

Type 85 Telephone 470-914

TYPE 85 TELEPHONE



Technical
bulletin 470-914

AUTOMATIC ELECTRIC

Subsidiary of

GENERAL TELEPHONE & ELECTRONICS



GENERAL

The Type 85 telephone is a self contained desk set that provides the transmission quality, features, and design of the Type 80 telephone. A combination push-turn key and an optional exclusion key provide a variety of special services and special features.

Physical Description

The Type 85 telephone weighs approximately 6-1/4 pounds and measures 9" long, 4-3/4" high, and 5" wide. There are four rubber cushions located on the baseplate (one at each corner), that protect the desk or table top from scratches. The Type 85 telephone is available in five colors (Sand Beige, Dawn Gray, Jade Green, Turquoise, and Gardenia White) and Black. The line cord and retractile handset cord are colored to match the telephone. Either a standard metropolitan dial or a plain numbered dial may be specified. All dials have clear plastic finger plates. (A dial blank, in the colors listed above, may be substituted by the installer, if desired.)

TYPE 85 TELEPHONE

1. FEATURES

There are three Type 85 telephones: Type 85A, Type 85B, and Type 85C (figure 1); they differ in the number and combination of services extended to the customer. The following services or combinations of service are provided by one or more of the three Type 85 telephones.

- a. Exclusion of one or more extensions from the line.
- b. Two-line pickup - permits access to two lines from the same desk set.
- c. Ringer cutoff - for locations requiring uninterrupted quiet.
- d. Single line extension cutoff with ringer transfer - allows switching calls and/or ringing to and from an extension telephone.
- e. Headset control - permits secretarial monitoring of conversations at discretion of telephone user.
- f. External signal control - provides switching to include an outside signaling device.
- g. Exclusion with line shorting - for maximum privacy; provides shorting out all extensions and prevents line tapping from these lines.

The initial design of the Type 85 telephone included a manually-adjusted rheostat which regulates the conductor-loop resistance, thus controlling the quality of transmission. Later Type 85 telephones use a self-compensating transmission unit which automatically reduces sidetone and balances the impedance characteristics of the line. The following paragraphs describing the three Type 85 telephones apply to both the self-compensating and manually-adjusted versions. Paragraphs 2, and 3, cover installation and maintenance for the self-compensating Type 85 telephones and paragraphs 4, and 5, cover installation and maintenance for the manually-adjusted Type 85 telephones.

1.1 The Type 85A telephone is factory wired for two-line pickup and is equipped with a combined push-turn key located below and to the left of the dial (figure 1). The locking "turn" feature permits the subscriber to answer or originate a call on either of the two

lines. The nonlocking "push" feature is used to operate an external signaling device. The Type 85A telephone is equipped with one ringer, which is wired across line one. Should a second ringer be required for line two, any standard ringer box can be installed.

With minor wiring changes described in Table A and shown in figures 19 and 20, the combined push-turn key may provide the following additional features for the Type 85A telephone:

- a. Single-line ringer cutoff. This feature is designed for use in an extension telephone in a location requiring silence. By turning the push-turn key, the user can cut off the ringer, but leave the line open for use.
- b. Single-line extension cutoff with ringer transfer. With this wiring option, the turn key on the parent telephone is used to connect an extension telephone and its ringer to the line of the parent telephone, and simultaneously disconnect the ringer of the parent telephone. When the key is turned back to reconnect the ringer of the parent telephone, the extension is cut off.
- c. Single-line extension cutoff. The turn key may be used to connect and disconnect an extension telephone.
- d. External signal control. The turn key may be wired to allow the user to connect an external signal (lamp, buzzer, etc.) in parallel with the ringer in the telephone. Restoring the key cuts off the external signal.
- e. Headset control. The turn key can be used to connect a secretary's headset to the line to allow her to take notes on a telephone conversation.
- f. Exclusion of extension with line shorting. The turn key feature may be wired to permit exclusion of all extensions, and also shorts out the extension lines to assure complete privacy.

1.2 The Type 85B telephone is supplied with an exclusion key (figure 1) located near the handset. The exclusion key is used for extension exclusion and is composed of one red push button, and one chrome push button. The user excludes all extensions from the line by pushing the chrome button and may restore the exten-

sions to the line during the same conversation by pressing the red button. Also, the chrome button is automatically restored when the handset is replaced, returning all extensions to the line.

Optional wiring described in Table B and shown in figures 21 and 22 is used to convert the Type 85B telephone to provide two-line pickup. The chrome button is used to gain access to line two. Replacing the handset automatically restores the circuit to line one. Extension exclusion is not possible when two-line pickup is used.

1.3 The Type 85C telephone is factory wired to provide two-line pickup and extension exclusion. It is equipped with both the combined push-turn key and the exclusion key (figure 1). The "turn" feature of the push-turn key gives the subscriber access to either of two lines. The "push" feature enables him to signal his secretary by means of a lamp or a buzzer. The exclusion key, located near the handset, provides exclusion of all extensions on one line.

The exclusion key of the Type 85C telephone may be converted to provide a holding feature on line 1. This conversion must be made in the field. Instructions for making this conversion follow:

- Remove the BRN lead from springs A2 and B3 of the exclusion key.
- Transfer the ORN lead from spring B3 to spring A2.
- Add a radio type resistor (470 ohms, 1 watt Ohmite type, or A.E.Co. D-284081-A9) to springs B3 and A2.



Figure 1. Type 85 Telephone.

- Transfer the BLU lead from terminal strip B, terminal 10 to terminal 2, and the ORN lead from terminal strip B, terminal 9 to terminal 1.

Figure 2 shows the wiring of the exclusion key after conversion to the holding feature. Upon conversion to holding feature the exclusion feature is disabled.

Schematic and wiring diagrams for the self-compensating and manually-adjusted Type 85C telephones are shown in figures 23 and 24, respectively.

2. INSTALLATION (Self-Compensating Type 85 Telephone)

2.1 Line polarity is important at divided ringing party line stations, and in SATT exchanges. Connection information, including the schematics presented throughout these instructions, assume that the interior wires between the protector (or P-B-X switchboard, etc.) and the telephone location in the subscriber's premises have their polarities identified by these standard tracers:

Red	-	negative (ring)
Green	-	positive (tip)
Yellow	-	ground

2.2 After the location of the telephone has been determined, mount the line cord terminal block where it is not conspicuous, and at the same time allow ample line cord length.

2.3 Self-compensating Type 85A and Type 85B telephones are supplied with one 10-terminal, terminal block. Figure 3 illustrates the standard connections at the terminal block for the line cord wires and interior wires.

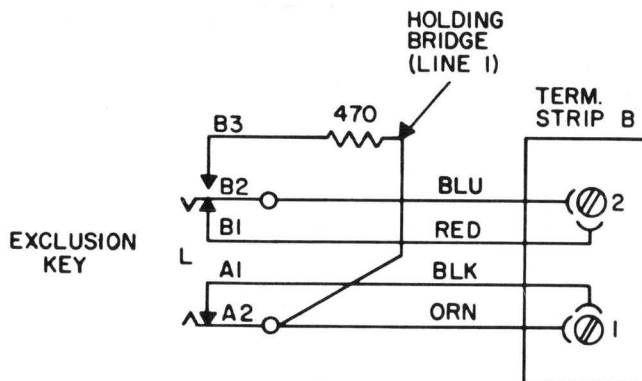


Figure 2. Exclusion Key of Type 85C Telephone converted to provide holding feature.

TABLE A. SERVICE VARIATIONS FOR TYPE 85A TELEPHONES

FEATURES	LINE CORD CONNECTIONS TERMINAL STRIP "B"								SET WIRING TERMINAL STRIP "B"				
	TO LINE 1		TO LINE 2		TO EXT. STA. OR EXT. RINGER OR HEADSET		TO SIG. CKT.		RINGER LEADS		TURN KEY LEADS		
	RED	GRN	YEL	BLK	YEL	BLK	BLU	WHT	BLK	RED	BLU **	BLU ***	ORN
TWO LINE PICKUP	1	2	3	4			7	8	1	2	15	10	8
SINGLE LINE RINGER CUTOFF (RINGER IN SET)	9	10	3*	4*			7	8	1	2	15	10	8
SINGLE LINE EXTENSION CUTOFF W/RINGER TRANSFER	9	10			3	4	7	8	1	2	15	10	8
SINGLE LINE EXTENSION CUTOFF OR EXTERNAL RINGER CONTROL OR HEADSET CONTROL	9	10			3	4	7	8	9	10	15	10	8
EXCLUSION OF EXTENSION WITH LINE SHORTING	1	2			4	5	7	8	9	10	4	4	5
	STRAP TERM. 1 TO TERM. 9 STRAP TERM. 2 TO TERM. 10												
* Not used ** Type 85A with circuit label H-54500-1 only *** Type 85A with circuit label D-530206-A only <input type="checkbox"/> Terminals on transmission unit													

TABLE B. SERVICE VARIATIONS FOR TYPE 85B TELEPHONES

FEATURES	LINE CORD CONNECTIONS TERMINAL STRIP "B"								SET WIRING TERMINAL STRIP "B"						
	TO LINE 1		TO LINE 2		TO EXTENSION STATION		RINGER LEADS		RINGER LEADS		SET LEADS			EXCLUSION KEY LEADS	
	RED	GRN	YEL	BLK	YEL	BLK	BLU	WHT	BLK	RED	WHT	GRN **	WHT ***	SL	RED
EXCLUSION	1	2			4	7	5	6	6	5	1	2	2	4	7
TWO-LINE PICKUP	1	2	3	4			7*	8*	1	2	9	10	10	9	10
* Not used ** Type 85B with circuit label H-54501-1 only *** Type 85B with circuit label D-530207-A only															

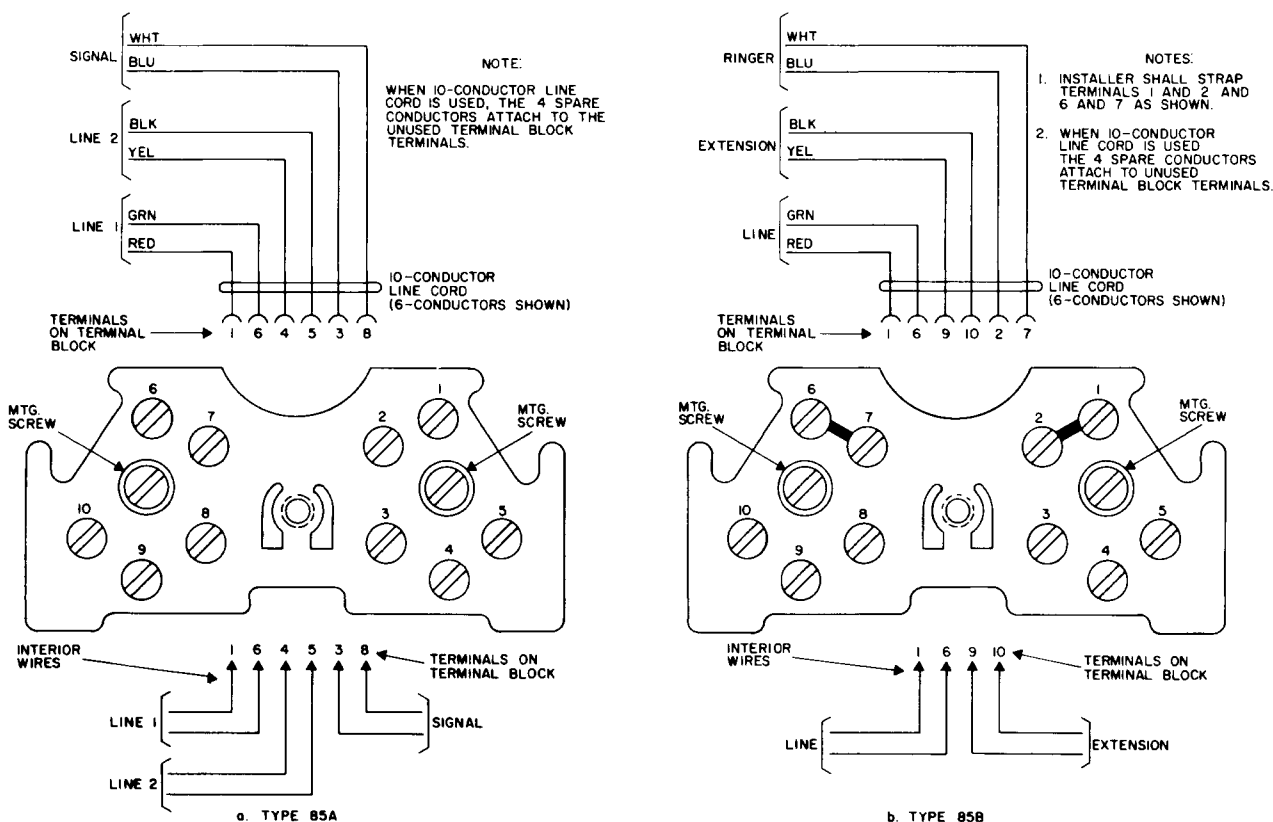


Figure 3. Standard terminal block wiring for self-compensating Type 85A and 85B telephones equipped with a 10-terminal, terminal block.

NOTE: Some self-compensating Type 85A and Type 85B telephones were equipped with 6-terminal, terminal blocks. The connections at the terminal block are the same as those shown in figure 13.

2.4 Self-compensating Type 85C telephones are also equipped with one 10-terminal, terminal block. Figure 4 illustrates the standard connections at the terminal block for the line cord wires and interior wires.

2.5 Check the ringer wiring by dialing from another telephone on the line. If bells tap, the following changes must be made:

- For Type 85A, reverse the ringer leads at terminals 1 and 2 on terminal strip B.
- For the Type 85B or the Type 85C, reverse the ringer leads at terminals 5 and 6 on terminal strip B.

3. MAINTENANCE (Self-Compensating Type 85 Telephone)

3.1 To remove the telephone housing, locate the three captive screws on the baseplate

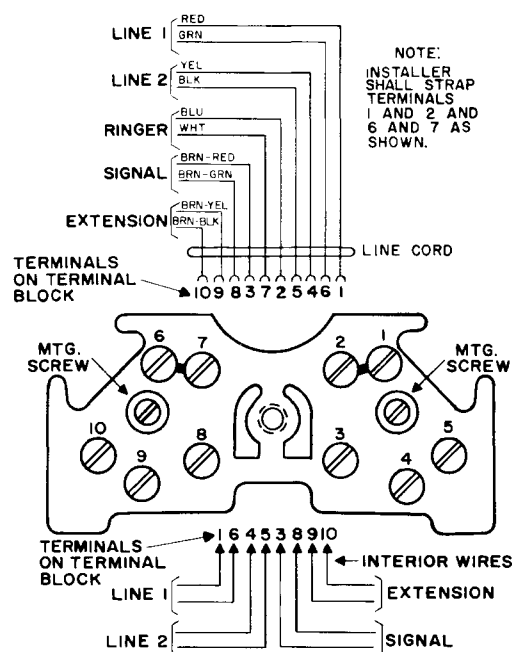


Figure 4. Standard terminal block wiring for self-compensating Type 85C telephones.

of the telephone marked BASE MTG SCREWS (figure 5) and loosen them. Now lift and remove the housing (figure 6). If the telephone is connected to the line, push the hookswitch actuating lever down to its locked position (see paragraph 3.2).

NOTE: Some self-compensating Type 85 telephones and all manually-adjusted Type 85 telephones require that the knob of the push-turn key be pulled off in order to remove the telephone housing.

3.2 When working inside the telephone, press the hookswitch actuating lever (hooklock) down until the lever remains locked as shown in figure 7. This keeps the telephone transmission circuit off the line and the ringer on the line while the telephone is being worked on. When the housing is replaced, the actuating lever is unlocked automatically. This will restore the actuating lever to its normal position under the control of the handset operated cradle plungers.

3.3 To inspect the dial assembly, first remove the telephone housing. Do not disconnect the dial leads to the transmission unit terminals unless the dial must be replaced. The Type 85

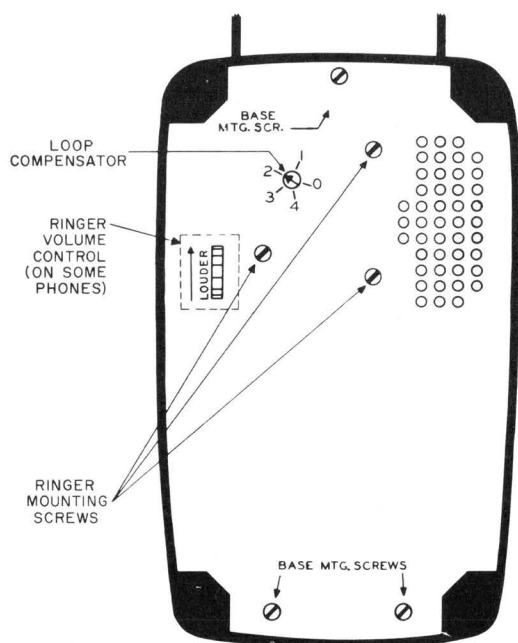


Figure 5. Typical baseplate.

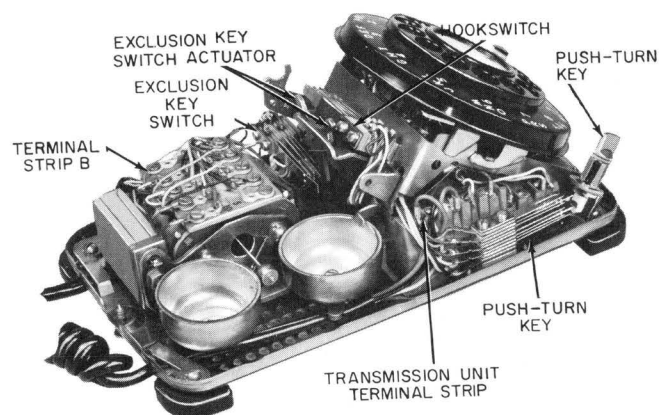


Figure 6. Interior view with hookswitch actuator removed.

telephone dial has a snap-on bayonet lug pin mounting as shown in figure 7. To remove the dial, press down on the dial and mounting plate. At the same time slide them down the frame until the lugs are disengaged from the pins. Then tip up the bottom of the dial to expose the wiring and the transparent dust cover over the springs.

3.4 To remove the ringer, first remove the telephone housing. At terminal strip B (figure 6), disconnect the red ringer wire and black capacitor wire. At the transmission unit disconnect the green ringer wire and the white capacitor wire. At the bottom of the baseplate, remove the 3 ringer-mounting screws (figure 5). Remove the ringer and capacitor. Using the old ringer-mounting screws, fasten the new ringer and capacitor to the baseplate.

3.5 Figures 8 and 9 are line drawings of the exclusion key and combination push-turn key, intended to help the installer insure that the keys are operating properly. They will also aid in making minor readjustments of the keys. Figure 8a shows the positions of the ex-

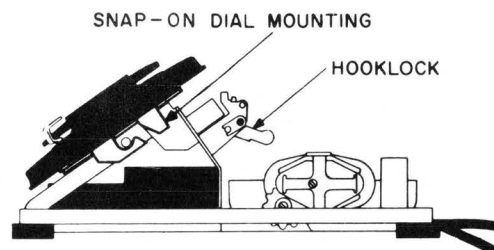


Figure 7. Hooklock and dial mounting.

clusion key and buffer with red and chrome buttons normal. Figure 8b shows the exclusion key when the chrome button is operated and with the handset off-hook. Figure 9a shows the push-turn key at normal. Pressing the key closes the lower set of contacts only, as shown in figure 9b. Turning the key should close the upper set of contacts as shown in figure 9c. The operations shown in figures 9b and 9c can be combined.

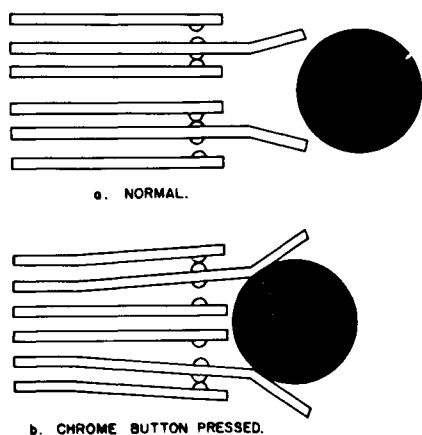


Figure 8. Typical exclusion key operation.

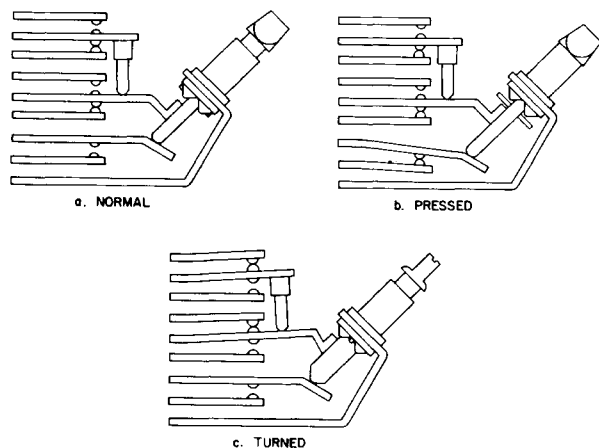


Figure 9. Push-turn key operation.

3.6 The latest versions of the self-compensating Type 85A and Type 85B telephones are equipped with 10-conductor line cords. Earlier versions were equipped with 6-conductor line cords. Only six conductors of the 10-conductor line cord are used. The BRN-BLK, BRN-YEL, BRN-GRN, and BRN-RED colored leads are not used.

Type 85C telephones are equipped with 10-conductor line cords; all conductors are used with this version.

To replace the line cord, first remove the telephone housing. Notice whether the line cord connections at terminal strip B are standard for this type of telephone, or whether one of the variations of paragraphs 1.1, 1.2, or 1.3 has been previously installed. Disconnect the 6- or 10-conductor line cord leads from terminal strip B (figure 6). Loosen the cord clamp screw in the corner of the baseplate (figure 10) and unlock the clamp lug from its hole in the baseplate. Withdraw the old cord.

Pass the end of the new cord through the baseplate hole (figure 10), until the covered portion extends just over two inches into the base. Insert the cord clamp lug into its baseplate hole and adjust the cord in the clamping bracket until the covered cord end fits securely between the ringer capacitor and the upright portion of the cord clamp bracket. Tighten the cord clamp screw.

Connect the line cord conductors to terminal strip B in accordance with the service provided. Then connect the line cord leads to the 10- or 6-terminal, terminal block as described in paragraphs 2.3, 2.4, 4.1, or 4.2.

3.7 A Type 810 handset is used with the self-compensating Type 85 telephone. Piece numbers for the 810 receiver and transmitter capsules are D-51024-A and D-38379-A, respectively. Figure 11 shows the components and wiring of the Type 810 handset.

3.8 To replace the handset cord follow the instructions given in paragraph 3.1 for removing the housing. If the telephone is connected to the line, push the hookswitch actuating lever down. Disconnect the green and black wires from transmission unit terminal 3TR, the yellow wire from terminal 4R, and the red wire from terminal 5T. Loosen the strain relief clamp screw (figure 10) and pull out the old cord. The new cord can now be connected. NOTE: Previous Type 85 telephones used a cord clamp (also illustrated in figure 10) for retaining the handset cord.

Remove the old cord from the handset and connect the new cord as shown in figure 11.

3.9 The transmission unit schematic (figure 12) is for information for continuity tests, ohmmeter measurements, etc. During manufacture, the transmission unit is sealed; do not attempt repairs in the field. If it becomes damaged; replace it.

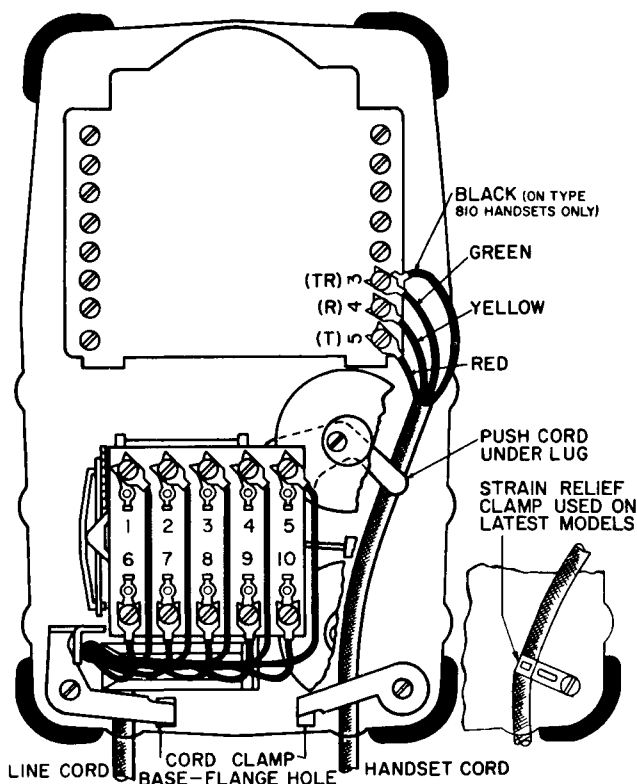


Figure 10. Line cord and handset cord connections inside telephone.

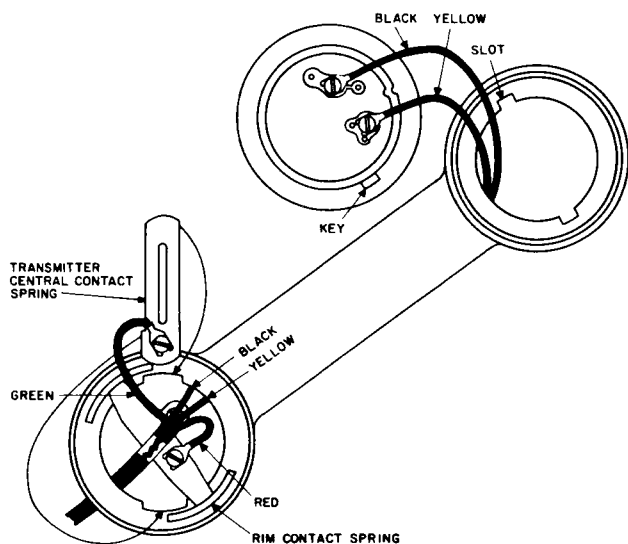


Figure 11. Type 810 handset wiring.

4. INSTALLATION (Manually-Adjusted Type 85)

The following paragraphs apply to the installation of the manually-adjusted Type 85 tele-

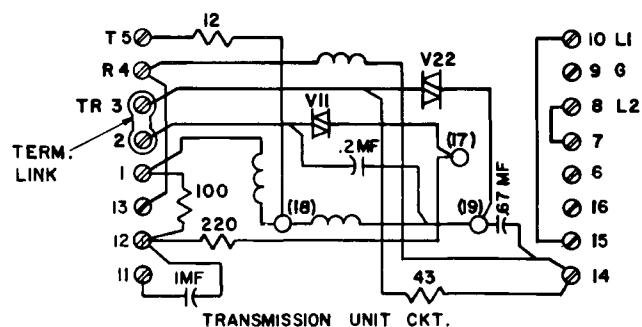


Figure 12. Schematic of transmission unit for self-compensating circuit.

phone. For information on line polarity, location of the terminal block, and on checking ringer wiring, refer to paragraphs 2.1, 2.2, and 2.5.

4.1 Manually-adjusted Type 85A and Type 85B telephones are supplied with one 6-terminal, terminal block. Figure 13 illustrates the standard connections at the terminal block for the line cord wires and interior wires.

4.2 Manually-adjusted Type 85C telephones are supplied with two 6-terminal, terminal blocks. Figure 14 illustrates two methods of connecting line cord wires and interior wires.

4.3 Manually-adjusted Type 85 telephones have loop compensator rheostats which regulate the conductor loop resistance. Conductor loop resistance is the total resistance of the line conductors, heat coils, and central-office cabling. The resistances of the telephone instrument and central-office relays are not included.

The "loop compensator" is a rheostat-and-switch accessible from the bottom of the telephone (figure 5). By turning the slotted arrow counterclockwise with a small screwdriver from 0 to 4, the rheostat inserts 0 to 400 ohms in series with the loop.

When the rheostat is at 0 (as it should be for long cable loops), the switch element adds a capacitor and a resistor into the sidetone balancing impedance to match more nearly the capacitive impedance of a long cable loop.

Thus the loop compensator minimizes sidetone:

- On a short loop by limiting the transmitter current.
- On a long loop by improving the balance between the sidetone balancing impedance and the line impedance characteristic.

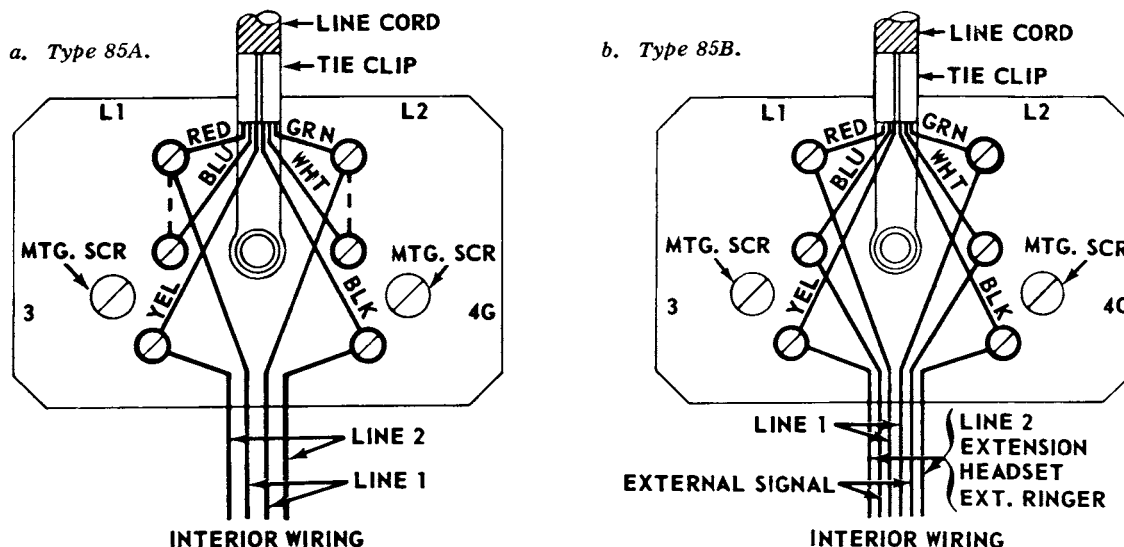


Figure 13. Standard terminal block wiring for manually-adjusted Type 85A and 85B telephones.

Loop compensation lessens current diverted by a party-line subscriber near the central-office listening in on the conversation of a subscriber on that line more distant from the central-office.

On a reverting call, loop compensation tends to equalize the currents available to the two conversing parties.

4.4 Type 85 telephones equipped with a loop compensator rheostat should be adjusted according to information in paragraphs 4.4.1 to 4.4.4. For marginal or unusual location, make the adjustment according to paragraph 4.5.

4.4.1 For usual lines in a 48- or 50-volt exchange, if the conductor loop resistance is 200 ohms or less, set the loop compensator at 2. If the conductor loop resistance is over 200 ohms, set the loop compensator at 0.

EXCEPTIONS:

a. If the station is connected directly to an open wire section over 200 ohms resistance, set the loop compensator midway between 0 and 1.

b. If the station is on a loaded subscriber loop and is less than one loading section (for type H loading, less than 6000 feet) from the nearest loading coil, set loop compensator midway between 0 and 1.

NOTE: Because the open-wire line or open-wire section, or the loaded cable, has less

effective capacitance than has unloaded cable, the aim here is not to close the rheostat.

4.4.2 If two or more Automatic Electric Company telephones with loop compensators (Type 80, 88, 90, etc.) are used on one line (party line or extension telephone), set the loop compensator of each as if it were the only telephone on the line. If the Type 85 telephone is used on the same line with an entirely different make or model of telephone, set the Type 85 telephone loop compensator at 0; or, if one of the exceptions of paragraph 4.4.1 applies, midway between 0 and 1.

4.4.3 In a key system, P-B-X, or P-A-B-X, a Type 85 telephone may receive its transmitter current from either of two different 48- or 50-volt sources. Adjust the loop compensator for the current received on a trunk (outside) call if:

a. Station loop plus trunk resistance is 200 ohms or less - set at 2.

b. Station loop plus trunk resistance is over 200 ohms - set at 0.

c. If long-line equipment or a pulse repeater at the P-B-X or P-A-B-X supplies transmitter current on trunk calls, set at 2.

EXCEPTION: If the P-B-X switchboard uses non-relay series-lamp line circuits, set the loop compensator at 0 in all of the above cases.

4.4.4 If the central-office or P-B-X switchboard operates from 24 volts and has

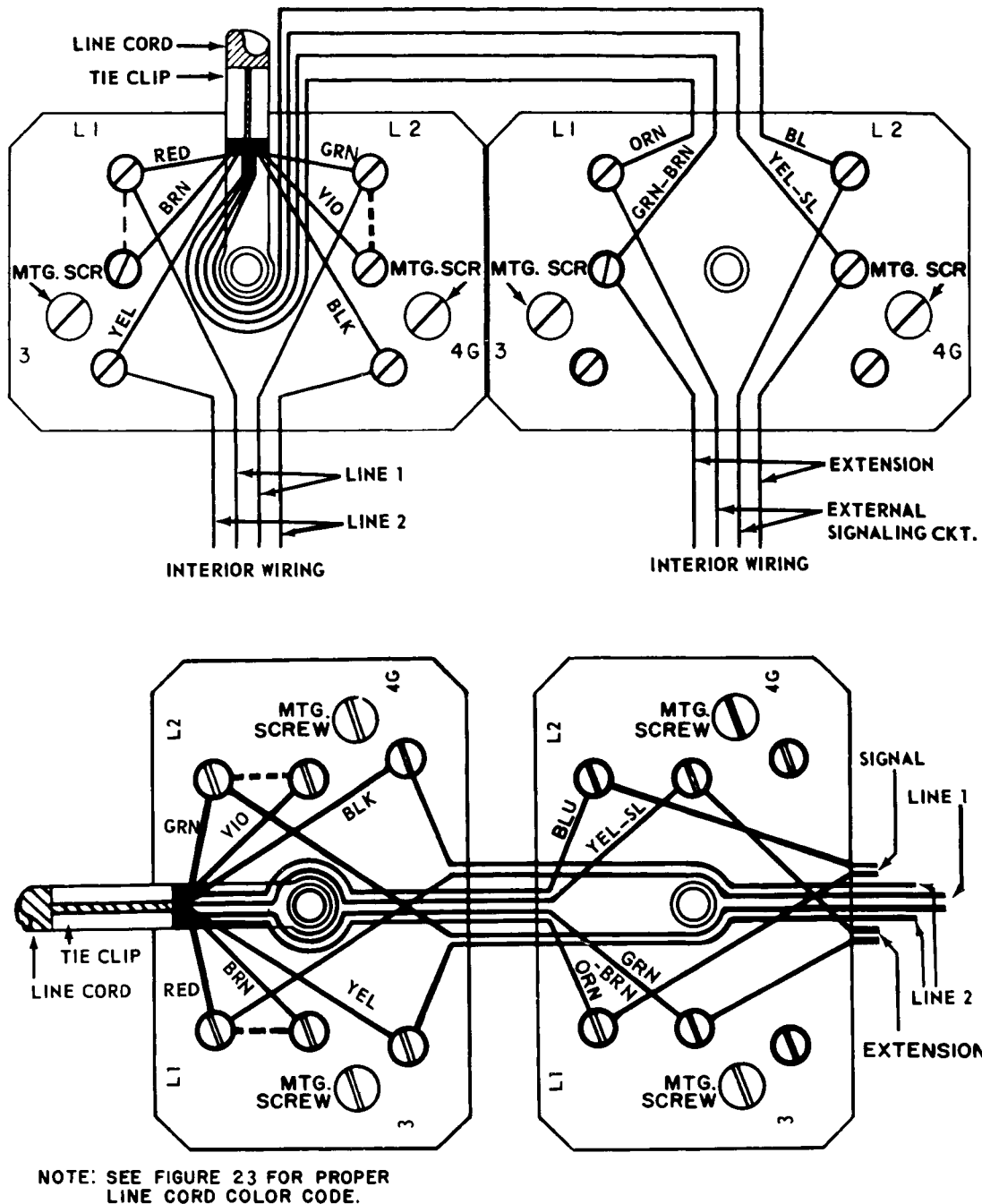


Figure 14. Standard terminal block wiring for manually-adjusted Type 85C telephones.

100 ohms plus 100 ohms battery feed coils or uses non-relay series-lamp line circuits, set the loop compensator at 0; otherwise use one of the methods described in paragraph 4.5.

4.5 Although the rules of paragraph 4.4 are adequate for most installations, occasionally current in the line should be adjusted

accurately to 60 milliamperes. Examples are: where there has been a transmission complaint, or where the subscriber does not hear well over the telephone and this seems to be due to noise in his room. The sidetone from extreme room noise can be reduced further by setting the loop compensator to limit the line current to 55 or even to 50 milliamperes. To adjust use one of

the methods described in paragraphs 4.5.1 through 4.5.4.

4.5.1 To make the adjustment without assistance from the central-office, loosen the terminal block cover screw, remove the cover, and disconnect the red line cord lead. Connect a milliammeter between the red lead and the terminal block terminal L1 so that the milliammeter is in series with the line. Refer to figure 15. Take the handset off the cradle and vary the loop compensator until the milliammeter reads 60 milliamperes. Disconnect the milliammeter and reconnect the red line cord lead to the terminal block terminal L1. Make certain that the tie-cord clip ring is still in place and replace the terminal block cover. Finally, test the transmission.

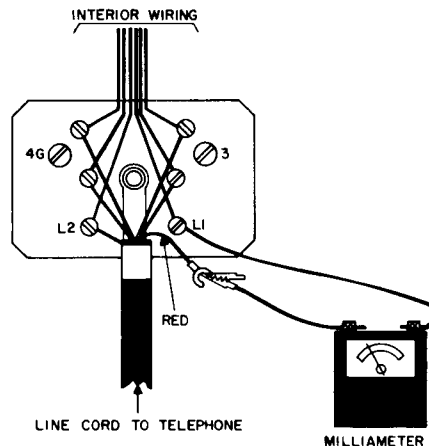


Figure 15. Line current testing at the subscribers premises.

4.5.2 When the test board is equipped for line current measurement through the usual 200 ohms plus 200-ohms battery feed, dial the test board. Request the line current measurements. The test board attendant will give you readings. Vary the loop compensator until the current is 60 milliamperes.

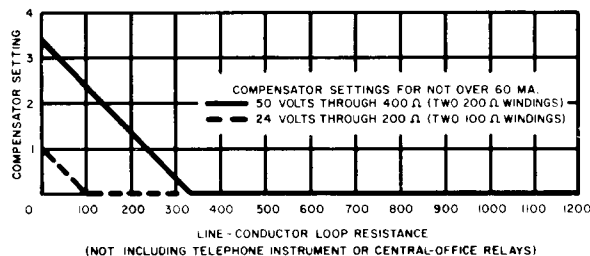


Figure 16. Compensator setting for loop resistance.

4.5.3 When the test board is equipped for line resistance measurements, dial the test board. Request line resistance measurements. Short circuit the line a few moments while the test board attendant measures loop resistance. Set the compensator according to figure 16.

4.5.4 When the test board is equipped for line voltage measurement, dial the test board. Request a line voltage measurement and stay on the line. The test board attendant will connect to the line from which you are calling through a test distributor or distributing frame test shoe and will connect his voltmeter across the line. The two most usual exchange situations encountered are:

- Battery fed through 200 ohms plus 200 ohms. This is usual in 48- or 50-volt exchanges. Vary the loop compensator until the test board voltmeter reads 24-volts less than the central-office battery voltage. That is, when 60 milliamperes flow in the line, there will be 24-volts drop in the usual 200 ohms plus 200 ohms battery feed to the calling line.
- Battery feed through 100 ohms plus 100 ohms. This is used in many 24-volt exchanges. Vary the loop compensator until the test board voltmeter reads 12-volts less than the central-office battery voltage.

5. MAINTENANCE (Manually-Adjusted Type 85)

For information on housing removal, hooklock operation, dial removal, ringer removal, key adjustment (push-turn key and exclusion key), and line cord removal, refer to paragraphs 3.1, 3.2, 3.3, 3.4, 3.5, and 3.6, respectively.

5.1 The manually-adjusted Type 85 telephone uses a Type 81 handset only. The piece number for the Type 81 transmitter capsule is D-38363-A. The piece number for the Type 81 receiver capsule is D-51021-A. Type 81 handset components and wiring are shown in figure 17.

5.2 To replace the handset cord follow the instructions for removing the telephone housing as stated in paragraph 3.1. Disconnect the handset cord wires from the transmission unit terminals and the handset cord clamp screw (figure 10). Pull out the old cord. The new cord can now be connected.

Remove the old cord from the handset and connect the new cord as shown in figure 17.

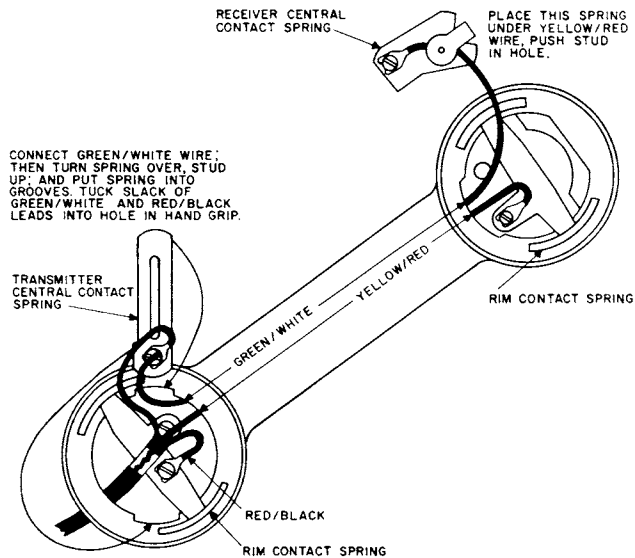


Figure 17. Type 81 handset wiring.

5.3 The transmission unit schematic (figure 18) is for information for continuity tests, ohmmeter measurements, etc. During manufacture, the transmission unit is sealed, do not attempt repairs in the field. If it becomes damaged; replace it.

6. DIAL NUMBER CARD

6.1 To remove the escutcheon ring of a dial with metal finger plate (formerly all black telephones were equipped with metal finger plates), proceed as follows. Insert the dial escutcheon tool (H-26917) or a small screwdriver between the escutcheon ring and the transparent cover opposite finger hole 5 (figure 25). Press the tool downward until it engages the locking lever. Next move the tool counterclockwise toward finger hole 6. This will unlock the escutcheon ring. The ring may now be lifted from the dial with the tool. Figure 26 shows how the clamping plate holds the transparent cover and number card to the ring. Rotating the notched clamping plate counterclockwise will release the assembly.

Print or stamp the desired number or other information clearly on the number card.

To reassemble, first place the transparent cover in the escutcheon ring. Insert the

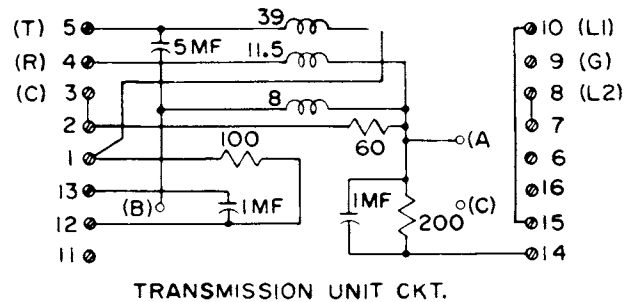


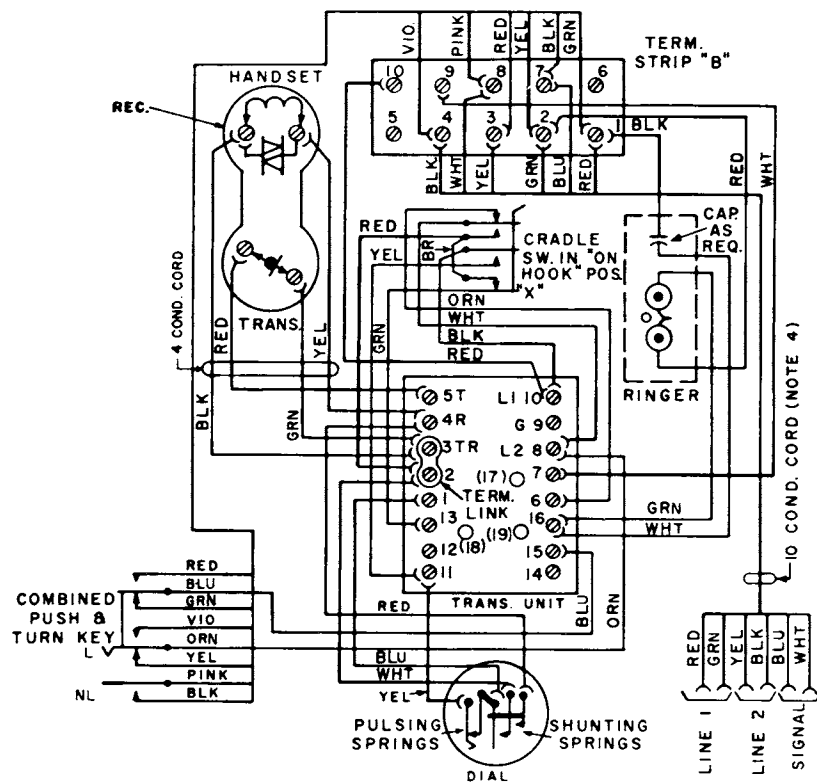
Figure 18. Schematic transmission unit for manually-adjusted circuit.

number card and the clamping plate. Turn the clamping plate clockwise to engage its tongue and lock the assembly. Before mounting the assembly on the dial, note that the locking lever on the finger plate is midway between finger holes 6 and 7 (figure 27). Insert the small lug of the escutcheon ring into the slot near the finger stop and press the assembly into the finger plate. Then insert the dial tool under the escutcheon ring opposite finger hole 7, and press the tool down against the locking lever underneath the card. Move the tool clockwise to finger hole 6 to lock the assembly in place.

6.2 To remove the escutcheon ring of a dial with plastic finger plate, proceed as follows. At a point halfway between finger holes 5 and 6 (figure 28), insert a screwdriver between the edge of the escutcheon ring and the transparent cover to unlatch the escutcheon ring. Lift the ring with the screwdriver. Rotate the clamping plate (as shown in figure 29) counterclockwise and remove the number card. Print or stamp the desired number or other information clearly on the card.

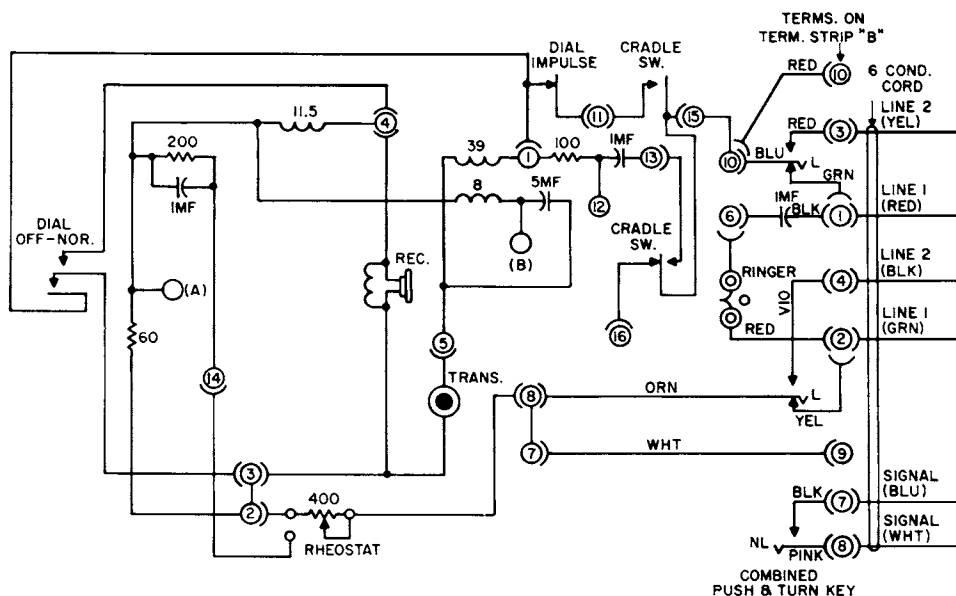
Next, with the transparent cover in the escutcheon ring, add the number card and the clamping plate. Press lightly with the left thumb near one circular hole, say the lower left one in figure 29 and lock the clamping plate by inserting the right thumbnail in the other circular hole and turning the clamping plate clockwise. Then hook the escutcheon locating lug into the dial near the finger stop.

Insert the screwdriver between finger holes 5 and 6. Finally, press in the screwdriver tip until clamping plate latches.

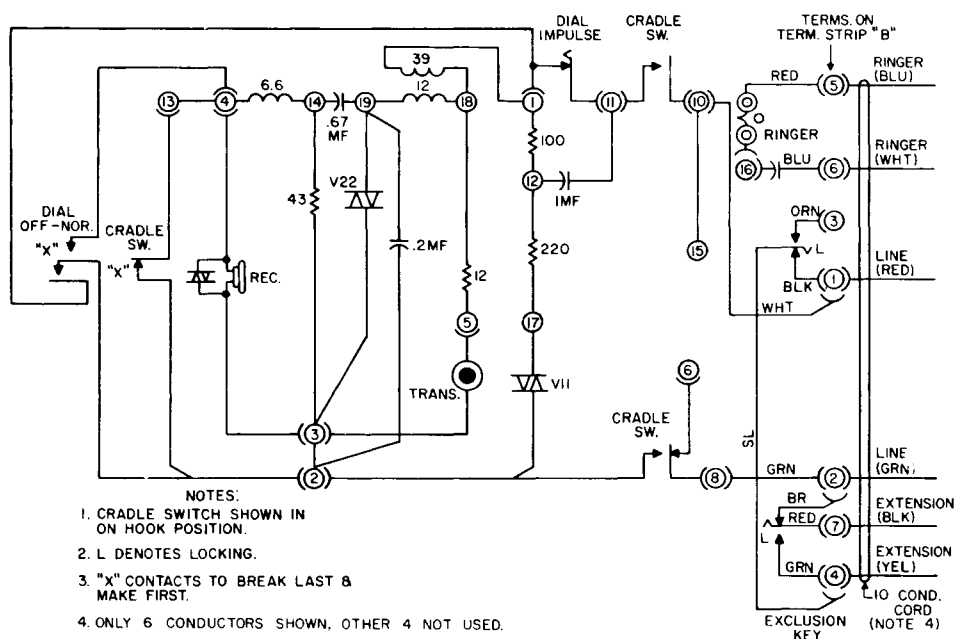


- NOTES:
1. CRADLE SWITCH SHOWN IN ON HOOK POSITION.
 2. L DENOTES LOCKING, NL DENOTES NON-LOCKING.
 3. "X" CONTACTS TO BREAK LAST & MAKE FIRST.
 4. ONLY 6 CONDUCTORS SHOWN, OTHER 4 NOT USED.

Figure 19. Schematic and wiring diagrams for the self-compensating Type 85A telephone.



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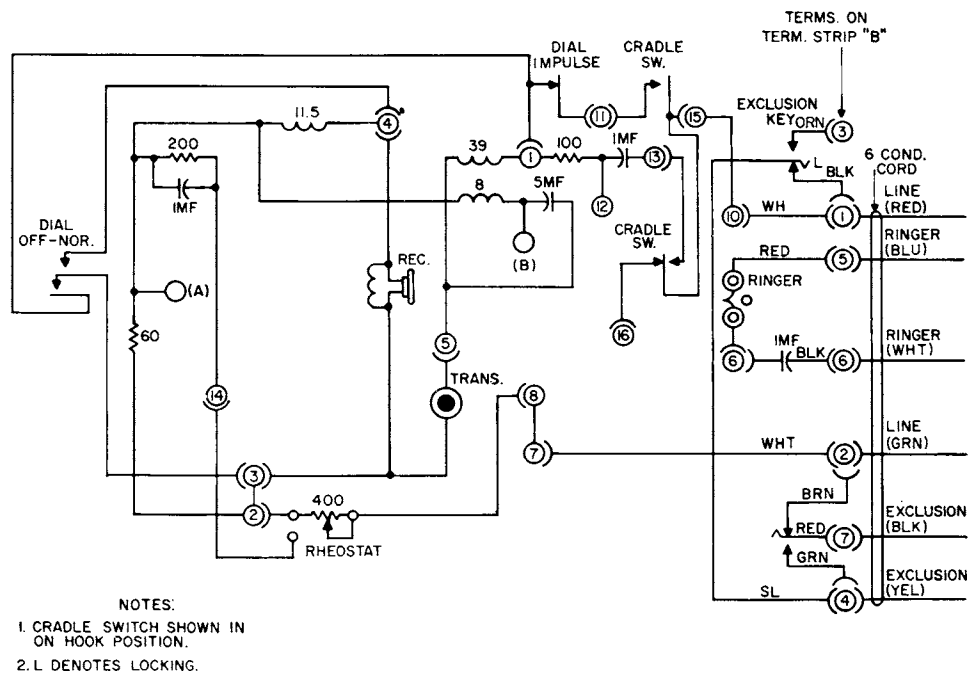
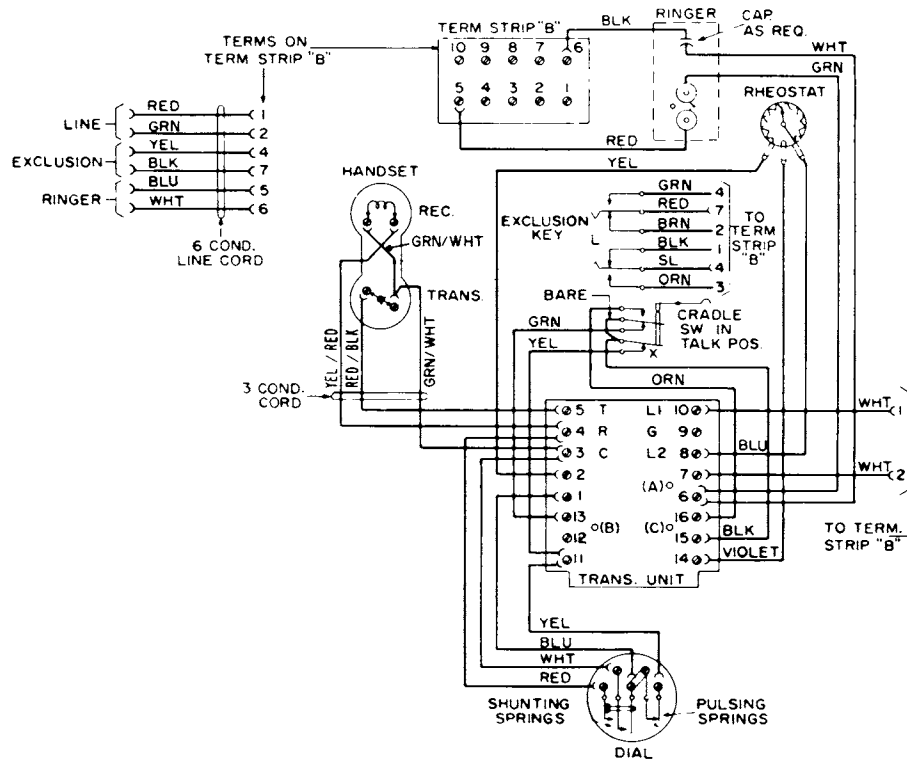


Figure 22. Schematic and wiring diagrams for the manually-adjusted Type 85B telephone.

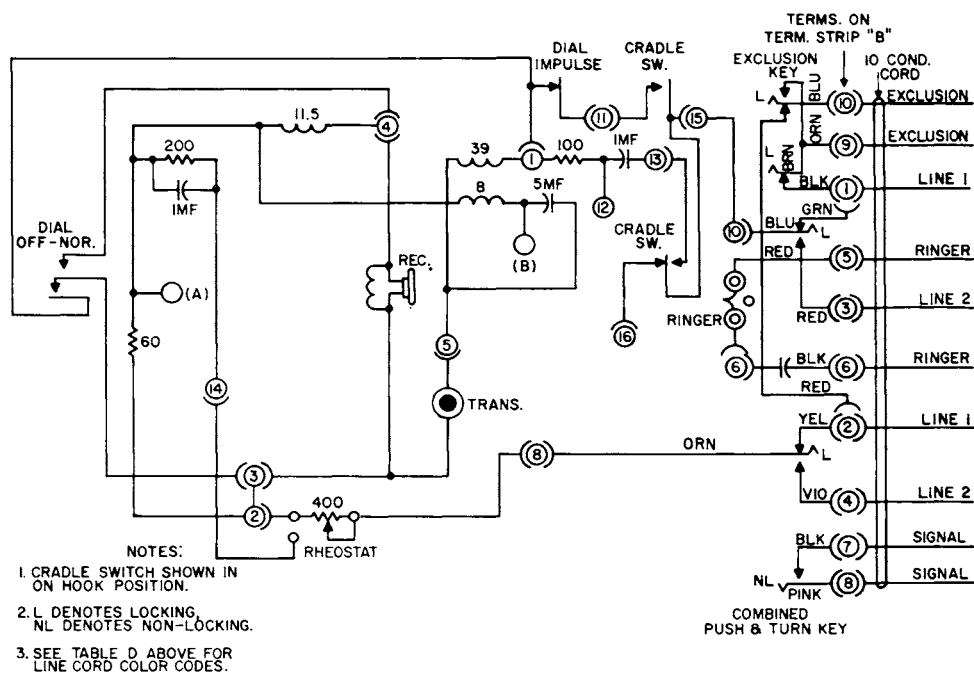
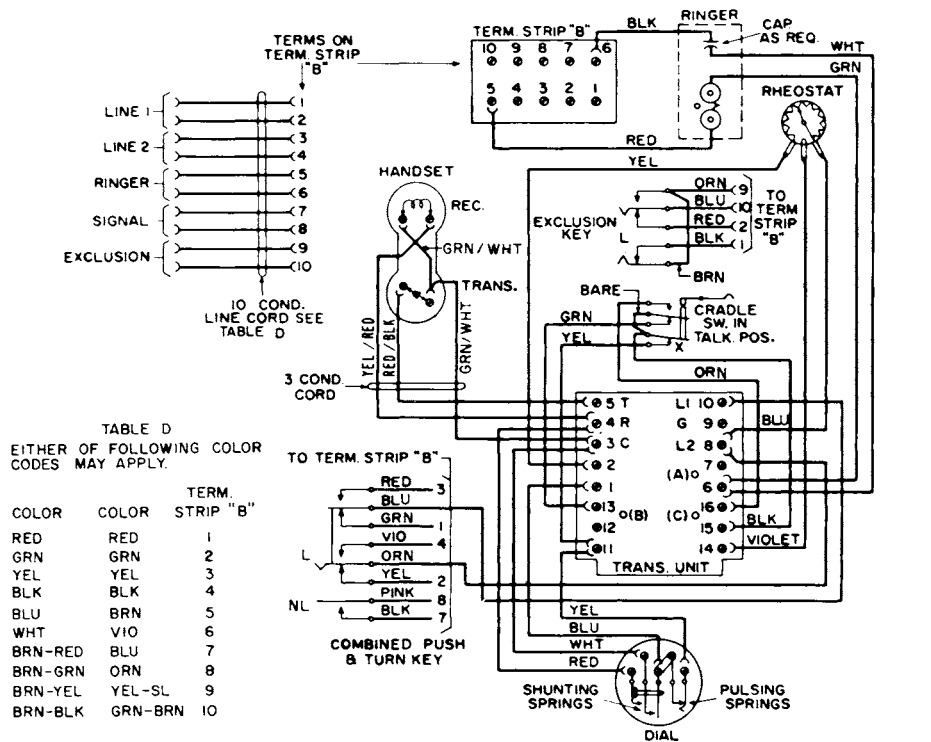


Figure 24. Schematic and wiring diagrams for the manually-adjusted Type 85C telephone.

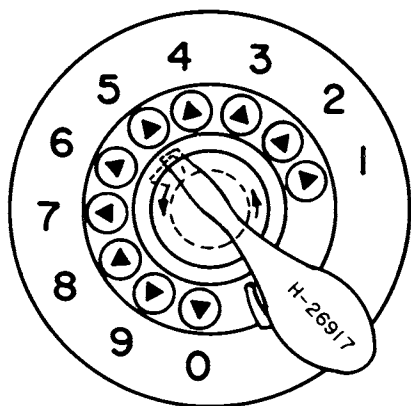


Figure 25. Unlocking escutcheon ring.

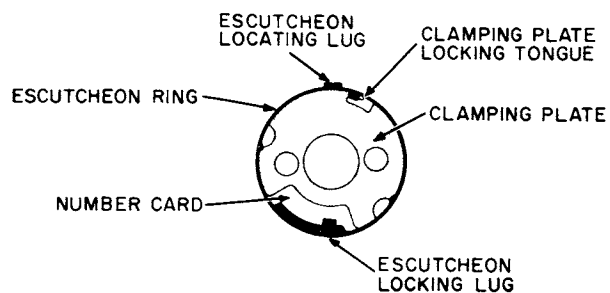


Figure 26. Number card in escutcheon ring.

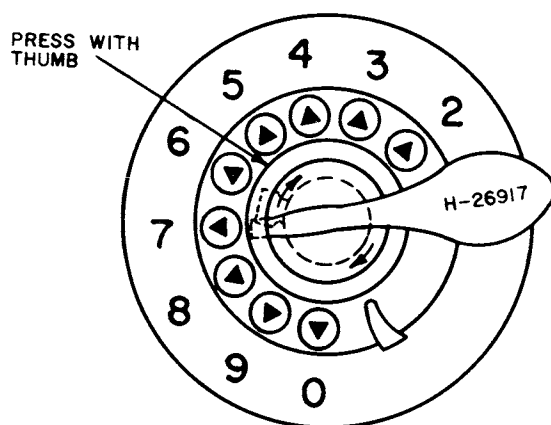


Figure 27. Locking escutcheon ring.

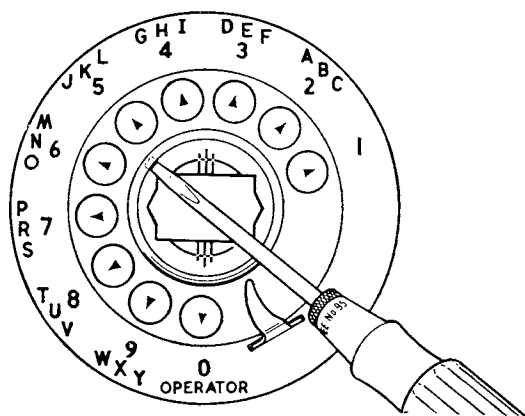


Figure 28. Use of screwdriver on escutcheon ring.

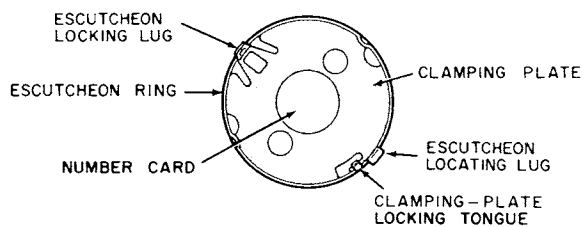


Figure 29. Escutcheon ring with number card.

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