATURE IS DESIRED, ORDER PACKAGE ASSEMBLY 204793-891 AND WIRE AS SHOWN. USE TERMINALS 9 AND 12 FOR EXCLUSION ON LINE 1, TERMINALS 8 AND 11 FOR EXCLUSION ON LINE 2, AND TERMINALS 7 AND 10 FOR EXCLUSION ON LINE 3. CONNECT CABLE WIRES TO TIP AND RING OF EXCLUDED LINE OF EXCLUDED STATIONS AS SHOWN.
  - WHEN A COMMON AUDIBLE SIGNAL IS REQUIRED, ORDER PACKAGE ASSEMBLY 202101-155 AND WIRE AS SHOWN.
  - WHEN AN INDIVIDUAL LINE SIGNAL IS REQUIRED USING STANDARD RINGING VOLTAGE, THE FOLLOWING OPTIONS ARE AVAILABLE. WIRE AS SHOWN USING TERMINALS 9 AND 12 FOR LINE 1, TERMINALS 8 AND 11 FOR LINE 2, AND TERMINALS 7 AND 10 FOR LINE 3.
    - S-C SERIES 20 RINGER. ORDER PACKAGE ASSEMBLY 702100-244 FOR STRAIGHT LINE RINGER OR 702100-260 FOR 60 HZ. RINGER.
    - ONE RINGER. ORDER PACKAGE ASSEMBLY 202100-488 (WIRE PER INSTRUCTION SHEET WITH TONE RINGER).
    - S-C #2A BUZZER. ORDER BUZZER ASSEMBLY 206014-621.
    - A TYPE MIA RINGER MAY BE USED IN PLACE OF THE S-C SERIES 20 STRAIGHT LINE RINGER.
  - WHEN AN INTERCOM BUZZER IS REQUIRED, THE FOLLOWING OPTIONS MAY BE USED.
    - TYPE 7 (A.C. OR D.C.) BUZZER. REQUIRES MOUNTING PLATE PACKAGE ASSEMBLY 206289-671.
    - #O-E BUZZER. ORDER PACKAGE ASSEMBLY 206289-681. #O-E BUZZER (STOCK NO. 212709-000) MAY ALSO BE MOUNTED WITH #7 BUZZER USING PACKAGE ASSEMBLY 206289-671.
    - 'Q' BUZZER. MOUNTED PER INSTRUCTION SHEET 300981-191.
  - TO REPLACE NEON SIGNAL LAMPS IN LAMP BLOCK, CLIP OFF LEADS FOR OLD NEON LAMP AND INSERT NEON LAMP 200162-299.
  - WHEN BUSY LAMP INDICATION IS REQUIRED, ORDER ONE TRANSFORMER POWER SUPPLY 202897-642, IF NO 100V. A.C. SOURCE IS AVAILABLE.
  - WHEN USING TELEPHONE WITH PABX, USE SIGNAL SWITCH FOR CALL TRANSFER ON ANY LINE BY MAKING FOLLOWING WIRE CHANGE.
    - CONNECT CABLE SIGNAL WIRE FROM CONNECTOR 44 TO EARTH GROUND.
    - MOVE BLACK SIGNAL SWITCH WIRE FROM TERMINAL 13 TO TERMINAL C ON NETWORK.

