

AUXILIARY TOUCH CALLING ADAPTER
CONNECTIONS

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1. GENERAL	

1.01 This section provides information concerning the connection of the auxiliary Touch Calling adapter (HD-840102) to rotary-dial telephones.

1.02 This section is reissued to update the text. Marginal arrows are used to identify new material. Remove the previous issue of this section from the binder or microfiche file and replace it with this issue.

2. APPLICATIONS

2.01 An auxiliary Touch Calling adapter is required when a station served by a dial central office must be equipped to transmit DTMF signals over the switched message network to distant equipment, such as a customer-owned computer installation or apparatus arranged for remote control. It may also be used at multiline stations or PBX attendants' sets that receive primary service from a dial CO but have access to one or more lines or trunks arranged for DTMF signaling, such as lines to a foreign exchange arranged for Touch Calling service.

2.02 The auxiliary Touch Calling adapter, commonly referred to as a pad (Figure 1), consists of a special 12-key Touch Calling Unit (TCU) arranged for plug connection directly to its printed-circuit oscillator board and mounted in a rectangular housing molded of black or beige styrene. Four circular vinyl feet provide a nonskid base for desk use. In desk use, the brushed aluminum faceplate lies at a 25-degree angle to the horizontal. A desk space 5 inches wide by 5-3/4 inches deep is required for the adapter, which is 3-1/2 inches high. Wall mounting requires four holes or anchors on 3-1/2 inch horizontal and 3-3/16 inch vertical centers to accept No. 10 or No. 12 screws inserted through the center of each foot, which should not be removed. In this case, the TCU must be removed from the housing (Figure 2) and the entrance grommet removed temporarily to secure more cord slack. The TCU can then be reversed, so that the cord connector lies next to the shorter wall on the housing (the top, when wall mounted). The faceplate is symmetrical and may be installed so that the acrylic number card cover lies either above or below the keys, regardless of whether the adapter is used on a desk or is wall mounted. In either case, the connections to the associated telephone set are made by means of a 9-foot 4-1/2 inch length of matching nine-conductor cord, which is termi-

nated on the connector of the TCU and equipped with spade lugs at the free end.

2.03 Telephone instruments manufactured by other North American suppliers, including ITT (Kellogg), LEICH, North, Northern, present Stromberg-Carlson, and Western Electric, employ the standard WECO 500 Series-type telephone set (Figure 3) configurations, in which the primary winding of the induction coil is divided into two sections. By placing one section in series with each side of the line, this circuit arrangement provides a point for ANI ground mark application that is both a standard transmission network terminal (the transmitter connection) and a reactive as well as resistive, midpoint of the transmission network bridge.

2.04 Figure 4 shows the circuit arrangement of the auxiliary Touch Calling adapter, as applied to an NC-series telephone instrument. Use of a common switch spring pile with separate contact sets to key the oscillator, pad the receiver, and mute the transmitter requires a larger cord connector and two additional conductors in the line cord. As with the standard Type 12C Touch Calling unit, isolation of the receiver-padding contacts permits their insertion in the induction coil side of the path for proper operation with amplified-receiver handsets. In other respects, the application is the same as for the present adapter.

2.05 Figure 3 shows the interconnection of the auxiliary Touch Calling adapter and a WECO 500 Series-type telephone. In this case, loop characteristics may change. Better regulation of the DTMF oscillator supply potential may be attained by connecting the oscillator leads to terminals C and R (corresponding to terminals 1 and 2 or 23 in Figure 4) rather than across the entire transmission network bridge, which are terminals C and R in Figure 3. Although the potential drop across the shorter path provides a reduced

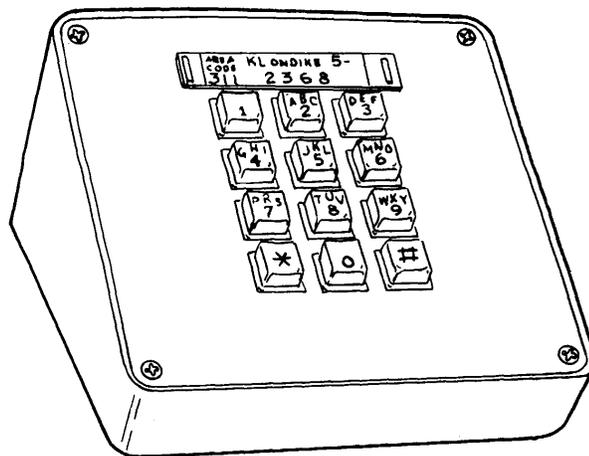


Figure 1.- Auxiliary Touch Calling Adapter in Desk Use.

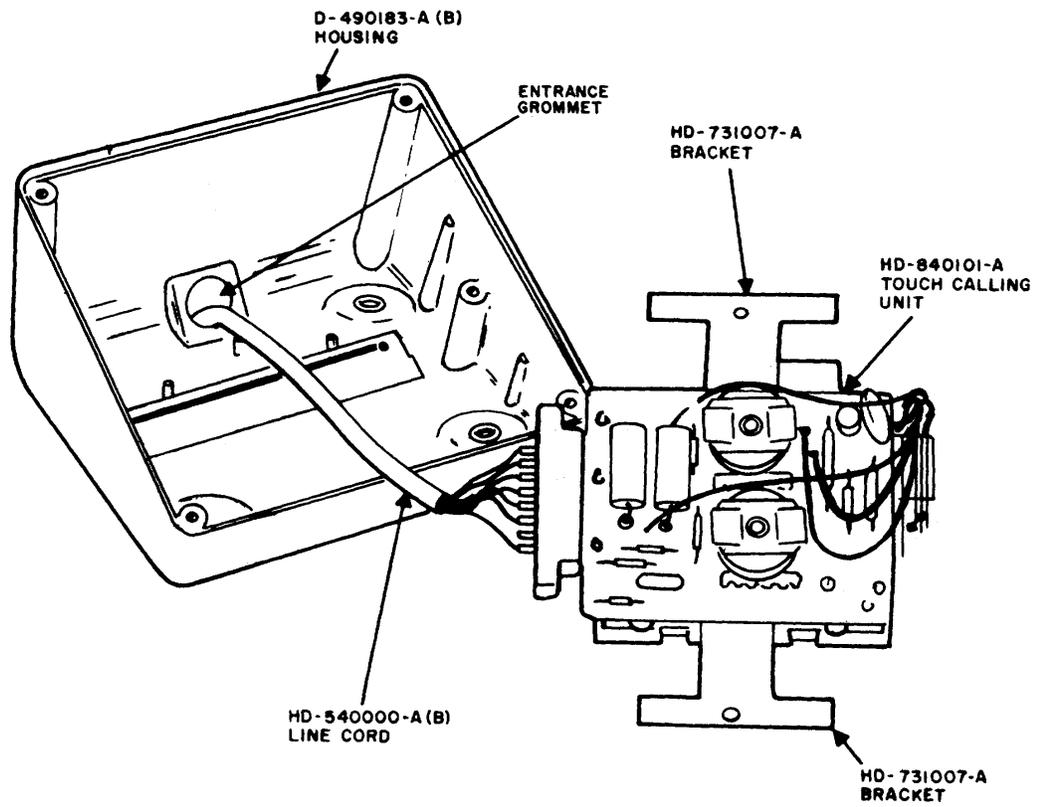


Figure 2. Auxiliary Touch Calling Adapter with TCU Removed.

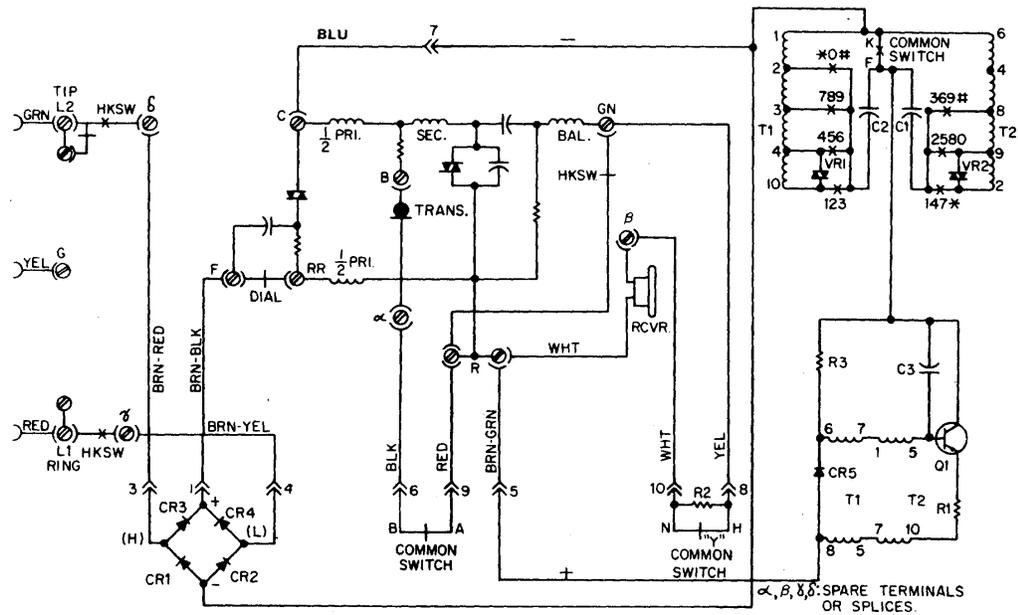


Figure 3. Schematic Diagram of HD-840102 Auxiliary Touch Calling Adapter Connected to WECO 500 Series-Type Telephone.

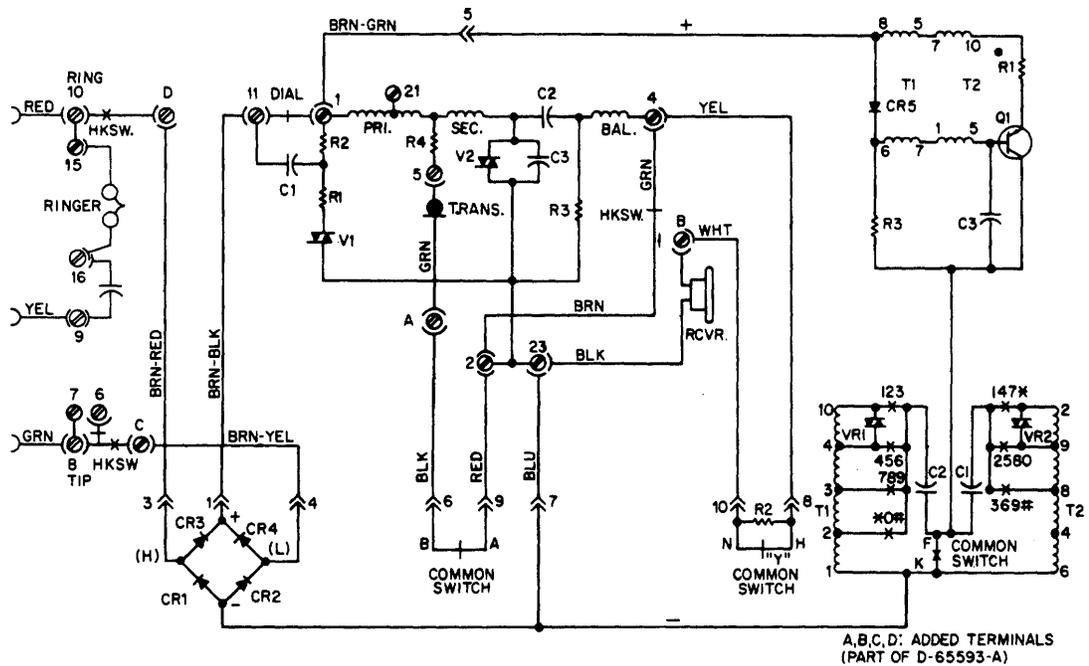


Figure 4. Schematic Diagram of HD-840102 Auxiliary Touch Calling Adapter Connected to NC-Series Telephone.

output from the oscillator, a comparable signal level is delivered to the line as a result of the autotransformer action of the two-section primary winding on the induction coil. However, because of the negative output terminal of the diode bridge has still not been provided with a separate conductor in the connecting cord, the connection to transmission network terminal C (a line terminal) must be made by the blue connecting cord lead from connector contact 7 (a combined line lead and oscillator lead). Only this arrangement will leave the brown-green connecting cord lead from connector contact 5 (solely an oscillator lead) free from connection to transmission network terminal R (not a line terminal). This means that the brown-black connecting cord lead from connector contact 1 (solely a line lead) must be connected to transmission network terminal F, resulting in a polarity reversal of the transmission network from its normal condition when wired for bridged or ring party services. Accordingly, the adapter cannot be used on the WECO 500 Series-type telephones that have been equipped with spotter dials. Note also that in the case of more complicated instrument circuits, such as speakerphone applications in which an external R1 lead must be derived, the requirement for a negative lead from the bridge separate from the lead to transmission network terminal C precludes use of the adapter.

3. CONNECTIONS

3.01 To permit entrance of the interconnecting cord, it may be necessary to establish or enlarge the cord entry slot in the telephone housing. A clamp is supplied with the adapter to secure the cord within the set if no other retention is provided. Figures 5 through 15 and 17 through 20

show the methods of routing and securing the cord for common applications.

3.02 The following paragraphs cover connection information necessary to adapt the auxiliary Touch Calling adapter to GTE Automatic Electric telephones.

3.03 To connect the auxiliary Touch Calling adapter to a Type 80 or 90M Telephone Set, proceed as follows:

- (a) Route and secure the adapter's cord on the Type 80 (Figure 5) or 90M (Figure 8) telephone.
- (b) Refer to Table 1 for internal wiring changes in the telephone and connection information on the conductors of the interconnecting cord from the auxiliary Touch Calling adapter.
- (c) Replace the D-65573-A support spacer with D-65593-A.

3.04 To connect the auxiliary Touch Calling adapter to a Type 85A, 85B, and 85C Telephone sets, proceed as follows:

- (a) Route and secure the adapter's cord to Type 85A, 85B or 85C Telephone as shown in Figure 6.
- (b) Refer to Table 1 for internal wiring changes in the telephone and connection information on the conductors of the interconnecting cord from the auxiliary Touch Calling adapter.

3.05 To connect the auxiliary Touch Calling adapter to a Type 86 Telephone Set, proceed as follows:

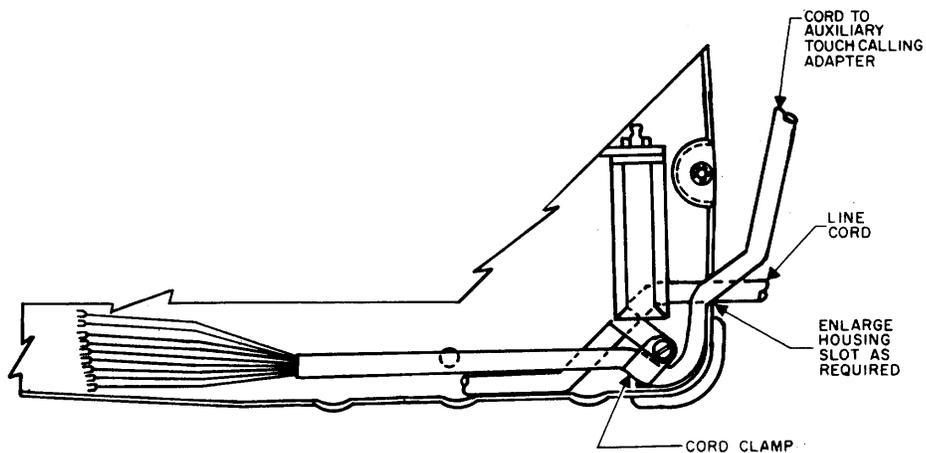


Figure 5. Routing and Securing Cord from Auxiliary Touch Calling Adapter to Type 80 Telephone.

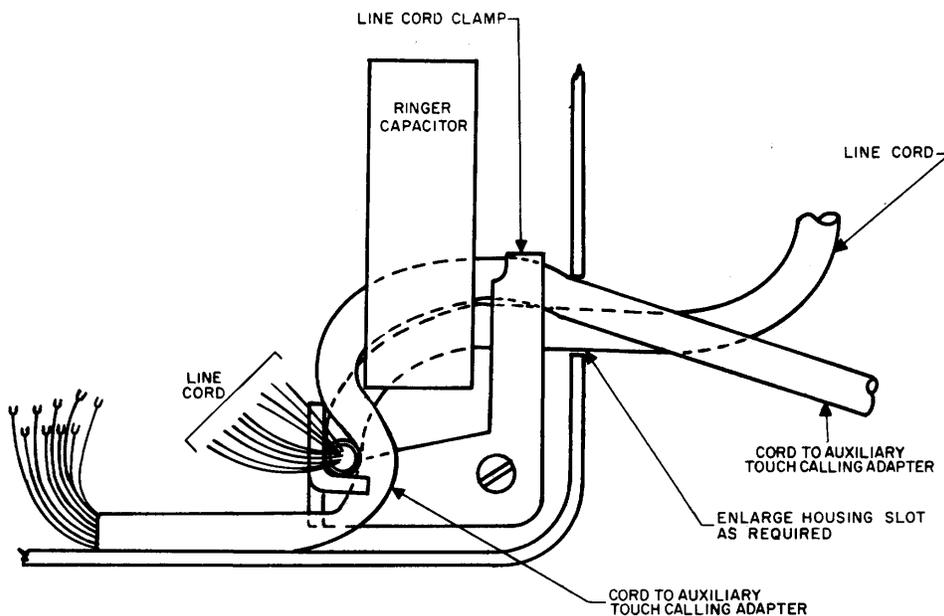


Figure 6. Routing and Securing Cord from Auxiliary Touch Calling Adapter to Type 85 Telephone.

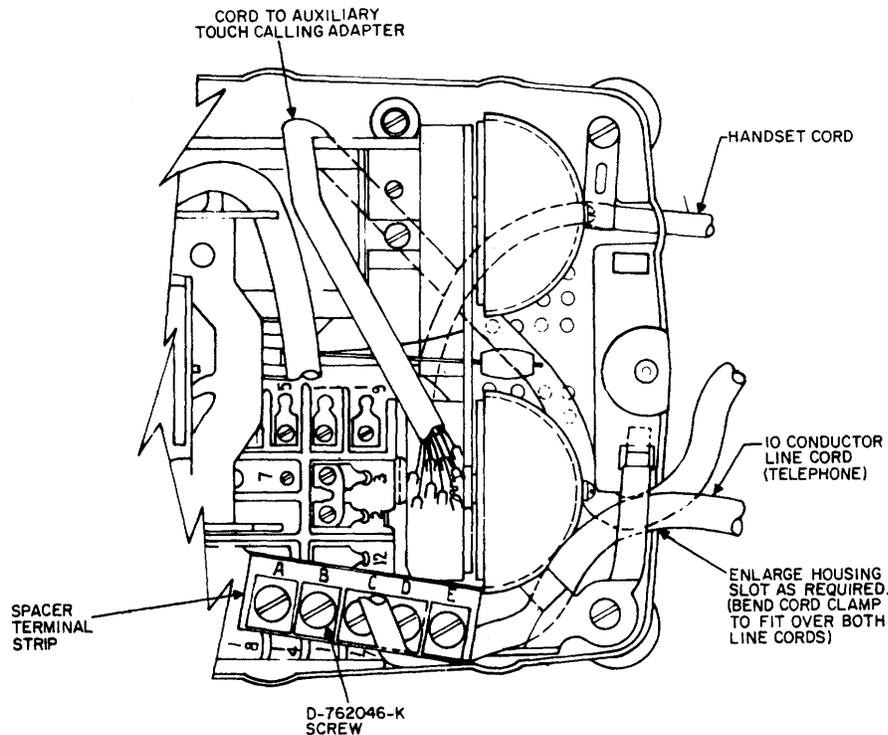


Figure 7. Routing and Securing Cord from Auxiliary Touch Calling Adapter to Type 86 and Type 87 Telephones.

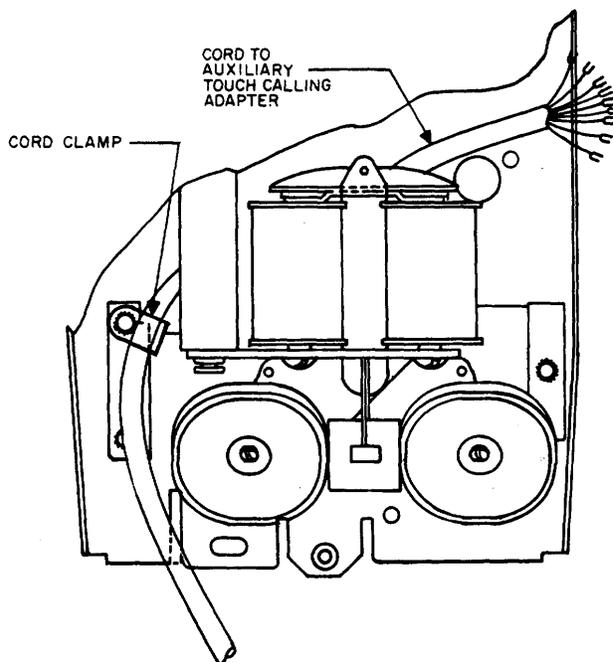


Figure 8. Routing and Securing Cord from Auxiliary Touch Calling Adapter to Type 90M Telephone.

- (a) Route and secure the adapter's cord to a Type 86 telephone as shown in Figure 7.
- (b) Cut off the spacer terminal strip as shown in Figure 16.
- (c) Move the terminal and terminal screw from terminal B to terminal E.
- (d) Drill a hole completely through the B terminal hole with a 9/64-inch drill.
- (e) Remove the terminal screw and BLU dial lead from transmission network terminal 1. Move them to spacer terminal B, and reattach them by inserting the removed terminal screw through spacer terminal hole B and back into terminal hole 1 on the transmission network.
- (f) Refer to Table 1 for internal wiring changes in the telephone and connection information on conductors of the interconnecting cord from the auxiliary Touch Calling adapter.

3.06 To connect the auxiliary Touch Calling adapter to the Type 87 Telephone Set, proceed as follows:

- (a) Route and secure the adapter's cord to the Type 87 telephone as shown in Figure 7.
- (b) Repeat steps (b) through (f) of paragraph 3.05.

3.07 To connect the auxiliary Touch Calling adapter to a Type 95 panel telephone, proceed as follows:

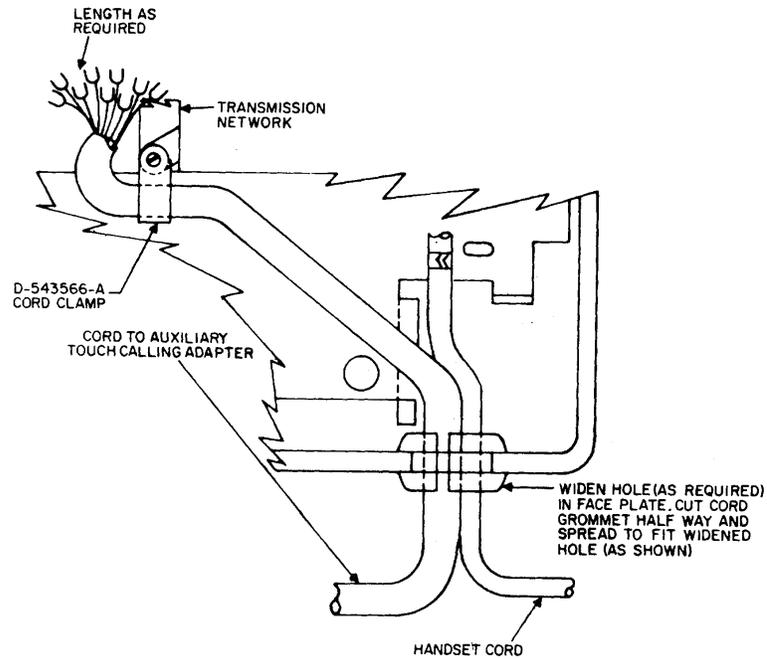


Figure 9. Routing and Securing Cord from Auxiliary Touch Calling Adapter to Type 95 Telephone.

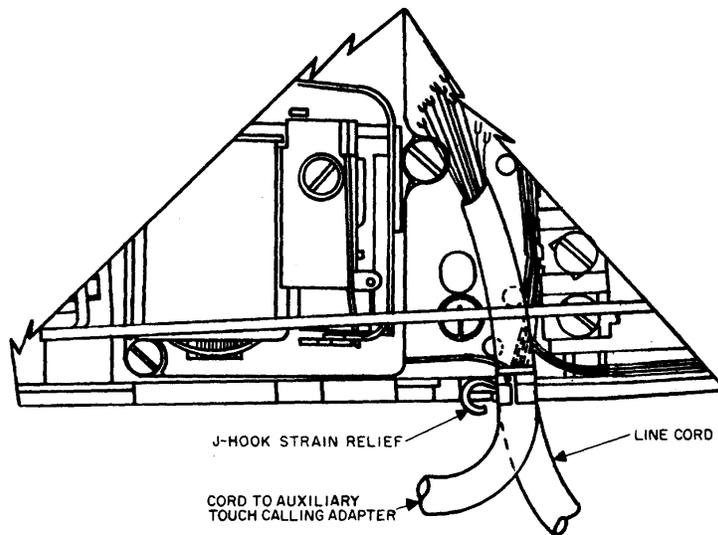


Figure 10. Routing and Securing Cord from Auxiliary Touch Calling Adapter to Type 182A and 192A Telephones.

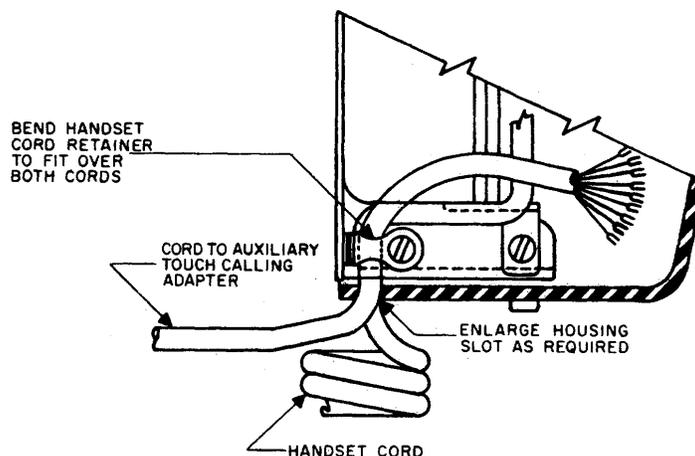


Figure 11. Routing and Securing Cord from Auxiliary Touch Calling Adapter to Type 183 Telephone.

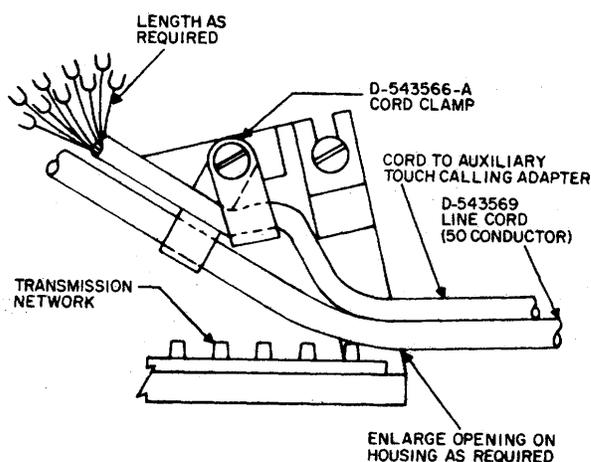


Figure 12. Routing and Securing Cord from Auxiliary Touch Calling Adapter to Type 186 (Desk) Telephone.

- (a) Route and secure the cord to the Type 95 panel telephone as shown in Figure 9.
- (b) Refer to Table 1 for internal wiring changes in the telephone and connection information on the conductors of the interconnecting cord from the auxiliary Touch calling adapter.

3.08 To connect the auxiliary Touch Calling adapter to the Type 182A and 192A telephones, proceed as follows:

- (a) Route and secure the adapter's cord to the Type 182A and 192A Telephone Sets as shown in Figure 10.
- (b) Refer to Table 1 for internal wiring changes in the telephone and connection information on the conductors of the interconnecting cord from the auxiliary Touch Calling adapter.

3.09 To connect the auxiliary Touch Calling adapter to a Type 183 Telephone Set, proceed as follows:

- (a) Route and secure the adapter's cord to the Type 183 telephone as shown in Figure 11.
- (b) Cut off the spacer terminal strip as shown in Figure 16.
- (c) Move the terminal and terminal screw from terminal B to terminal E.
- (d) Drill a hole completely through terminal B with a 9/64-inch drill.
- (e) Insert a suitable screw through the terminal B hole and into terminal hole 10 on the transmission network assembly.
- (f) Refer to Table 1 for internal wiring changes in the telephone and for connection information on conductors of the interconnecting cord from the auxiliary Touch Calling adapter.

3.10 To connect the auxiliary Touch Calling adapter to a Type 186 desk or wall telephone (PPPPsPsPs and HPPPpPsPs), proceed as follows:

- (a) Route and secure the adapter's cord to the Type 186 desk (Figure 12) or wall (Figure 13) Telephone Set.
- (b) Locate the BLU lead that connects terminal 2 of the transmission network to terminal A of the terminal board. Then, move the BLU lead from terminal 2 of the transmission network to terminal 2 of the terminal board for PPPPsPsPs sets, or terminal 6G on HPPPpPsPs sets.
- (c) Refer to Table 1 for internal wiring changes in the telephone and connection information on the conductors of the interconnecting cord from the auxiliary Touch Calling adapter.

3.11 To connect the auxiliary Touch Calling adapter to a Type 187 (desk or wall) Telephone Set, proceed as follows:

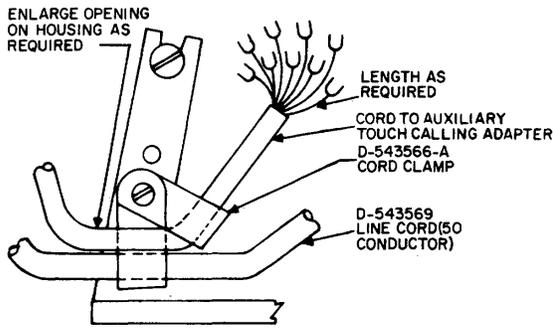


Figure 13. Routing and Securing Cord from Auxiliary Touch Calling Adapter to Type 186 (Wall) Telephone.

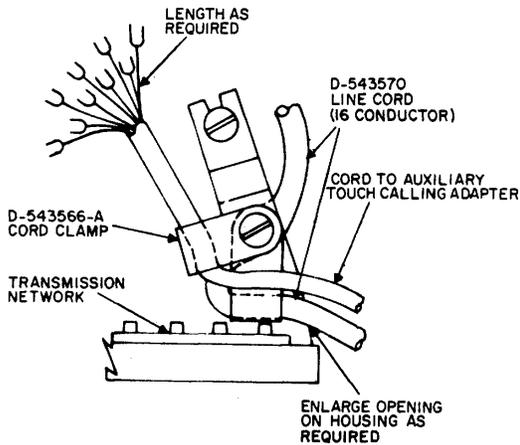


Figure 14. Routing and Securing Cord from Auxiliary Touch Calling Adapter to Type 187 (Desk or Wall) Telephone.

- (a) Route and secure the adapter's cord to a Type 187 desk or wall telephone as shown in Figure 14.
- (b) Refer to Table 1 for internal wiring changes in the telephone and connection information on the conductors of the interconnecting cord from the auxiliary Touch Calling adapter.

3.12 To connect the auxiliary Touch Calling adapter to a Type 860A Telephone Set, proceed as follows:

- (a) Route and secure the adapter's cord to a Type 860A telephone as shown in Figure 15.
- (b) Cut off the spacer terminal strip as shown in Figure 16.
- (c) Move the terminal and terminal screw from terminal B to terminal E.
- (d) Drill a hole completely through the B terminal hole with a 9/64-inch drill.
- (e) Remove the terminal screw and the WHT and YEL-

WHT leads from transmission network terminal 9. Move them to spacer terminal B, and fasten them by inserting the terminal screw through terminal hole B and back into terminal hole 9 on the transmission network.

- (f) Refer to Table 1 for internal wiring changes in the telephone and connection information of the conductors of the interconnection cord from the auxiliary Touch Calling adapter.

3.13 To connect the auxiliary Touch Calling adapter to a Type 860B Telephone Set, proceed as follows:

- (a) Route and secure the adapter's cord to the 860B telephone as shown in Figure 15.
- (b) Refer to Table 1 for internal wiring changes in the telephone and connection information on the conductors of the interconnection cord from the auxiliary Touch Calling adapter.

3.14 To connect the auxiliary Touch Calling adapter to a Type 880B Speakerphone, proceed as follows:

- (a) Route and secure the adapter's cord to a Type 880B speakerphone as shown in Figure 17.
- (b) Refer to Table 2 for internal wiring changes in the telephone and connection information on the conductors of the interconnection cord from the auxiliary Touch calling adapter.

3.15 To connect the auxiliary Touch Calling adapter to a Type 80E Telephone, proceed as follows:

- (a) Route and secure the adapter's cord to a Type 80E telephone as shown in Figure 18.
- (b) Refer to Table 3 for internal wiring changes in the telephone and connection information on the conductors of the interconnection cord from the auxiliary Touch Calling adapter.

3.16 To connect the auxiliary Touch Calling adapter to a Type 85ED Telephone, proceed as follows:

- (a) Route and secure the adapter's cord to a Type 85ED telephone as shown in Figure 19.
- (b) Refer to Table 3 for internal wiring changes in the telephone and connection information on the conductors of the interconnection cord from the auxiliary Touch Calling adapter.

3.17 To connect the auxiliary Touch Calling adapter to a Type 85EB Telephone, proceed as follows:

- (a) Route and secure the adapter's cord to a Type 85EB telephone as shown in Figure 19.
- (b) Refer to Table 3 for internal wiring changes in the telephone and connection information on the conductors of the interconnection cord from the auxiliary Touch Calling adapter.

3.18 To connect the auxiliary Touch Calling adapter to a Type 102A (10- or 20-pushbutton key) Telephone Set, proceed as follows:

- (a) Route and secure the adapter's cord to a Type 102A telephone as shown in Figure 20.

(b) Refer to Table 3 for internal wiring changes in the telephone and connection information on the conductors of the interconnection cord from the auxiliary Touch Calling adapter.

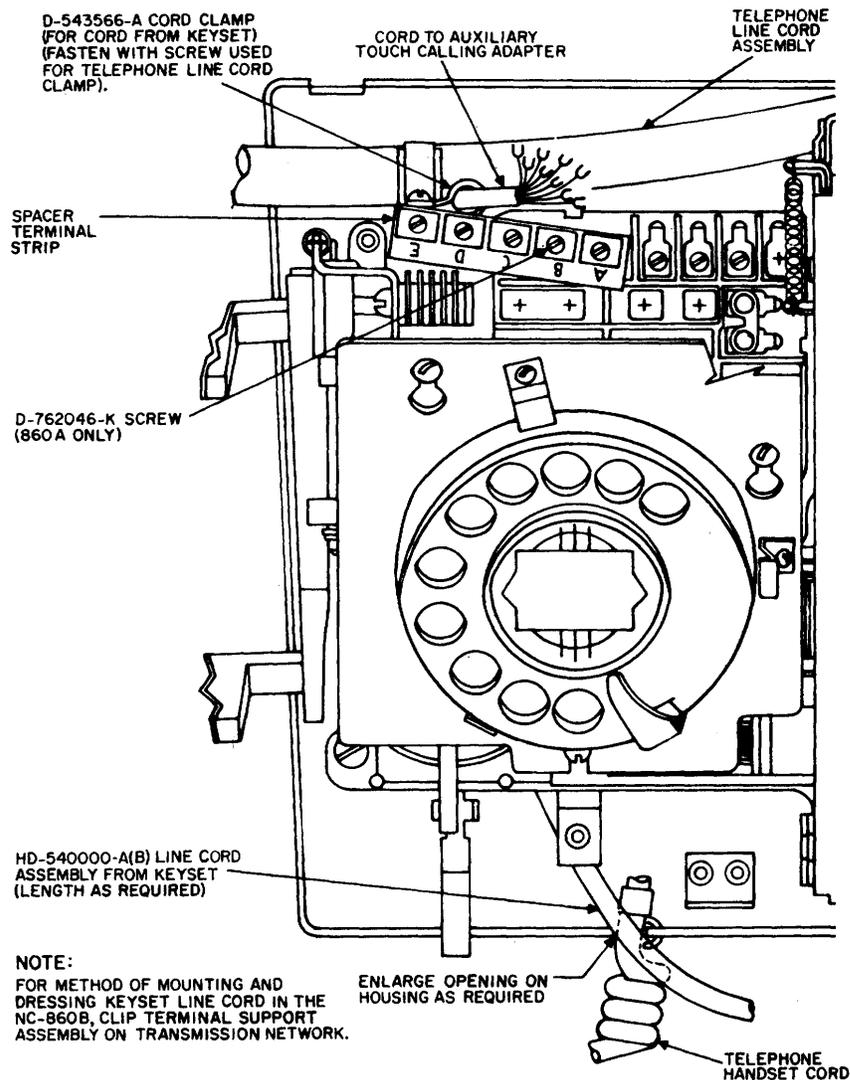


Figure 15. Routing and Securing Cord from Auxiliary Touch Calling Adapter to Type 860A and 860B Telephones.

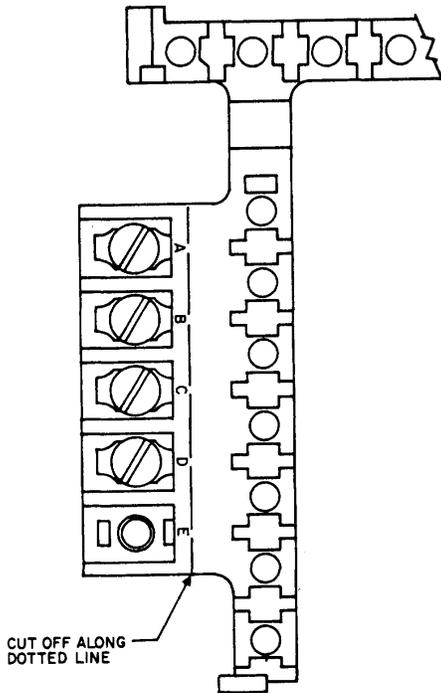


Figure 16. Typical View of Spacer Terminal Strip D-65593-A.

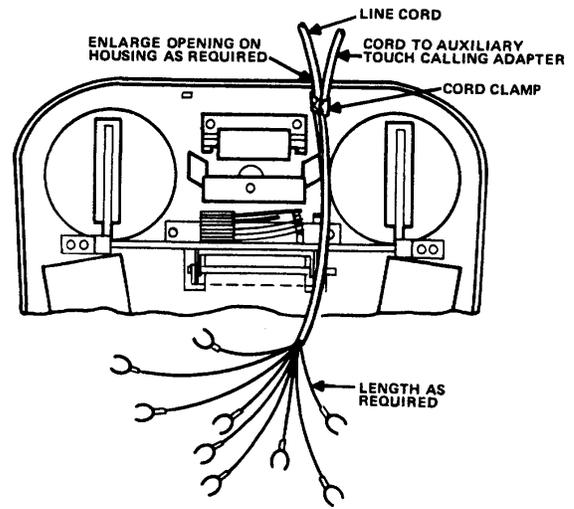


Figure 17. Routing and Securing Cord from Auxiliary Touch Calling Adapter to Type 880B Speakerphone.

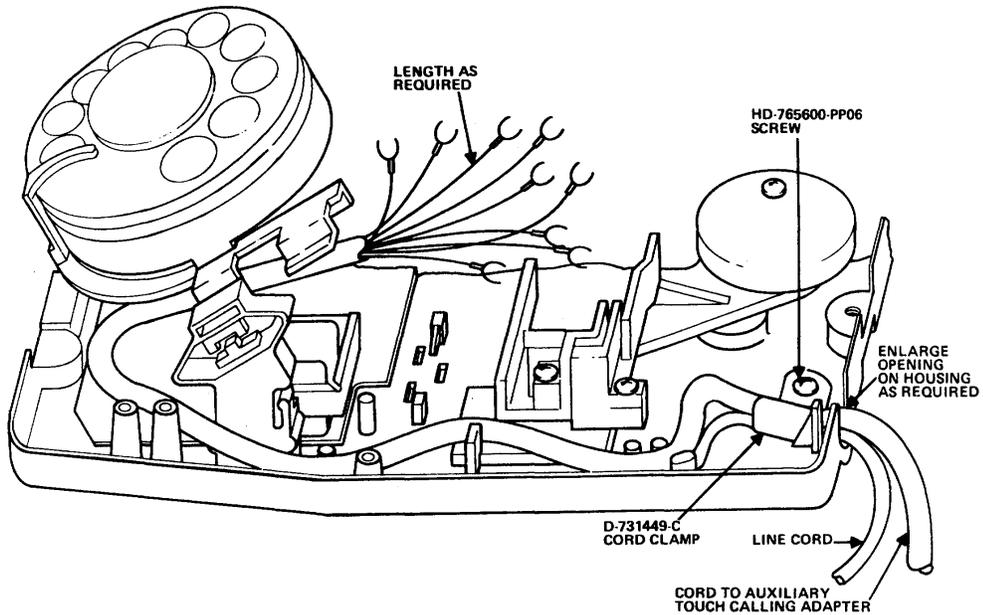
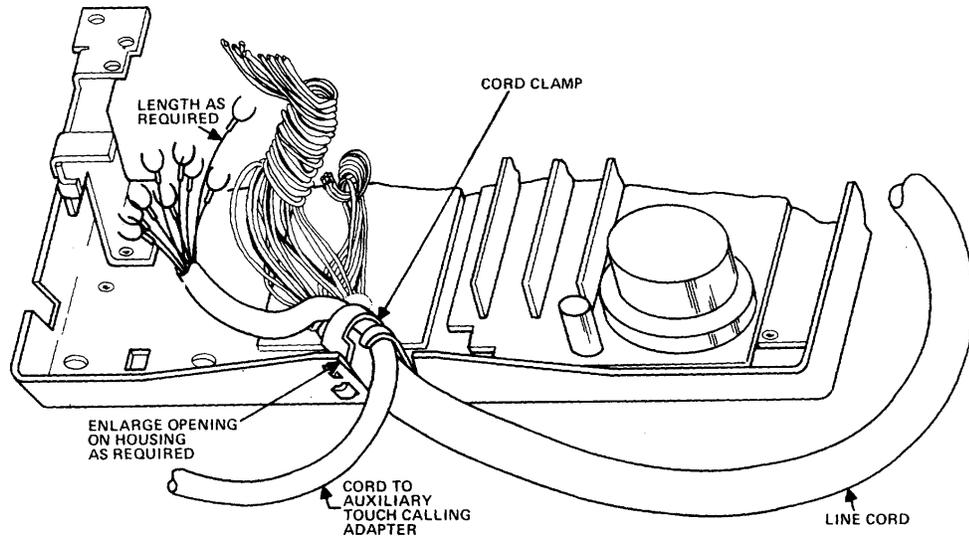
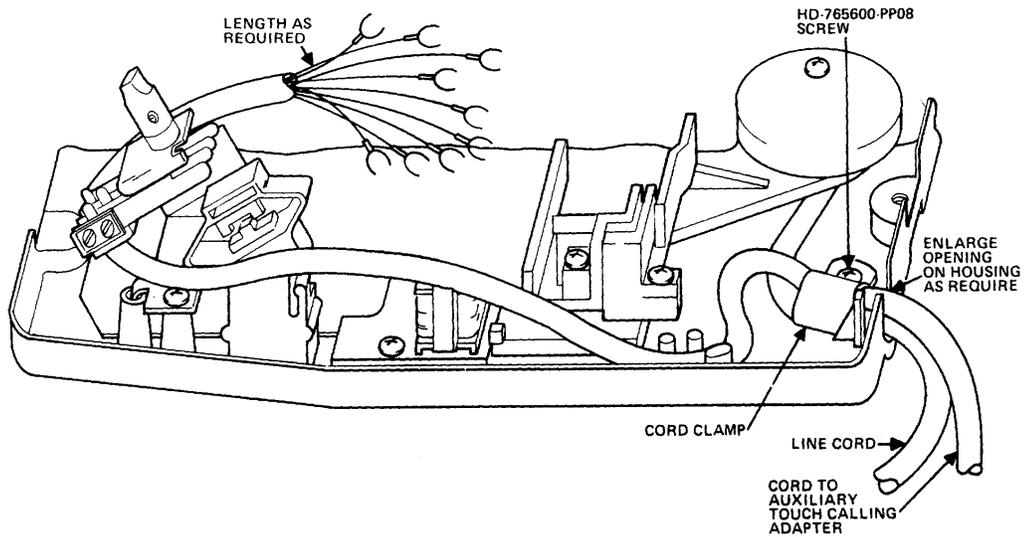


Figure 18. Routing and Securing Cord from Auxiliary Touch Calling Adapter to Type 80E Telephone.



→ Figure 19. Routing and Securing Cord from Auxiliary Touch Calling Adapter to Type 85EB and 85ED Telephones.



→ Figure 20. Routing and Securing Cord from Auxiliary Touch Calling Adapter to Type 102A Telephone.

Table 1. Wiring Changes and Connection Information for Cord Conductors of Auxiliary Touch Calling Adapter.

CONNECTIONS	80 AND 90M	85	86	87	95	182A AND 192A	183	186	187	860A	860B
Move RED Hookswitch Wire From Transmission Net. Terminal To Spacer Terminal	2 C	2 C			11 C	2 Base Terminal C	11 D		11 Transmission Net. Terminal 16		
Move YEL Hookswitch Wire From Transmission Net. Terminal To Spacer Terminal	11 D	11 D	11 D	11 C	2 D	11 Base Terminal D	3 C	11 Terminal Board Terminal 4 (Note 2)		B and Tape	
Remove BRN Strap Wire From Hookswitch	(NOTE 1) (AS REQ)					(NOTE 1) (AS REQ)	(NOTE 1)				
Add BRN Wire Between Hookswitch Spring And Transmission Net. Terminal	(NOTE 1) 2 2	(NOTE 1) 2 2			(NOTE 1) 5 2	(NOTE 1) Operating Spring of "X" pile up 2	(NOTE 1) 5 3				
Move YEL Handset Wire From Transmission Net. Terminal To Spacer Terminal	4 B	4 B	4 E	4 E	4 B	4 Base Terminal B	4 E		Terminal Board Terminal 10 Transmission Net. Terminal 9	4 C	GIT.B.) B
Move GRN Handset Wire From Transmission Net. Terminal To Spacer Terminal	3 (23) A	3 (23) A	3 A	3 A	3 (23) A	3 (23) Base Terminal A	2 A		Terminal Board Terminal 8 Terminal Board Terminal 14	3 A	PIT.B.) A
Remove BRN Strap Wire Between Hookswitch Spring And Hookswitch Spring		(NOTE 1) 2 5			(NOTE 1) 4 5						
Remove BLU Hookswitch Wire From Terminal Strip Terminal And			A Tape								
Move GRN Hookswitch Wire From Transmission Net. Terminal To Spacer Terminal				2 D							
Remove BLK Ringer Wire From Base Terminal And						D Tape					
Remove BLU Terminal Block Wire From Base Terminal And						A Tape					
Remove BLK Terminal Block Wire From Base Terminal And						B Tape					
Remove BLK Wire of Electroluminescent Disc From Base Terminal And						B Tape					
Remove BLK Wire of Electroluminescent Disc From Base Terminal And						C Tape					
Remove YEL Wire Between Transmission Net. Terminal And Terminal Board Terminal								4 7			
Remove GREEN Wire Between Transmission Net. Terminal And Terminal Board Terminal								23 6			
Move RED Wire From Transmission Net. Terminal To Transmission Net. Terminal									2 6		
Move ORANGE Hookswitch Wire From Transmission Net. Terminal To Spacer Terminal										11 D	11 D
Move GREEN Strap From Transmission Net. Terminal To Spacer Terminal											8 C
Connect Touch Calling Pad Cord Lead To Terminal	BRN-BLK Terminal 11 YEL Terminal 4 BRN-GRN Terminal 1 BRN-YEL Spacer Terminal C BRN-RED Spacer Terminal D BLK Spacer Terminal A BLU Terminal 3 (23) WHT Spacer Terminal B RED Terminal 2	Transmission Net. Terminal 11 Transmission Net. Terminal 4 Transmission Net. Terminal 1 Spacer Terminal C Spacer Terminal D Spacer Terminal A Transmission Net. Terminal 2 Spacer Terminal B Transmission Net. Terminal 2	Transmission Net. Terminal 11 Transmission Net. Terminal 4 Spacer Terminal B Terminal Strip Terminal A Spacer Terminal C Spacer Terminal D Spacer Terminal A Transmission Net. Terminal 2 Spacer Terminal B Transmission Net. Terminal 2	Transmission Net. Terminal 11 Transmission Net. Terminal 4 Spacer Terminal B Spacer Terminal A Transmission Net. Terminal 2 Spacer Terminal E Transmission Net. Terminal 2	Transmission Net. Terminal 11 Transmission Net. Terminal 4 Spacer Terminal B Spacer Terminal C Spacer Terminal D Spacer Terminal A Transmission Net. Terminal 2 Spacer Terminal E Transmission Net. Terminal 2	Transmission Net. Terminal 11 Transmission Net. Terminal 4 Transmission Net. Terminal 1 Base Terminal C Base Terminal D Base Terminal A Transmission Net. Terminal 2 Base Terminal B Transmission Net. Terminal 2	Transmission Net. Terminal 11 Transmission Net. Terminal 4 Transmission Net. Terminal 1 Spacer Terminal C Spacer Terminal D Spacer Terminal A Transmission Net. Terminal 2 Transmission Net. Terminal 2 Transmission Net. Terminal 2	Transmission Net. Terminal 11 Transmission Net. Terminal 4 Transmission Net. Terminal 1 Terminal Board Terminal 2 (Note 3) Terminal Board Terminal 4 (Note 2) Terminal Board Terminal 6 Transmission Net. Terminal 6 Transmission Net. Terminal 2 Terminal Board Terminal 7	Transmission Net. Terminal 11 Terminal Board Terminal 10 Transmission Net. Terminal 1 Transmission Net. Terminal 16 Transmission Net. Terminal 6 Transmission Net. Terminal 14 Transmission Net. Terminal 2 Transmission Net. Terminal 9	Transmission Net. Terminal 11 Transmission Net. Terminal 4 Transmission Net. Terminal 1 Transmission Net. Terminal B Spacer Terminal D Spacer Terminal A Transmission Net. Terminal 2 Transmission Net. Terminal 2 Transmission Net. Terminal 2 Transmission Net. Terminal 9	Transmission Net. Terminal 11 Terminal Board Terminal 4 Transmission Net. Terminal 1 Spacer Terminal C Spacer Terminal D Transmission Net. Terminal A Transmission Net. Terminal 2 Transmission Net. Terminal 2 Transmission Net. Terminal C Terminal Board Terminal 2

NOTE 1. Not Required For NC - Series Telephone Set.
2. Terminal BL on HPPPs Ps Ps.
3. Terminal 6G on HPPPsPsPs.

→Table 2. Wiring Connections and Changes for Type 880B Speakerphone.

DESCRIPTION	LEAD COLOR	REMOVE FROM TERMINAL	CONNECT TO TERMINAL
Strapping Bars			RC to ET ER to RT 1 to RR
Rotary Dial	RED WHT ORN BLU YEL	2T 2/3/23 (network) 11 (network) 1 (network) 4 (network) (Note 2)	2 (network) 2T 10 (network) 8 (network) } Note 1
On-Off Switch	GRN WHT PNK VIO	2T 4R 2/3/23 (network)	2/3/23 (network) RO } Note 1 RO }
Hookswitch	PNK	11 (network)	10 (network) (Note 1)
Line Cord	BRN-RED BRN-YEL BRN-BLK BLU	RC } EB } Note 2 CR } RT }	
Amplifier Board	YEL WHT	ET } RC } Note 2	
Transmitter	GRN	3/23 (network)	6 (network) (Note 1)
Receiver	YEL	4 (network)	9 (network)
Resistor Capacitor (D-68875-A) (Note 3)	BRN YEL		10 (network) 8 (network) } (Note 1)
Touch Calling Adapter Cord	BRN-BLK BRN-RED BRN-GRN BRN-YEL WHT YEL RED BLK BLU		1 (network) 8 (network) 1 (network) 2T 4 (network) 9 (network) 2/3/23 (network) 6 (network) (Note 1) RO (Note 1)

- NOTES: 1. If terminal is not available, use a spare terminal or 18050 connector.
2. Tape and store.
3. Required for dial spark suppression.

→ Table 3. Wiring Connections and Changes for Type 80E, 85EB, 85ED, and 102A Telephones.

DESCRIPTION	LEAD COLOR	MOVE FROM TRANSMISSION NETWORK TERMINAL			CONNECT TO TRANSMISSION NETWORK TERMINAL			CONNECT TO TERMINAL BOARD TERMINAL		
		TYPE OF TELEPHONE			TYPE OF TELEPHONE			TYPE OF TELEPHONE		
		80E AND 85ED	85EB	102A	80E AND 85ED	85EB	102A	80E AND 85ED	85EB	102A
Strapping Bars		2 and 3; 7 and 11 (NOTE 1)	2 and 3; 7 and 11 (NOTE 1)							
Rotary Dial	YEL	7	7		11	11				
Handset	YEL	4	4	4	15	Spare term. B NOTE 2				29
	GRN	23	23	23	12	Spare term. C NOTE 2				17
Ground Tip				11						37
Recall Switch	WHT			2						54
Touch Calling	BRN-BLK				11	11	11			
	BRN-RED				7	7				54
	BRN-GRN				1	1	1			
	BRN-YEL				3	3				44
Adapter Cord	WHT				15	Spare term. B				29
	YEL				4	4	4			
	RED				2	2	23			
	BLK				12	Spare term. C				17
	BLU				23	23	2			

NOTES: 1. Tape and Store.

2. If the telephone has no orange-colored exclusion key, add spare terminals B and C (D-150289). If the telephone has an exclusion key, remove the conductor from terminal B, tape the conductor wire, store the conductor wire and add only terminal C.