

GTE AUTOMATIC ELECTRIC
TYPE 860 TELEPHONE SET
SHOP PROCEDURE

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6. ASSEMBLY	11	1.01 This section contains instructions for disassembly, cleaning, parts identification, ordering of replacement parts, assembly, adjustment and lubrication information for the GTE Automatic Electric Type 860A and 860B CALL COMMANDER® Key Telephone Set as shown in Figure 1 and 2. Also included is coding information for identifying a complete telephone set by a coded part number. This code number is affixed to the packing carton and telephone baseplate to identify the enclosed assembly type.
Terminal Board Assembly	11	1.02 This section is being reissued to include shop procedure information on the Type 860A and 860B CALL COMMANDER Key Telephone Sets. This section supersedes Section 997-203-800, Issue 2. Due to extensive changes marginal arrows have been omitted. Remove Issue 2 from the practice binder and file Issue 3 in its place.
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Figure 1. Type 860 Key Telephone Set with Rotary Dial.

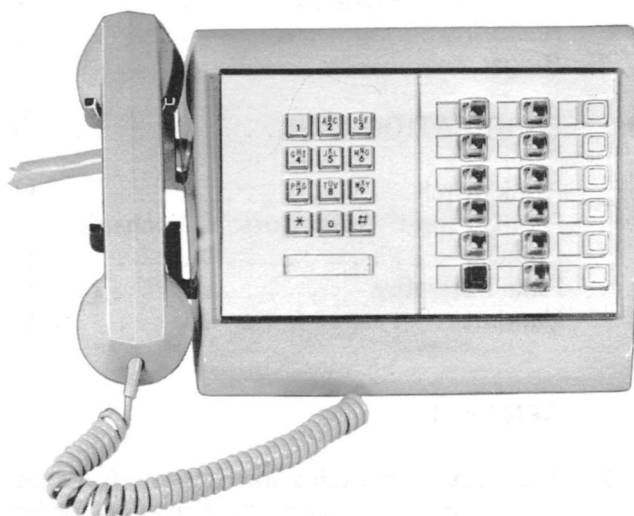


Figure 2. Type 860 Key Telephone Set with Touch Calling Unit.

2. TELEPHONE SET IDENTIFICATION CODE

2.01 The identification code for a Type 860 key telephone set consists of an alphabetical prefix, numerical base and alphabetical suffix arrangement. Each digit or letter associated with the identification code has its own particular meaning. The code interpretation can best be explained in the following example:

- (1) The packing carton or telephone set containing a NC-860100-JRB part number can be interpreted as follows:
 - (a) NC- Type of transmission unit,
 - (b) 860- Type of telephone set,
 - (c) 10- This set is beige,
 - (d) 0- No special services,
 - (e) J- This set has a Touch Calling Unit,
 - (f) RB- This set contains a straight-line ringer and buzzer.
- (2) Refer to Tables 1 and 2 for translation of a coded part number for identification purposes.

3. REPLACEMENT PARTS

3.01 The component parts for the Type 860A and 860B key telephone set are listed in Table 3. Each item number listed is associated with a specific component in Figure 3 or 4. Therefore, choose the desired item number from the table and reference it to the corresponding number on either Figure 3 or 4.

4. DISASSEMBLY

Faceplate Mounting Plate, Faceplate, Faceplate Key, Faceplate Mat and Key Designation Strip

4.01 To remove the faceplate mounting plate, faceplate, faceplate key, faceplate mat and key designation strip proceed as follows:

- (1) Insert a flat surface object under the top left or right-hand corner of the faceplate mounting plate (1). Carefully pry the top section free of the housing (2). Lift the three bottom spring clips of the faceplate mounting plate out of their mounting holes and remove the complete faceplate mounting plate assembly.
- (2) Slide the faceplate key (3) out of the faceplate mounting plate. Remove the

Table 1. NB-860 Coding Information.

BASIC NUMBER	1ST SUFFIX TYPE OF DIAL	2ND & 3RD SUFFIX TYPE OF RINGER	4TH SUFFIX COLOR
NB-860	C (Rotary Dial)	XX (No Ringer)	B (Sand Beige)
		SL (Straight Line)	D (Jade Green)

Table 2. NC-860 Coding Information.

BASIC NUMBER	4TH & 5TH DIGITS COLOR	6TH DIGIT ADDITIONAL SERVICE	1ST SUFFIX TYPE OF DIAL	2ND & 3RD SUFFIX AUDIBLE SIGNAL DEVICE
NC-860	00 (Black)	0 (None)	C (Rotary Dial)	SL (Straight Line Ringer)
	10 (Sand Beige)		J (Touch Calling Unit)	BA (Buzzer)
	12 (Jade Green)			RB (SL Ringer and Buzzer)

dial faceplate (4) or Touch Calling unit faceplate (5) from the left side of the faceplate mounting plate. Slide the faceplate mat (7) out of the enclosed edges of the faceplate mounting plate.

- (3) Remove the key designation strip (8) covering the indicator lamps by loosening one end of the strip and gently peeling it off.

Telephone Number Cover, Card and Dial Fingerwheel

4.02 To remove the telephone number cover (9), card (10), or dial fingerwheel (6) proceed as follows:

- (1) Insert the point of a fingerplate removal tool (578922) in the hole in the right end of the plastic telephone number cover.
- (2) Move the tool to the right just enough to cause the center of the cover and card to bow outward.

- (3) Grasp the center of the cover and card with your fingers, and bow it further until the right end comes clear of the slot.

- (4) Lift the cover and card out of the slot at the left end and remove.

4.03 Removal of the dial fingerwheel (6) can be accomplished by following those procedures outlined in the 473-820 Series of GTE Practices.

Housing

4.04 To remove the housing (2) loosen the two housing lock screws (12) at the rear of the set enough to clear the housing. Elevate the rear of the housing and slide it forward until the two hooks (13) at the front of the housing are free.

Touch Calling Unit

4.05 To remove the Touch Calling unit (14):

- (1) Remove the three mounting screws (15) securing the Touch Calling unit mounting plate (16) to the three

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Table 3. Replacement Parts.

ITEM NO.	DESCRIPTION	PART NUMBER	COLOR			QTY.	SERIES	
			BLACK	SAND BEIGE	JADE GREEN		NB	NC
1	Faceplate Mounting Plate	D-781063-A	A	B	D	1	NA	--
2	Housing	D-490209-				1	--	--
3	Faceplate Key	D-780310-A				1	--	--
4	Faceplate - Dial	D-780809-A				1	--	--
5	Faceplate-Touch Calling Unit	D-781064-A				1	NA	--
6	Dial Fingerwheel	D-780896-A				1	--	--
7	Faceplate Mat: Touch Calling Dial	D-530410-A				1	NA	--
		D-530303-A				1	--	--
8	Key Designation Strip	D-530304-A				1	--	--
9	Telephone Number Cover-Touch Calling	D-530394-A				1	NA	--
10	Telephone Number Card-Touch Calling	D-530386-A				1	NA	--
11	Screw	D-760900-A				4	--	--
12	Housing Lock Screws	D-760865-A				2	--	--
13	Hooks	D-62142-A				2	--	--
14	Touch Calling Unit (12 Button - ABC)	D-840000-AR				1	NA	--
15	Screws-Touch Calling Unit	D-762046-A				6	NA	--
16	Mounting Plate-Touch Calling	D-781067-A				1	NA	--
17	Dial and Bracket Assembly	D-84934-A				1	--	NA
		D-84999-A				1	NA	--
18	Bracket	D-731757-A				1	--	--
19	Screws	5-40x1/4"RHIMS				3	--	NA
20	Bracket Assembly	D-732248-A				1	--	--
21	Dial Screws	D-760730-A				3	--	--
22	Dial Assembly	D-84821-J				1	--	--
23	Keyset	D-59307-A				1	--	--
24	Keyset with Hold/Key	D-59306-A				1	--	--
25	Keyset Blank	D-63544-A				1	--	--
26	Blocking Ring Bushing	D-750008-A				2	--	--
27	Captive Screws	D-760862-A				6	--	--
28	Key Frame Assembly	D-30227-A				1	--	--
29	Transmission Unit: Touch Calling Dial	WA-1155-A				1	NA	--
		WA-1154-A				1	NA	--
30	Capacitor - 0.47 uF	D-68837-A				1	NA	--
31	Transmission Unit Mounting Screws	D-76733-A				2	NA	--
32	Mounting Bracket	D-732246-A				2	NA	--
33	Terminal Bracket Screws	6-40x3/16"RHIMS				7	--	NA
34	Screw	D-760864-A				3	--	--

Table 3. Replacement Parts (continued).

ITEM NO.	DESCRIPTION	PART NUMBER	COLOR			QTY.	SERIES	
			BLACK	SAND BEIGE	JADE GREEN		NB	NC
35	Screw	D-760863-A				3	--	--
36	Latch Assembly	D-58079-A				3	--	--
37	Shakeproof Washer	D-17389-A				3	--	--
38	Latch Lock	D-58080-A				1	--	--
39	Yoke Latch	D-67639-A				1	--	--
40	Screw	D-762948-B				5	NA	--
41	Screw	D-761074-A				2	NA	--
42	Maintenance Hook	D-62141-A				1	--	--
43	Baseplate	D-780808-A D-781066-A				1 1	-- NA	NA --
44	Line Cord & Plug Assembly	D-543308-A D-543636-	A	B	*	1 1	-- NA	NA --
45	Screw	4-40x1/4"RHIMS				1	--	NA
46	Screw	D-760732-A				1	NA	--
47	Flat Washer	D-1725-A				1	NA	--
48	Cord Clamp	D-543291-A D-731449-K				1 1	-- NA	NA --
49	Ringer	D-56580-A				1	--	--
50	Shoulder Screws (Ringer)	D-760866-A				3	--	--
51	Buzzer	FD-1068-AF				1	NA	--
52	Screw	D-760858-A				2	NA	--
53	Handset Assembly	L-9047	C0	C1	C3	1	--	--
54	Terminal Board Assembly	D-150399-A				1	NA	--
55	Screw	D-762046-C				5	NA	--
56	Terminal Link	D-61079-A				1	--	NA
57	Coil Spring - Yoke	D-109885-A				1	--	--
58	Retaining Ring	D-65571-C				1	--	--
59	Bearing Pin	D-37692-A				1	--	--
60	Cradle Hook Assembly	D-62144-A				1	--	--
61	Coil Spring	D-109895				1	--	--
62	Cork Pad (Baseplate)	D-67640-A HD-670004-A				1 1	-- NA	NA --
63	Cord Support Spacer	D-65573-A				1	NA	--
64	Indicator Lamp	D-94085-A				12	--	--

NOTES:

NA - Not Applicable

* - Not available in Jade Green; select Sand Beige.

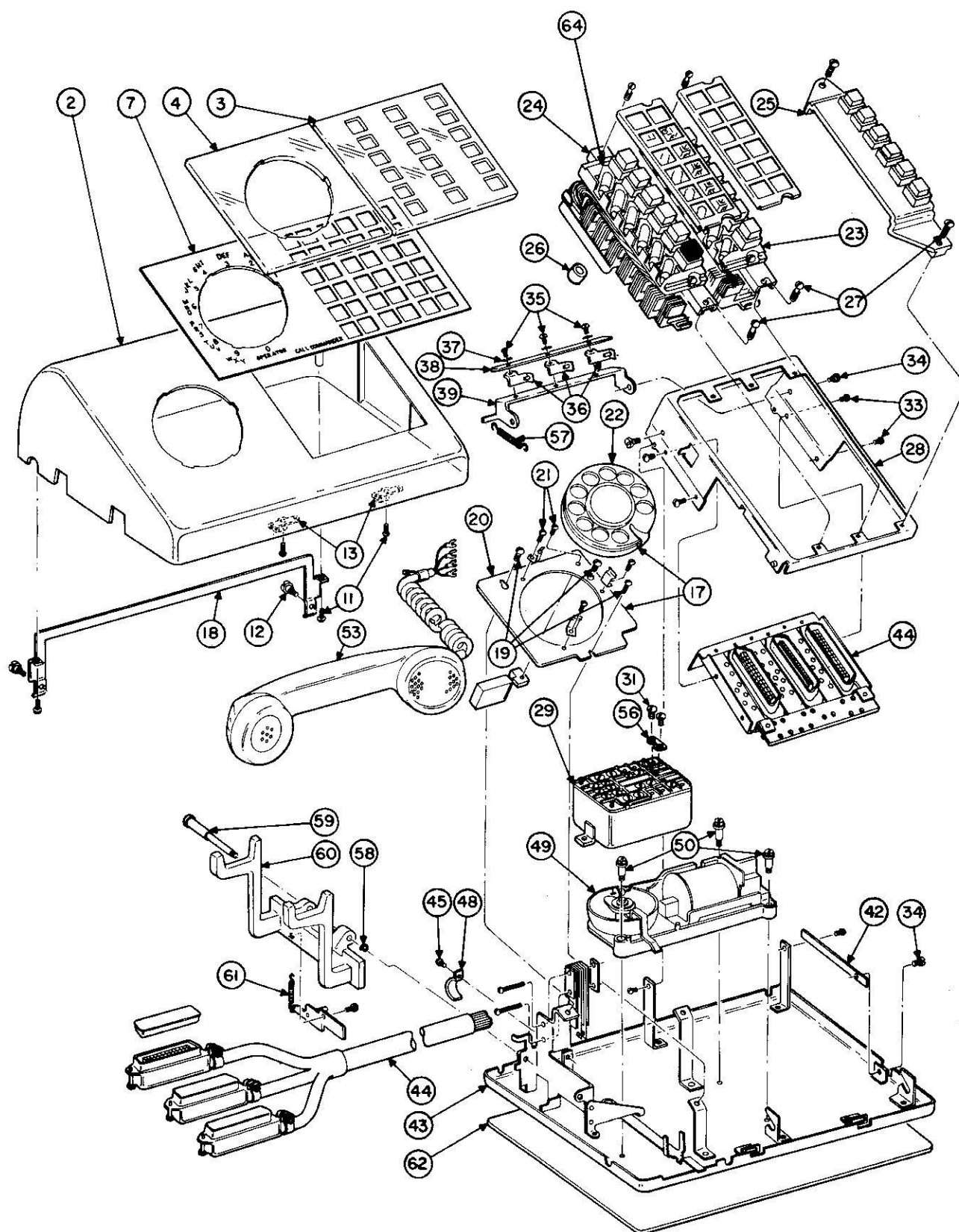


Figure 3. Type 860A CALL COMMANDER (NB-Series).

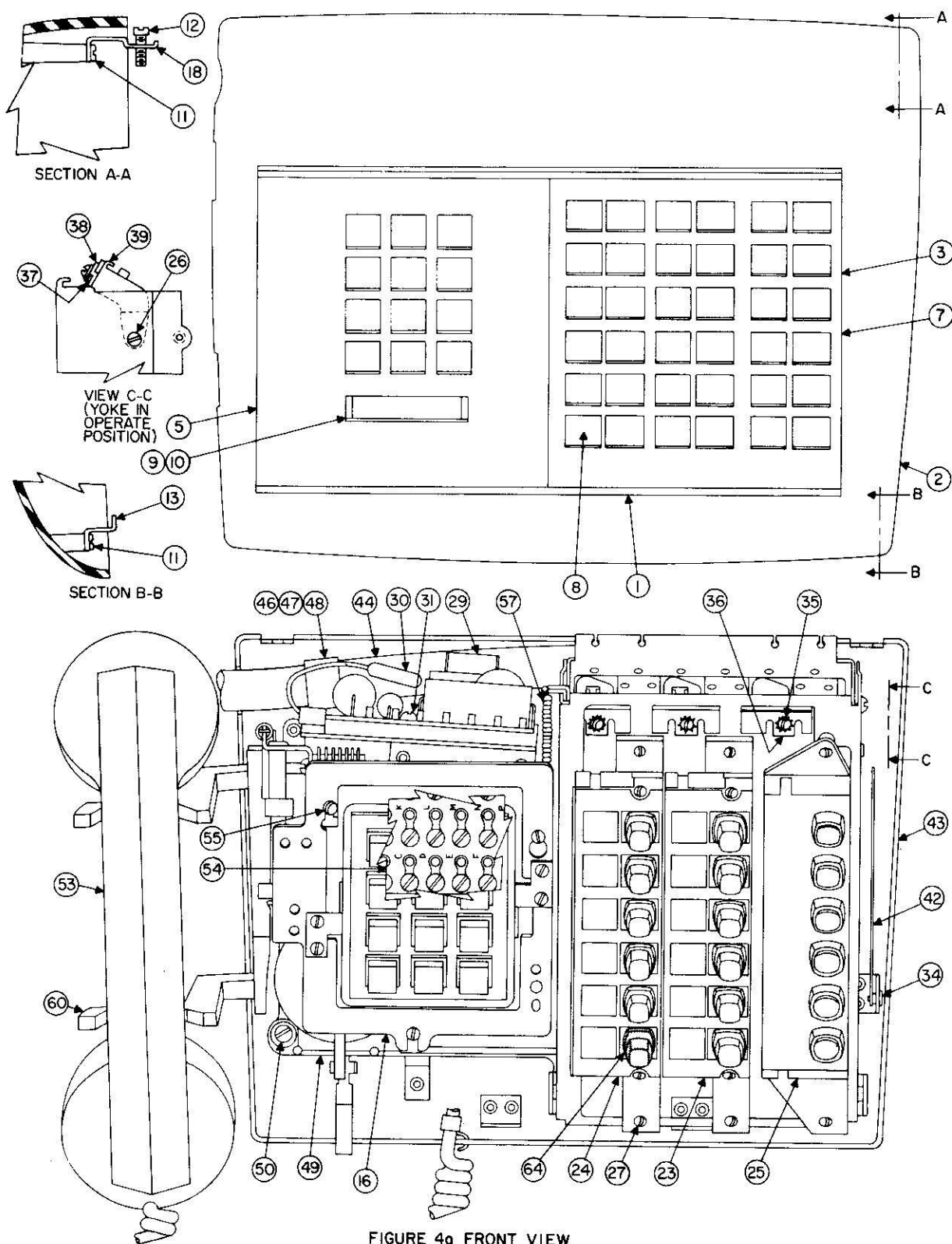


Figure 4. Type 860B CALL COMMANDER (NC-Series).

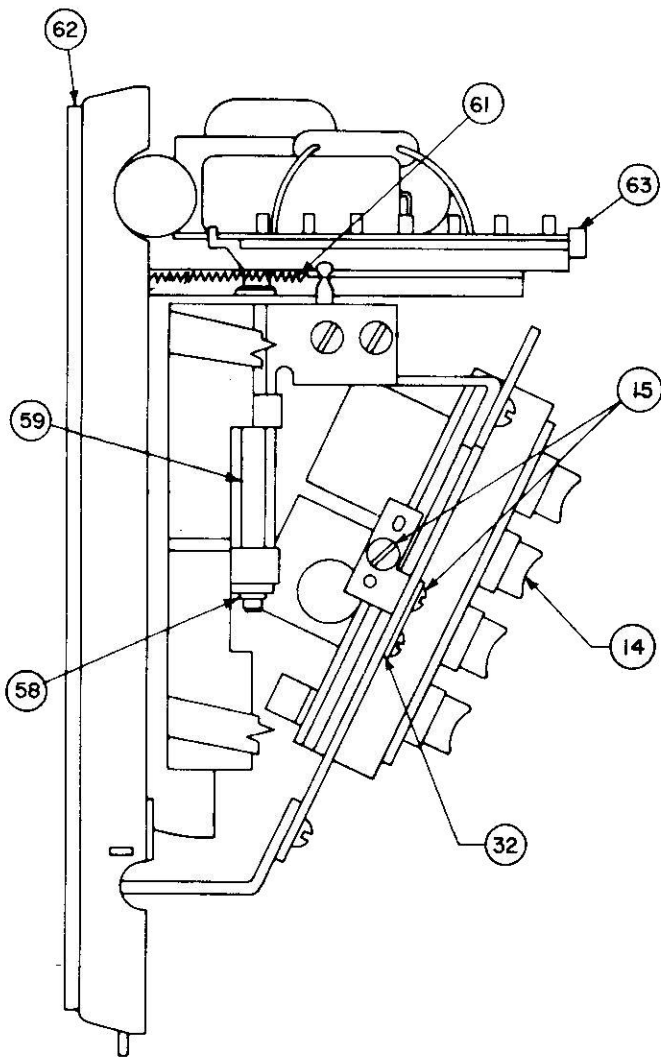


FIGURE 4b. LEFT SIDE VIEW.

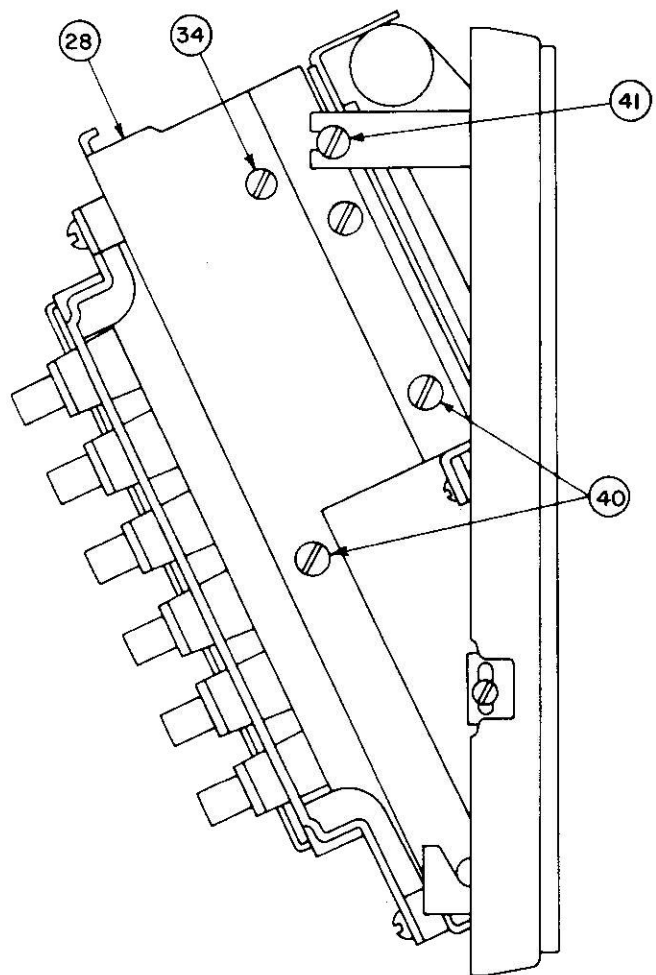


FIGURE 4d. RIGHT SIDE VIEW.

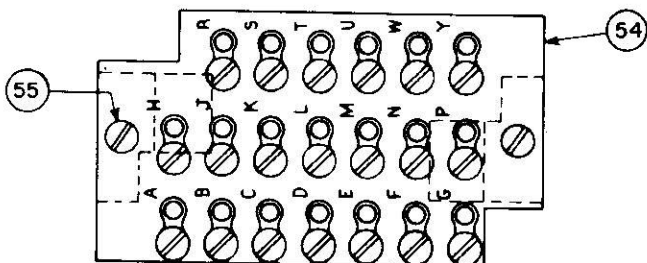


FIGURE 4c. TERMINAL BOARD ASSEMBLY.

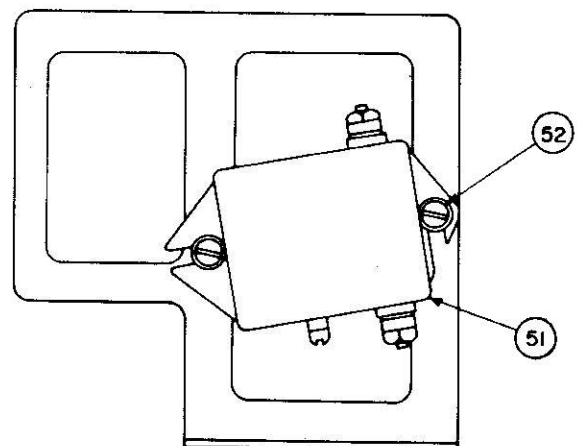


FIGURE 4e. AUXILIARY BUZZER MOUNTING.

Figure 4. Type 860B CALL COMMANDER (NC-Series).

mounting posts. Lift the mounting plate upward and remove.

- (2) Disconnect all the Touch Calling unit leads from the terminal board and transmission unit.
- (3) Remove the two mounting screws (15) from the two L-shaped flanges located on each side of the Touch Calling unit.
- (4) Lift the Touch Calling unit up and out of the mounting plate.

Dial and Bracket Assembly

4.06 To remove the dial and bracket assembly (17) proceed as follows:

- (1) Loosen the three screws (19) securing the dial and bracket assembly. Lift the bracket assembly (20) free of each screw.
- (2) Disconnect all dial leads from the transmission unit.
- (3) Invert the dial and bracket assembly and remove the three screws (21) from the bracket assembly (20) to remove dial assembly (22).

Indicator Lamp

4.07 To remove the indicator lamp (64), lift the light shield free of the keyset. With a thin-blade screwdriver, turn the lamp until the flat portion of the wedge-shape 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 or any convenient pointed instrument.

Keyset and Blank Keyset

4.08 To remove the keyset (23) and blank keyset (25):

- (1) Loosen the captive screws (27) from the top and bottom flanges of the

keyset blank and lift the key blank free of the key frame assembly (28).

- (2) Loosen the captive screws (27) on the top and bottom flange of the keyset (23, 24). Lift the bottom, then top protruding flange of the keyset ladder assembly upward enough to free the attached connector covers. Slide the keyset toward the rear of key frame assembly and lift the keyset out of the key frame assembly.

Transmission Unit

4.09 To remove the transmission unit (29) proceed as follows:

- (1) Disconnect all leads from the transmission unit.
- (2) Bend the leads of the epoxy end-filled capacitor (30) to the right to prevent interference with the removal of the transmission unit mounting screw (31).
- (3) Remove the transmission unit mounting screws and washers from the center and lower left corner of the transmission unit.

Key Frame Assembly

4.10 To remove the key frame assembly (28):

- (1) Remove the two terminal bracket screws (33) from each side of the key frame assembly.
- (2) Loosen the screws (34) located at the extreme rear of the key frame assembly enough to allow the complete key frame assembly to be elevated.
- (3) Raise the rear of the key frame assembly (28) upward, then lift the front end out of the hinged slots, in which it rests.

Line Cord and Plug Assembly

4.11 To remove the line cord and plug assembly (44) proceed as follows:

- (1) Disconnect all leads extending from the line cord and plug assembly to the terminal board assembly and transmission unit.
- (2) Remove the screw (45, 46), washer (47) and cord clamp (48) securing the line cord to the baseplate (Figure 5).
- (3) Lift the line cord and plug assembly up and out of the baseplate.

Ringer and Buzzer

4.12 To remove the ringer assembly (49), remove the three ringer shoulder screws (50) from each corner of the ringer base, and lift the ringer assembly out of the baseplate.

4.13 Remove the buzzer (51) (if equipped) from the front of the transmission unit mounting bracket (Figure 4e) by removing the two buzzer mounting screws (52).

Handset Assembly

4.14 To remove the handset assembly (53) proceed as follows:

- (1) Disconnect all handset assembly leads from the terminal board assembly.

- (2) Unhook the strain relief clamp from the left front section of the baseplate.

NOTE: For disassembly and assembly of the handset refer to the 473-802-300 section of the GTE Practices.

Terminal Board Assembly

4.15 For removal of the terminal board assembly (54) disconnect the remaining leads from the terminal board assembly terminals and remove the two screws (55) from each end of the terminal board assembly (Figure 4c).

5. **CLEANING AND INSPECTION**

Housing, Handset, Faceplate and Faceplate Keys

5.01 To clean the telephone set housing, handset, faceplate and faceplate keys, wash them in a mild solution of non-abrasive soap and water. Inspect all exterior plastic components for cracks or other defects. Discard and replace any found to be defective.

Interior Components

5.02 Wipe all the interior components of the telephone set clean. Use extreme care to

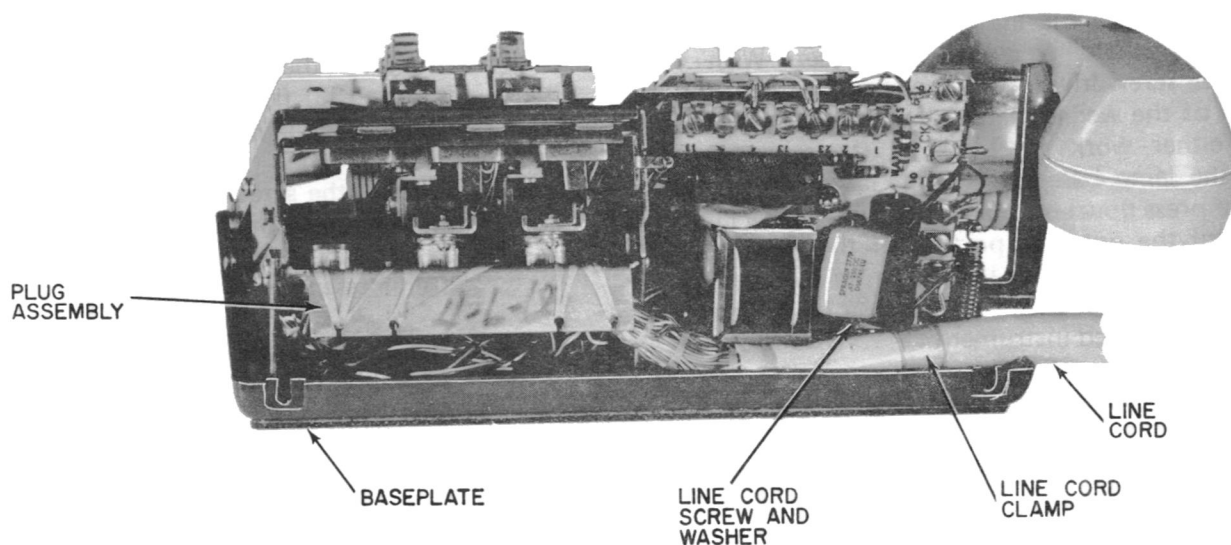


Figure 5. Type 860 Key Telephone Set, Rear View.

prevent breaking or otherwise damaging any components. Use a 1-inch wide, flat, non-metallic brush to remove accumulated dust or other foreign matter from the components. Check all solder joints and terminals for proper connections. Check for frayed or poorly insulated leads and replace as necessary. Compressed air in the range of 40 PSI maybe used to expell dust and accumulated foreign matter.

6. ASSEMBLY

Terminal Board Assembly

6.01 To install the terminal board assembly (54) proceed as follows:

- (1) Mount the terminal board assembly onto the small mounting studs in front of the transmission unit mounting bracket.
- (2) Insert and fasten the two terminal board assembly mounting screws (55).
- (3) Connect the hookswitch pile-up leads to the terminal board assembly terminals as follows:
 - (a) BLK - Terminal J.
 - (b) RED - Terminal E.
 - (c) BRN - Terminal K.

Handset Assembly

6.02 To install the handset assembly (53) proceed as follows:

- (1) Route the handset cord through the U-shaped opening in the front, left section of the baseplate (43) to the right of the ringer lever volume regulator.
- (2) Hook and secure the strain relief clamp into the small rectangular slot next to the U-shaped opening.
- (3) Connect the handset cord leads to the terminal board assembly terminals as follows:

- (a) RED - Terminal N.
- (b) BLK - Terminal F.
- (c) GRN - Terminal P.
- (d) YEL - Terminal G.

Ringer and Buzzer

6.03 To install the ringer (49):

- (1) Place the ringer in a horizontal position in front of the terminal board assembly (54). Route the two ringer leads under the ringer base and toward the transmission unit (29).
- (2) Align the ringer over the three mounting stubs on the baseplate. Insert and fasten the three ringer mounting screws (50).

6.04 To install the buzzer (51):

- (1) Mount the buzzer on the front of the transmission unit mounting bracket (Figure 4e). Using the two round head steel machine screws (52) fasten the buzzer to the mounting bracket.
- (2) Locate the insulated and stored leads from the mounting cord group identified by a red binder. Separate the YEL-SL and SL-YEL leads from this group (Figure 6, 7, and 8). Remove the insulator from their spade tips, and connect these leads to the buzzer.

Line Cord and Plug Assembly

6.05 To install the line cord and plug assembly (44) proceed as follows:

- (1) Route the line cord through the U-shaped opening at the left rear portion of the baseplate (43) behind the cradle hook assembly (60) (Figure 5).
- (2) Allow enough cord slack to permit the plug assembly to rest comfortably on the floor of the baseplate.

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- (3) Position the plug assembly into the upper right hand corner of the base-plate inside of the key frame assembly.
- (4) Insert the cord clamp mounting screw (45, 46) and washer (47) into the cord clamp (48) and fasten firmly.
- (5) Connect the plug assembly leads to the terminal board assembly terminals as follows:
 - (a) BRN-YEL - Terminal H.
 - (b) RED-BLK - Terminal J.
 - (c) BRN - Terminal K.
 - (d) RED - Terminal E.

Key Frame Assembly

6.06 To install the key frame assembly (28) proceed as follows:

- (1) Place the extension rod at the lower left hand outside corner of the key frame assembly into its associated mounting hinge staked to the base-plate. Slip the other extension rod into its mounting hinge. Carefully lower the key frame assembly until the two rear mounting screws (34) rest in their mounting post slots.
- (2) Align the mounting holes on the side flanges of the plug assembly parallel to the mounting holes on the side flanges of the key frame assembly. Insert and fasten the four terminal bracket screws (33).
- (3) Fasten the two screws (34) located at the extreme rear of the key frame assembly.

Indicator Lamp

6.07 To install the indicator lamps, insert the lamp into the two wire clips inside the openings on the key set. Press the glass portion of the lamp (not the base) firmly into the wire clips.

Place the light shield over the keyset keys and lamp opening, then push downward until it is secure.

Transmission Unit

6.08 To install the transmission unit (29):

- (1) Mount the transmission unit onto the transmission unit mounting bracket. Install and secure the two transmission unit mounting screws (31).
- (2) Make lead connections to the transmission unit terminals as follows:
 - (a) YEL (Hookswitch Pile-up) - Terminal 8.
 - (b) GRN (Hookswitch Pile-up) - Terminal 13.
 - (c) YEL (Hookswitch Pile-up) - Terminal 2.
 - (d) ORN (Hookswitch Pile-up) - Terminal 11.
 - (e) SL (Hookswitch Pile-up) - Terminal 6.
 - (f) RED-BLK (Ringer) - Terminal 16.
 - (g) RED (Ringer) - Terminal 15.
 - (h) SL-YEL (Plug Assembly) - Terminal 15.
 - (i) YEL-SL (Plug Assembly) - Terminal 9.
 - (j) GRN (Plug Assembly) - Terminal 8.
 - (k) BLK (Terminal Board Assembly) - Terminal 32.
 - (l) GRN (Terminal Board Assembly) - Terminal 32.
 - (m) YEL (Terminal Board Assembly) - Terminal 4.
 - (n) RED (Terminal Board Assembly) - Terminal 5.

Keyset and Blank Keyset

6.09 To install the keyset (23, 24) and blank keyset (25) proceed as follows:

- (1) Place the keyset inside the key frame assembly (28). Slide the extended metal end of the keyset mounting bar under the chaining switch contacts. Position the bar to the left and directly under the protruding mounting tab of the low portion of the key frame assembly.
- (2) Lift the keyset in an upward direction enough to permit the keyset plug-in connector cover to fit into the plug assembly mating cover. Press down on the upper portion of the keyset to secure the plug-in connector covers.
- (3) Fasten the two keyset mounting screws (27) at each end of the mounting bar.
- (4) Mount the keyset blank (25) (if equipped) at the extreme right of the key frame assembly opposite the other two keysets and secure.
- (5) If a third keyset is equipped follow those procedures in Paragraph 6.09 (1 and 2).

Dial and Mounting Bracket

6.10 To install the dial and bracket assembly (17) proceed as follows:

- (1) Position the dial assembly (22) over the cavity on front of the bracket assembly (20). Insert the three dial mounting screws (21) from the rear of the mounting bracket and fasten.
- (2) Connect the dial leads to the transmission unit terminals as follows:
 - (a) BLU - Terminal 1.
 - (b) WHT - Terminal 2.
 - (c) RED - Terminal 4.
 - (d) YEL - Terminal 11.

- (3) Place the dial and mounting bracket over the three screws (19) of the mounting posts and fasten.

Touch Calling Unit

6.11 To install the Touch Calling unit (14) proceed as follows:

- (1) Place the Touch Calling unit inside the rectangular cavity on the front of the mounting plate (16).
- (2) Align the holes on the L-shaped flanges of the Touch Calling unit parallel to the holes on the mounting plate.
- (3) Insert the two mounting screws (15) through the holes on each flange and fasten.
- (4) Connect the Touch Calling unit leads as follows:
 - (a) RED - Terminal board terminal D.
 - (b) PINK - Terminal board terminal P.
 - (c) SL - Terminal board terminal G.
 - (d) BRN - Transmission unit terminal 8.
 - (e) GRN - Transmission unit terminal 2.
 - (f) BLU - Transmission unit terminal 13.
- (5) Mount the Touch Calling unit and mounting plate over the three mounting posts bordering the ringer and terminal board assembly. Insert and fasten the three mounting screws (15).

Housing

6.12 Attach the hooks (13) under the housing (2) into the two brackets located inside the front rim of the baseplate. Carefully guide the housing over the cradle hook assembly (60), line

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cord (44) and transmission unit (29) until the two housing lock screws rest in their mounting slots at the rear corners of the baseplate (43).

Telephone Number Cover, Card and Dial
Fingerwheel

6.13 To install the telephone card (10) and cover (9):

- (a) Pass the ends of the card through the slits at the ends of the telephone number card slot.
- (b) Align the card so that the printed telephone number is centered in the telephone number card slot.
- (c) Insert the un-pierced end of the cover into the left end of the telephone number card slot.
- (d) Bow the cover outward, and insert the pierced end into the right end of the telephone number card slot.
- (e) Release the cover and allow it to snap into place over the telephone number card slot.

6.14 For installation of the dial fingerwheel (6) refer to the appropriate section in the 473-820 Series of the GTE Practices.

Mounting Plate, Faceplate, Faceplate Key,
Faceplate Mat and Key Designation Strip

6.15 To install the faceplate mounting plate, faceplate key, faceplate mat and key designation strip proceed as follows:

- (1) To install the key designation strip (8):
 - (a) Peel the protective covering from the adhesive backing of the key designation strip.
 - (b) Place the key designation strip face up on the light shield over the indicator lamps. Press it firmly into place.

- (2) Slide the faceplate mat (7) into the faceplate mounting plate (1). Insert the dial faceplate (4) or Touch Calling unit faceplate (5) into the left side of the faceplate mounting plate. Slide the faceplate key (3) into the right side of the faceplate mounting plate.

- (3) Position the three spring clips molded to the lower edges of the mounting plate into their corresponding holes in the housing (2). Align the cavities on the faceplate frame assembly over the keyset keys and dial (22) or Touch Calling unit (14). Push downward on the faceplate frame assembly until it snaps and fastens.

7. **ADJUSTMENT SPECIFICATIONS**

Touch Calling Unit

7.01 For adjustment procedures pertaining to the Touch Calling unit (D-840000-AR) used in the Type 860 key telephone set refer to the 997-306 Series of the GTE Practices.

Dial

7.02 Adjustment procedures for adjusting the dial of a Type 860 key telephone set are contained in the 997-300 Series of the GTE Practices.

Line Pick-Up Assembly

7.03 Before performing any adjustment function on the line pick-up assembly, hold key or hookswitch assembly observe the following adjustment requirements:

- (1) Make sure that twin combinations of a spring combination make or break within .002 inch of each other as gauged visually.
- (2) Make sure that the bar contacts are positioned so that the full width of a contact will project within the length of a contact on the mating spring at any point during the spring travel.
- (3) Make certain that all gauging and spring follow requirements are

"gauged visually" unless otherwise specified.

Line Pick-Up Button

7.04 To adjust the line pick-up button proceed as follows:

- (1) Adjust the tips of the formed lever springs to allow a 1/16 inch minimum to 5/64 inch maximum separation between the tips.
- (2) Position the lever springs such that with the plunger touching the first lever spring of the two make combinations a clearance of perceptible to .005 inch exist between the plunger and the formed lever spring of the single make combination.
- (3) Adjust the buffer spring of the two make combinations for a minimum of .010 inch when the tension of the first lever spring is removed from it.
- (4) Check and insure that a .015 inch minimum make contact separation exists in the non-operated position.
- (5) Check and insure that a minimum follow of .010 inch exists in the make spring when the button is fully depressed (operated position).
- (6) Adjust the make combinations of the two make pile-up to close within .005 inch of each other and close before the single make has closed.

Hold Button

7.05 The adjustment procedures for the hold button are as follows:

- (1) Check and insure that a minimum 1/32 inch, maximum 3/64 inch separation exists between the formed lever springs as measured at the tip of the make-before break combination lever spring. At this point the springs should be equal distant from the center line of the plunger, in the non-operated position.

- (2) Adjust the first lever spring of the break-make combination to a minimum of .010 inch when the tension of the buffer spring is removed.
- (3) Adjust the break spring of the break-make to follow a minimum .005 inch when the tension of the associated lever spring is removed.
- (4) Check and insure that a minimum .015 inch make separation exists between the lever spring and make spring of the break-make combination.
- (5) Check and insure that there is a .015 inch gap between the formed lever spring and make-break spring of the make-before-break combination.
- (6) When the supporting tension of the break spring is removed the make-break spring should be deflected to a minimum .040 inch, as measured at the make contact.
- (7) With the plunger fully operated adjust to a minimum 3/64 inch follow between the make and make-break spring.
- (8) With the plunger fully operated adjust to a minimum .010 inch break contact clearance.

Chaining Switch

7.06 To adjust the chaining switch proceed as follows:

- (1) Adjust to minimum perceptible, maximum .005 inch clearance between the first buffer and the actuating lever.
- (2) Adjust to minimum .015 inch break spring follow when the tension of the associated lever spring is removed.
- (3) With a line button fully depressed adjust to provide a minimum .025 inch contact separation.

Chaining Switch Sequence

7.07 To adjust the chaining switch sequence proceed as follows:

- (1) With any pick-up button fully depressed the make contacts of any other pick-up button shall not make until the make contacts of the depressed pick-up button have opened, while being retarded.
- (2) Do not release the pick-up button until the hold button is fully depressed and partially released.

Hookswitch Assembly

7.08 The adjustment procedures covering the hookswitch assembly includes adjustment information on the hookswitch springs, hookswitch sequence and restoring spring.

Hookswitch Springs

7.09 To adjust the hookswitch springs proceed as follows:

- (1) Adjust twin contacts of a spring combination to make or break within .002 inch of each other.
- (2) Position the actuating lever spring against the spring mounting surface.
- (3) Adjust break spring to follow minimum .015 inch when the tension of its lever spring is removed.
- (4) Adjust the make spring to follow minimum .015 inch when the tension of its lever spring is removed.
- (5) With the hookswitch in the talk position, adjust the buffer springs as follows:
 - (a) Single break combination to follow minimum .007 inch when the tension of the buffer spring of the outside break combination is removed from it.

- (b) Break-make combination to follow minimum .007 inch when the tension of the buffer spring of the single make combination is removed from it.

- (6) With the hookswitch in the talk position adjust to provide a maximum 3/64 inch clearance between the actuating lever spring and the first buffer spring.
- (7) With the hookswitch in either the ring or talk position adjust to provide clearance of .010 inch minimum between springs not designated to make contact.
- (8) Adjust the make contacts to open before breaks close, and the breaks to close before makes open.

Hookswitch Sequence

7.10 To adjust the hookswitch sequence proceed as follows:

- (1) Adjust the contact separation of the single make combination to a minimum .008 inch, maximum .015 inch with the hookswitch in the talk position.
- (2) At the time the single contact closes make sure all break contacts are closed.
- (3) Adjust to provide a minimum .005 inch contact separation of the single break combination as the break combination of the break-make combination opens.
- (4) When the hookswitch is operated from the talk position adjust the contact springs to operate as follows:
 - (a) Single make closes.
 - (b) Single break opens.
 - (c) Break of break-make opens.
 - (d) Make of break-make closes.

- (5) If the sequence specified in Paragraph 7.10 (4) is not obtained readjust per Paragraph 7.10 (1-3).

Restoring Spring

7.11 Adjust the restoring spring so that in the talk position the hookswitch will rest firmly against its stop. However, when the minimum weight handset is placed on the hookswitch, the hookswitch should operate the spring fully and rest firmly against its ring position stop.

Ringer

7.12 For adjustment information covering the ringer (Type 860) used in the Type 860 key telephone set refer to the 997-308 Series of the GTE Practices.

8. **LUBRICATION**

8.01 To insure proper lubrication the word "dip" will be used in the proceeding paragraphs as a guide. To obtain one dip of lubricant, dip a No. 4 Artist's Sable Rigger brush into the lubricant about 3/16 inches, then wipe the brush gently against the side of the container to remove the drop which forms at the end of the bristles.

Hookswitch

8.02 Apply one "dip" of lubricant (Specification 5920) around the hookswitch bearing pin on each end where it passes through the frame.

Pick-Up and Hold Button Mechanical Linkage

8.03 Lubricate the pick-up and hold button and all line interconnect and pick-up hold levers as follows:

- (1) Apply one "dip" of lubricant (Specification 5920) to each surface of slide bars which contacts die cast frame, release segments and lower plate.
- (2) Apply one "dip" of lubricant (Specification 5920) to the pawl pin guide in the pawl assembly (hold button).
- (3) Apply one "dip" of lubricant (Specification 5920) to the portions of the release segments which contact the plunger screw head.
- (4) Apply one "dip" of lubricant (Specification 5920) to each of the two (2) pivot screws for the yoke latch on the frame.

NOTE: All excessive lubricant must be removed. Remove dirt and gummy lubricant prior to re-lubricating. These steps are necessary to prevent excessive binds and possible contact contamination.

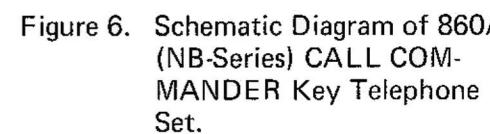
Final Assembly

8.04 Apply one "dip" of lubricant (Specification 5920) to each latch pin at the point of contact with the associated slide bar.

Handset

8.05 For lubrication of the handset (L-9047) apply three drops of switch lubricant Specification 5231 to the threads of the receiver and transmitter cap.

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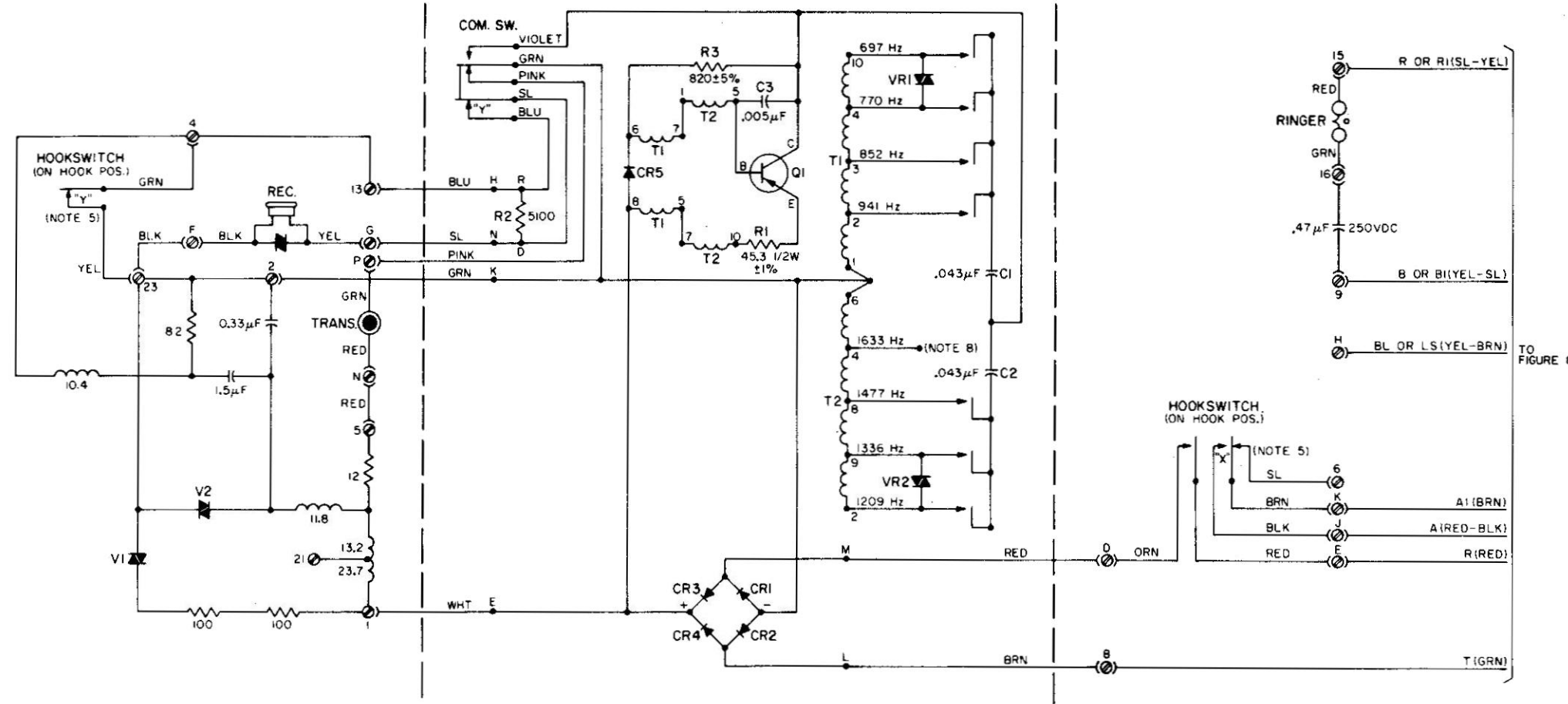


(A)

SCHEMATIC & WIRING DIAGRAM OF TOUCH CALLING CALL COMMANDER

SELF-COMPENSATING TELEPHONE CIRCUIT

TOUCH CALLING UNIT
(NOTE 7)



NOTES:

1-ALL A1,A2 & A3 COMMON ON THEIR RESPECTIVE
TERMINAL STRIP BLOCKS.

2-##- INDICATES LEADS ARE CUT AND INSULATED.

3-**-INDICATES LEADS ARE TAPED AND STORED.

4-AUTOMATIC ELECTRIC COMPANY TYPE 10A,10A1,10A2
& 16A KEY TELEPHONE UNITS, EQUIVALENT TO
WESTERN ELECTRIC COMPANY TYPE 1A,1A1,1A2 & 6A
KEY TELEPHONE UNITS.

5-"X" CONTACTS OPERATE FIRST.
"Y" CONTACTS OPERATE LAST.

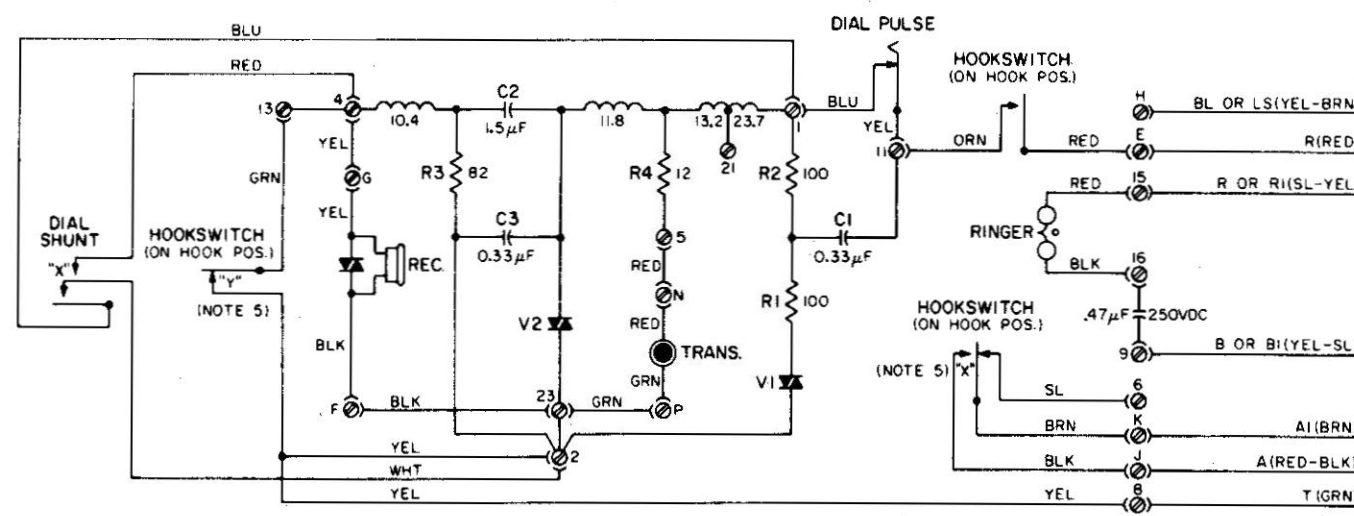
6- IN A AND B:
SCREW TERMINALS "A" THRU "Y" ARE LOCATED ON
TERMINAL BOARD MOUNTED ON BASE UNDER THE DIAL
OR TOUCH CALLING UNIT.
SCREW TERMINALS WITH NUMERICAL DESIGNATIONS ARE
LOCATED ON CARD ASSEMBLY.

7-ON TOUCH CALLING UNIT, DIODES CR1-CR5 ARE FD-1029-OF; TRANSISTOR Q1 IS FD-1029-BG; AND VARISTORS VR1 & VR2 ARE FD-1029-GH.

8-1633 Hz HAS NO CONNECTION.

(B)

SCHEMATIC & WIRING DIAGRAM OF ROTARY DIAL CALL COMMANDER
SELF-COMPENSATING TELEPHONE CIRCUIT



AA

(FOR REF. ONLY)
METHOD OF PROVIDING STATION BUSY LAMP FEATURE
AT MONITORED AND MONITORING STATION

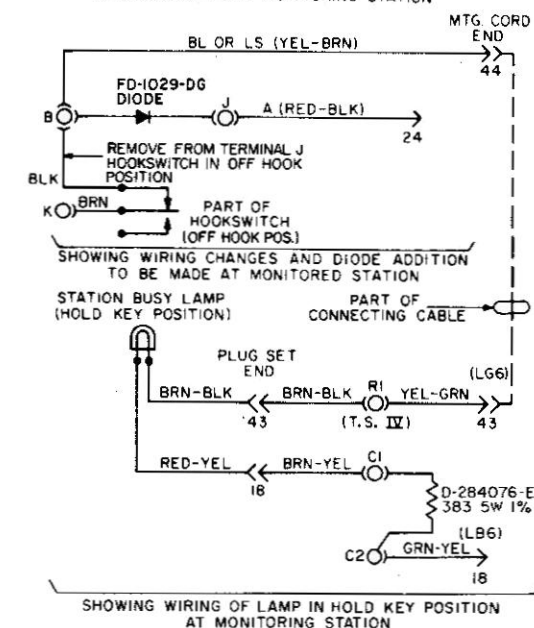


Figure 7. Schematic and Wiring Diagram of Type 860B (NC-Series) CALL COMMANDER Key Telephone Set Equipped with Rotary Dial and Touch Calling Unit.

LEAD	CONNECTION
ORN-RED ORN-GRN ORN-BLU ORN	REMAIN STORED
ORN-BLK BRN-YEL	TO SAME UNUSED TERMINA
ORN-WHT BRN-BLK	TO SAME UNUSED TERMINA
SL-BRN	TO TERMINAL A1 OF T.S.I

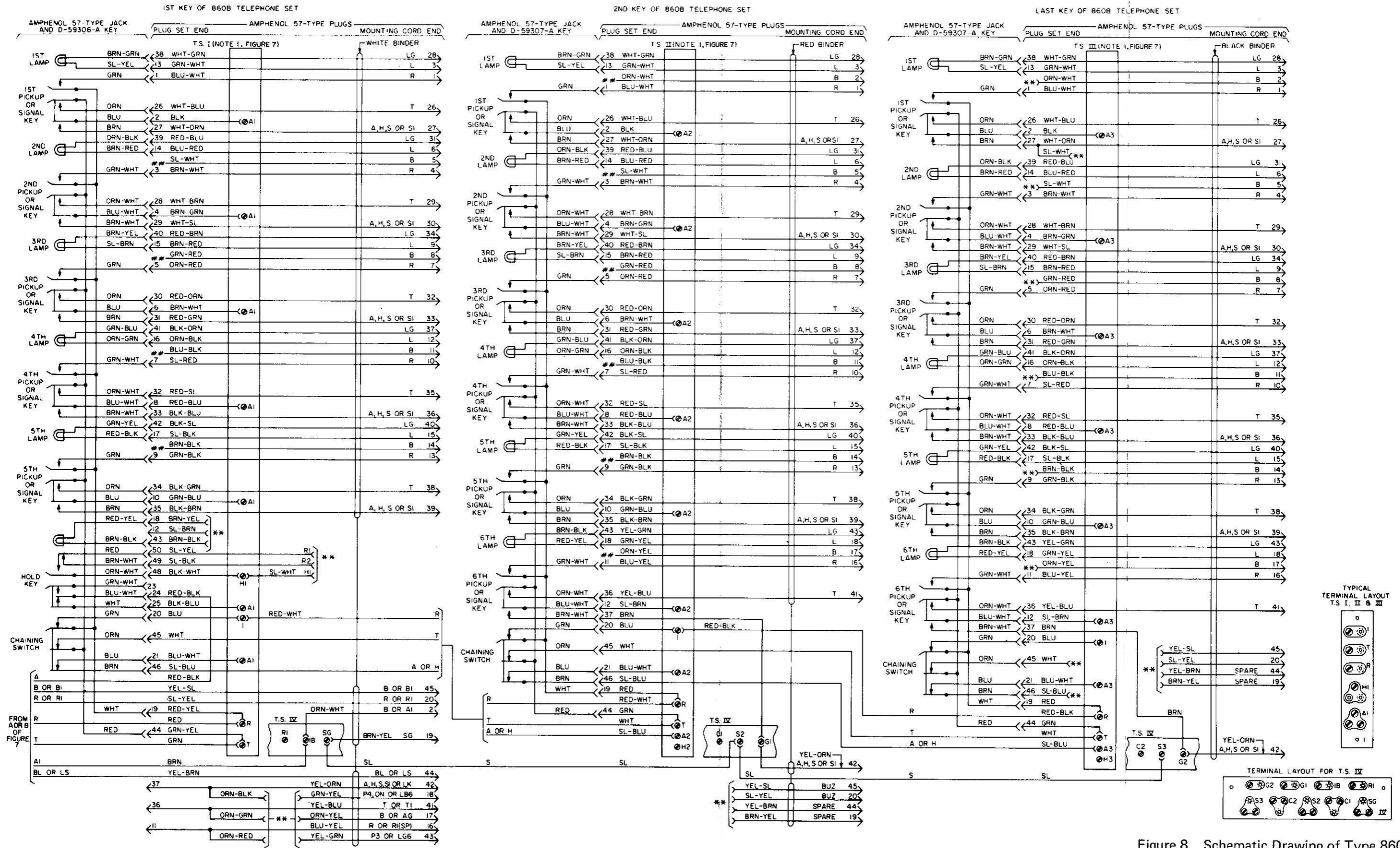


Figure 8. Schematic Drawing of Type 860B (NC Series)
CALL COMMANDER Key Strip Only.

GTE AUTOMATIC ELECTRIC
TYPE 860 TELEPHONE SET
SHOP PROCEDURES

1. GENERAL

1.01 This addendum is issued to make corrections to Table 3 and paragraph 7.04 in Issue 3 of this section.

1.02 In ink or red pencil, make the changes indicated in part 2 of this addendum. Write "See Addendum" in the margin next to changes. File this addendum in the binder directly in front of the section.

2. CHANGES

2.01 In Table 3, item 44, change the part number from D-543636 to D-543636-S and delete A, B, and *(asterisk) from the color columns.

2.02 In Table 3, item 64, change the part number from D-94085-A to HD-940003-A.

2.03 Change paragraph 7.04(1) to read as follows:

- (1) Adjust the tips of the formed lever springs to allow a 0.068-inch minimum to 0.084-inch maximum separation between the tips.