

TELEPHONE SETS
540, 560, 1560, AND 2560 SERIES
COMMON INSTALLATION AND MAINTENANCE INFORMATION

1. GENERAL

1.01 This section contains information on 4- and 6-button key telephone sets.

1.02 This section is reissued to:

- Add information on the rotary dial 563HBMS, 564HLMS, 565GKMS, 565HKMS, 565LKMS, and 568HAAMS telephone sets
- Add information on the TOUCH-TONE® dial 2564HLMS, 2563HBMS, 2565GKMS, 2565HKMS, 2565LKMS, and 2568HAAMS telephone sets
- Show the rotary dial 563HBM, 564HLM, 565GKM, 565HKM, 565LKM, and 568HAAM telephone sets (MD)
- Show the TOUCH-TONE dial 2563HBM, 2564HLM, 2565GKM, 2565HKM, 2565LKM, and 2568HAAM telephone sets (MD).

1.03 When installing or repairing any telephone set, *all* connections should be checked for tightness in order to prevent trouble reports.

2. INSTALLATION

A. Keys

2.01 The 636-type key (Fig. 1) has a terminal board arrangement to accommodate matching cord terminal wafers, so that any line connected to the set can be interchanged readily to appear on any five line pickup keys. See Fig. 2 and 3 for terminal designations on the 636A and 636B, respectively.

2.02 Lamps associated with the buttons may have common or individual grounds. See sections

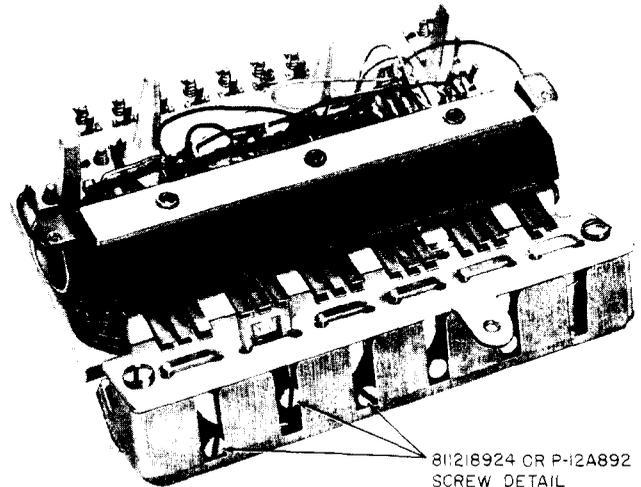


Fig. 1—636A Key, Bottom View

covering connections of individual telephone sets for lamp connections.

2.03 Certain pickup buttons on 6-button sets are arranged for conversion to signaling. To convert, remove 811218924 (P-12A892) screw detail (Fig. 1) and make necessary wiring changes. Table A shows key and associated telephone sets with convertible buttons.

2.04 Unused buttons, either round or square style, may be blocked with an 811218585 (P-12A858) blocking ring. Insert as shown in Fig. 4.

B. Lamp Retainer

2.05 In early telephone sets equipped with a 636A or 636B key, the 51A lamp contact springs are susceptible to losing their tension. An adjunct 840362347 lamp retainer (Fig. 5) is available and

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TABLE A

PICKUP BUTTON CONVERSION

KEY	TEL SETS	CONVERTIBLE BUTTONS
636B	565GK* 565GKM* 565GKMS 1565GK* 2565GK* 2565GKM* 2565GKMS	PPPPsPsPs
636A	563HB* 563HBM* 563HBMS 564HL* 564HLM* 564HLMS 565HK* 565HKM* 565HKMS 568HAA* 568HAAM* 568HAAMS 1563HB* 1564HL* 1564HK* 1565HK* 2563HB* 2563HBM* 2563HBMS 2564HL* 2564HLM* 2564HLMS 2565HK* 2565HKM* 2565HKMS 2568HAA* 2568HAAM* 2568HAAMS	HPPPsPsPs
589AJ	565LK* 565LKM* 565LKMS 1565LK* 2565LK* 2565LKM* 2565LKMS	HPPPsC
589AN	566MD* 566MDM	HPPPL

*MD sets.

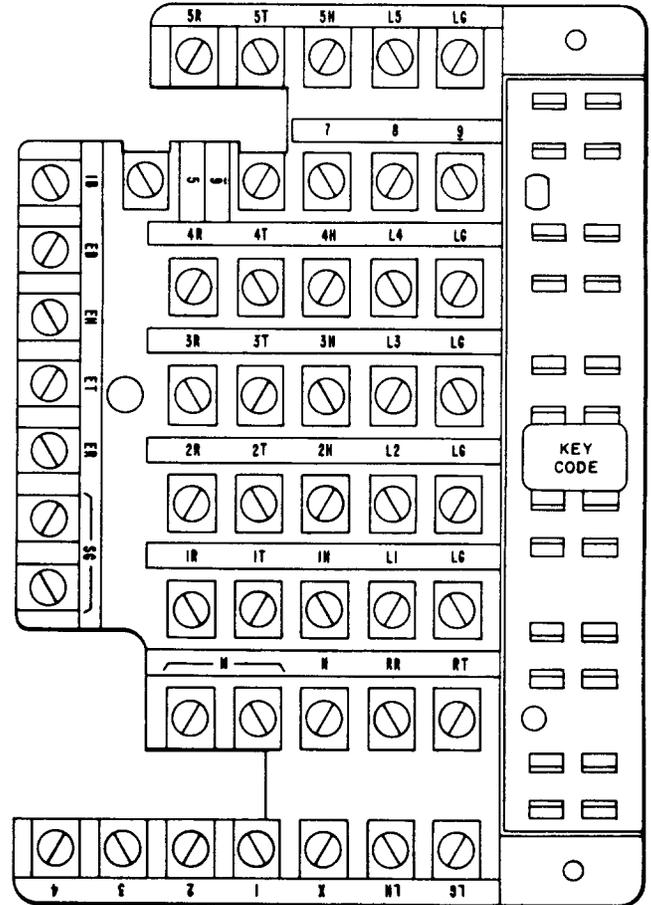


Fig. 2—Terminal Board for the 636A and 589Y Key

can be installed between the spring contacts of the lamps. The retainer must be ordered separately as D-180557 Kit of Parts.

C. Exclusion Switch Assembly

Note: When exclusion feature is provided the A25B connector cable must be used.

2.06 The 565- and 1565-type telephone sets manufactured prior to May 1967 provided an exclusion plunger in the housing. Other components of the exclusion assembly were part of a D-179935 Kit of Parts. Current manufactured sets no longer include the plunger in the housing. The plunger is now included in the D-179935 Kit of Parts (ordered separately and field installed).

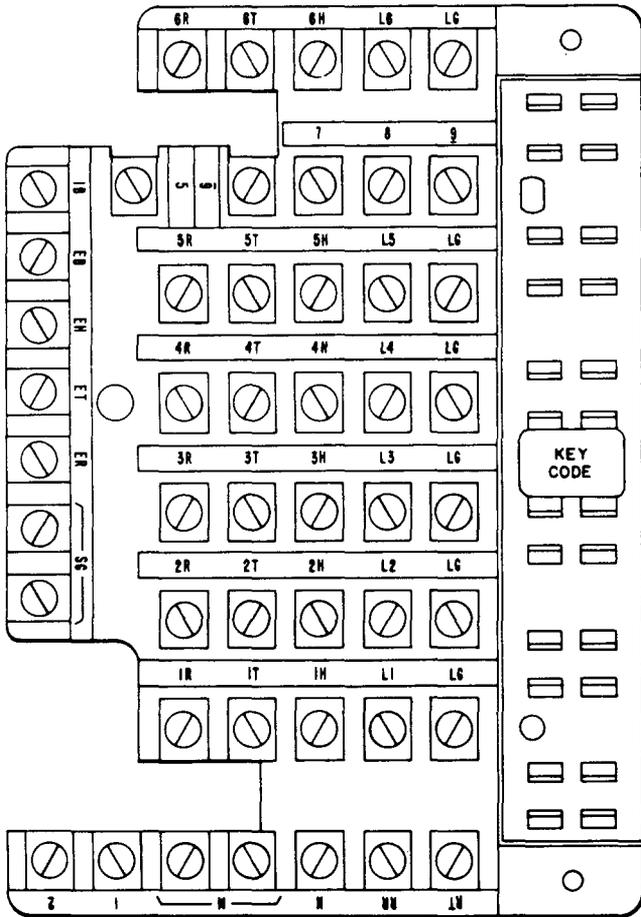


Fig. 3—Terminal Board for the 636B Key

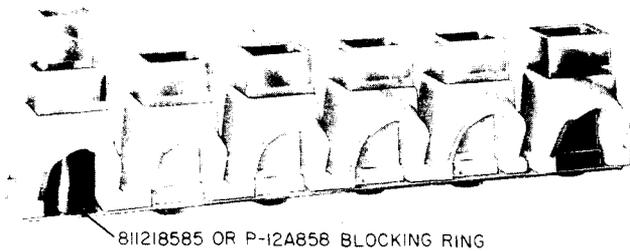


Fig. 4—811218585 (P-12A858) Blocking Ring, Installed

2.07 Components of the D-179935 Kit of Parts are:

- 803448596 (P-344859) bracket
- 803405604 (P-340560) spring

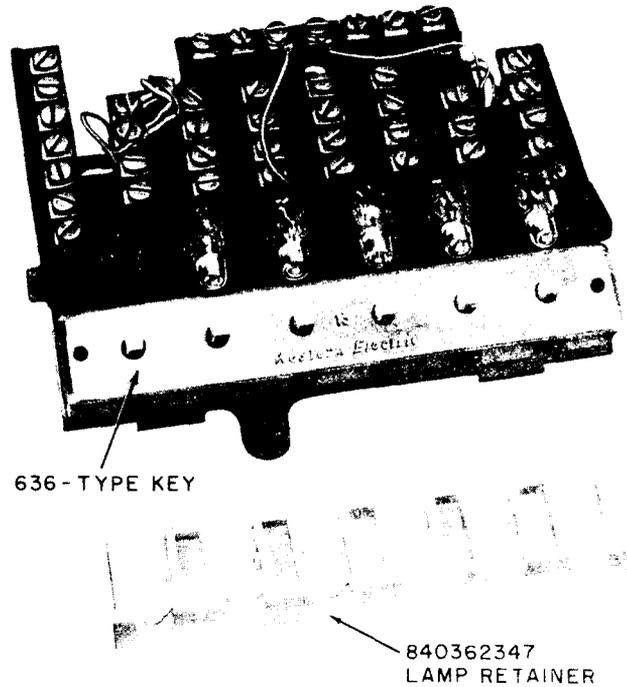


Fig. 5—Installing D-180557 Kit of Parts

- 801809229 (P-180922) screw
- 812551182 (P-25E118) exclusion switch
- 811416130 (P-14A613) exclusion plunger.

2.08 Install exclusion kit as follows (Fig. 6):

- (1) Insert the bracket into the two T slots precut in the line switch bracket.
- (2) Insert and tighten the screw which holds the bracket in the T slots.
- (3) Mount the exclusion switch assembly on the bracket and fasten in place using the 803405604 (P-340560) spring.
- (4) Remove the standard switchhook plunger from the left side of the telephone set housing and replace it with the 811416130 (P-14A613) exclusion plunger.



Replace the telephone set housing before making any tests. The housing serves to orient the exclusion switch and tilts the spring pile-up so that it will not short to the bracket.

2.09 The exclusion switch assembly must meet the following requirements.

(a) The exclusion plunger should remain in the oriented position when pulled up to the full extent of its stroke. It should hold in position when 50 grams of force or less are applied to the center of the plunger.

(b) The plunger should release from its upper (locked) position when the handset is dropped from a distance of 1/4-inch above the plunger.

2.10 The exclusion switch assembly terminates in individual and wafer strip spade-tipped conductors (Fig. 7). This allows adaption of the exclusion feature to any one of the pickup buttons.

2.11 Exclusion switch connections are found in sections covering the appropriate telephone set.

D. Buzzers

2.12 A KS-8109L2 or equivalent buzzer may be mounted to the H1-type ringer bracket (Fig. 8).

2.13 A second buzzer can be installed on a 70-type bracket (ordered separately) mounted on

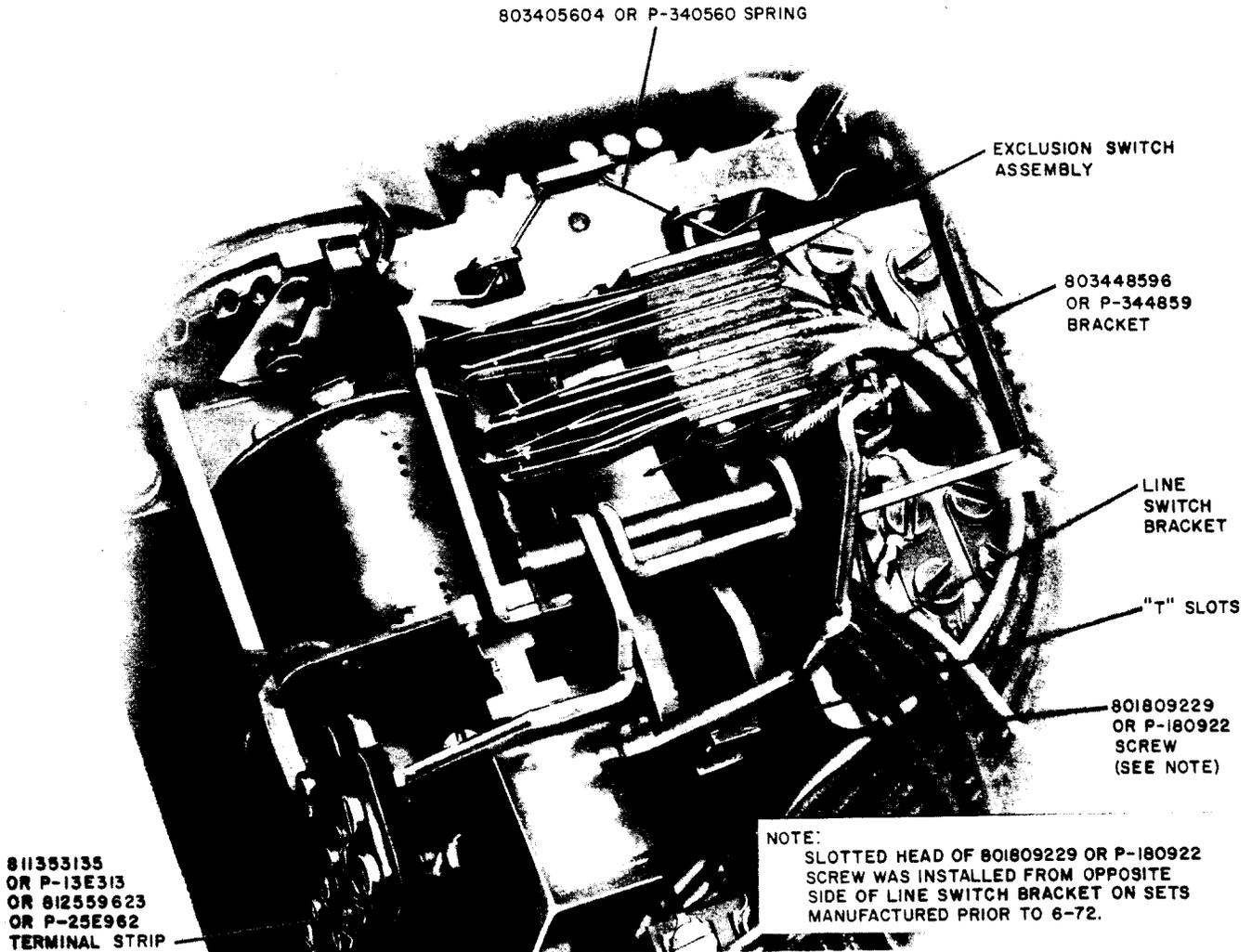


Fig. 6—D-179935 Exclusion Kit, Installed

top of the H1-type ringer coil in nonexclusion switch equipped sets.

2.14 A KS-200419L1 buzzer (10 volt ac only) may be mounted in any convenient location (screw must be provided). In current production 565- and 2565-type sets (except the GK), this buzzer is furnished from the factory and mounted on the left dial mounting bracket screw.

E. Mounting Cords

2.15 Mounting cords on 540-type and earlier models of the 560-type telephone sets have spade-tipped leads and terminate at 44A connecting blocks.

2.16 Plug-ended mounting cords terminate at 66E3 or 66E4 connecting blocks or connect to A20B or A25B connector cables. A B20A or B25A connector cable can be used to extend mounting cords where a plug is needed on the equipment end.

2.17 The set ends of mounting cord conductors are furnished with individual spade tips or wafers for terminating on 588-, 589-, or 636-type keys (Fig. 9, 10, and 11).

2.18 Terminating methods are shown in sections covering connecting blocks.

F. Ringer

2.19 The ringers may be connected as individual line ringer or common audible signals. Refer to the appropriate telephone set connection section.

2.20 Current production models are manufactured equipped with a C4B or H1B (one-coil) ringers. These ringers can also be used as maintenance replacements for the C4A and H1A ringers. When wiring changes are necessary refer to the appropriate telephone set section.

2.21 Volume control cams project through the base of the telephone set when equipped with C4A, C4B, or H1-type ringers, and through the lower left side of the housing on telephone sets equipped with N1A ringers.

2.22 Volume is adjustable to loud, soft, and off by either type volume control.

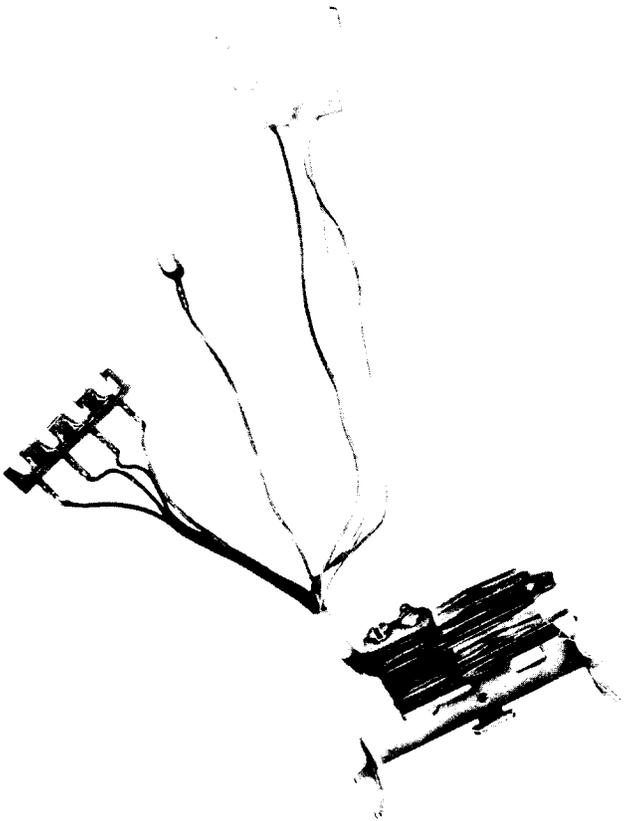


Fig. 7—812551182 (P-25E118) Exclusion Switch

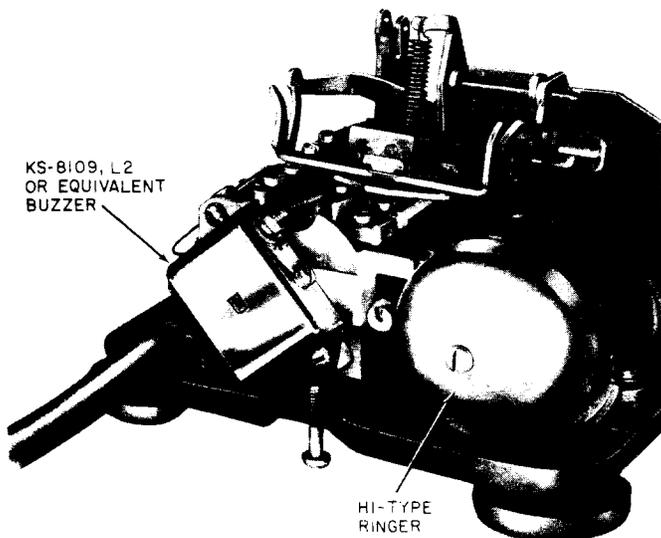


Fig. 8—Location of KS-8109L2 Buzzer

2.23 For ringer cutoff on sets with volume control cams, remove housing and move the detent spring from its slot and rotate the cam to the off position.

2.24 For ringer cutoff on sets with volume control arms, it is not necessary to remove the housing. Rotate and exert pressure on the arm to overcome the detent action to reach the off position.



Volume control lever detent action of current N-type ringers has been improved by making it more difficult to inadvertently operate the control lever to the off position.

G. Terminal Strips

2.25 The 589Y and 636A use 814319836 (P-43A983) terminal board (Fig. 2). The 636B uses the 814454005 (P-44E400) terminal board (Fig. 3).

2.26 Additional terminal strip for connecting auxiliary equipment in 6-button sets must be ordered separately as follows:

- 589-type keys require an 811353135 (P-13E313) terminal strip
- 636-type keys require an 812559623 (P-25E962) terminal strip.

2.27 These auxiliary terminal strips are attached to the line switch bracket as shown in Fig. 6.

H. TOUCH-TONE Dial

2.28 The 1560 and 2560 series telephone sets have 25-type, 10-button and 35-type, 12-button TOUCH-TONE dials, respectively.

2.29 ♦These dials must be connected with the green dial lead to the tip side of the line and the orange-black lead to the ring side of the line.♦

2.30 After completing installation, check the dial operation on each line using the central office dial test circuits. Refer to the appropriate dial section in Division 501.

I. Handsets

2.31 When special conditions exist the G3A-type or G15A handset may be replaced by the following:

- ♦G6B (MD) or G6BM handset for impaired hearing
- G7B (MD) or G7BM handset for weak speech
- G8B (MD) or G8BM handset for noisy locations.♦

J. Polarity Guard

2.32 When a polarity guard is required with these sets, an 819040528 (P-90D052) (MD) or 840364376 guard assembly can be installed. Polarity guards should be installed only when authorized by local instructions for end-to-end signaling when battery and ground reversals are encountered.

2.33 The current 840364376 polarity guard and instruction sheet comes in the D-181006 Kit of Parts.

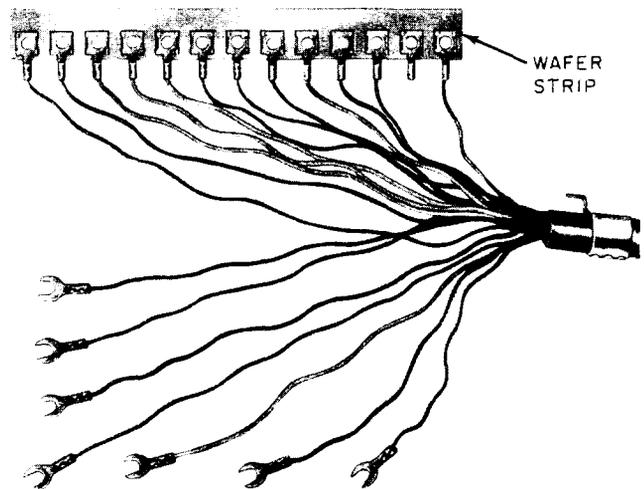


Fig. 9—Non-slotted Wafer Strip End of Mounting Cord, Early Type

K. 1P2 Lamps

2.34 The 1P2 key telephone system requires the use of a dual envelope lamp (KS-20673) on PICTUREPHONE® lines to indicate whether an audio or video call is being processed.

2.35 The KS-20673 lamp is inserted in place of the 51A Lamp. The voltage imposed on the lamp pair is controlled by the PICTUREPHONE line circuit. The lamp is inserted so that the white lamp is illuminated on audio calls (-10 volt dc from the line circuit) and the red lamp on video calls (+10 volt dc from the line circuit). This test should be made by the installer before fully inserting the lamp.

L. Speakerphone

Note: When speakerphone feature is provided the A25B connector cable should be used.

2.36 In nonspeakerphone installations, it is necessary to disconnect the speakerphone leads (V-G) (G-V) when these sets are multiplied with other sets providing speakerphone. Telephone sets produced after July 20, 1979 have (V-G) (G-V) leads insulated and stored at the factory.

3. MAINTENANCE**A. Components**

3.01 Maintenance of handsets, dials, and ringers are outlined in sections covering these components.

B. Removing and Replacing Housing

3.02 Sets without exclusion.

- To remove housing, loosen captive screws in base of set. Lift housing up and toward front of set.
- To replace housing, guide lower front of housing over pushbuttons, align housing with base of set, and gently press housing into place. Tighten captive screws in base of set.

3.03 Sets with exclusion.

- To remove housing, pull up exclusion plunger to its operated position, loosen captive screws in base of set, and lift housing up and toward the front of set.
- To replace housing, guide lower front portion of housing over pushbuttons, align housing with base of set, and gently press housing in place.
- Depress exclusion plunger. With slight pressure it should snap into its unoperated position.
- Operate exclusion plunger several times to insure proper operation. Tighten captive screws in base of set.

C. Exclusion Switch

3.04 Perform no field maintenance on exclusion switch and plunger other than cleaning contacts with a 265C tool.

3.05 Replace set or exclusion switch assembly if any of the following exclusion switch requirements cannot be met.

- Exclusion plunger should remain in the operated position when pulled up to the full extent of its stroke.
- The plunger should return to the fully depressed position when handset is replaced.
- With housing removed, normally closed contacts of the exclusion switch should have perceptible follow when operated manually.
- With housing removed, open contacts of the exclusion switch should have minimum separation of 1/64-inch; gauge by eye.

D. Mounting Cords

3.06 Replace mounting cords of early manufacture (Fig. 9) as follows.

- (1) Remove dial from its mounting bracket.
- (2) Remove terminal screws.

- (3) Disconnect spade-tipped conductors and wafer sections.
- (4) Disengage cord stay hook from right leg of dial mounting bracket.

3.07 Mounting cords of late manufacture feature a slotted wafer strip (Fig. 10) to facilitate replacement.

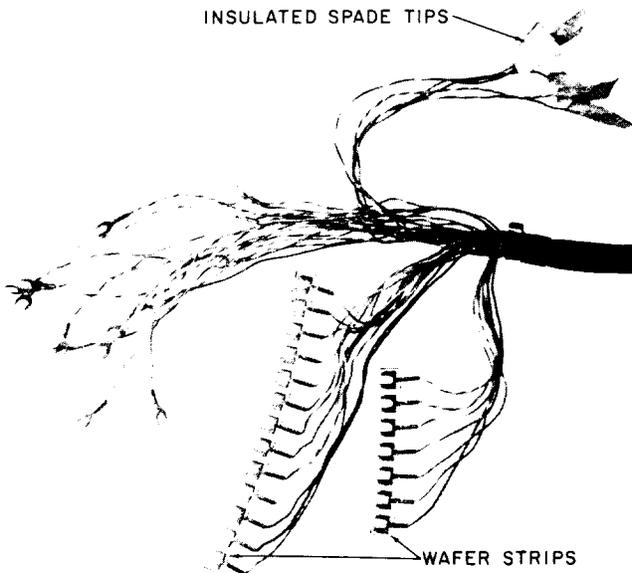


Fig. 10—Slotted Wafer Strip End of Mounting Cord, Later Type

3.08 Still later manufactured cords, designed for use with 636-type key assemblies, feature slotted wafer sections for each line appearance (Fig. 11). This allows easy arrangement of lines to pickup buttons.



No field maintenance should be performed on the plug end of plug-ended mounting cords.

E. Lamps and Pushbuttons

3.09 Replace cracked pushbuttons or collars. Remove accumulated dirt or film from lamps, collars, and pushbuttons with a water dampened cloth. **DO NOT USE SOLVENTS OF ANY KIND.** If cleaning does not correct binding of pushbuttons, replace button and collar assembly.

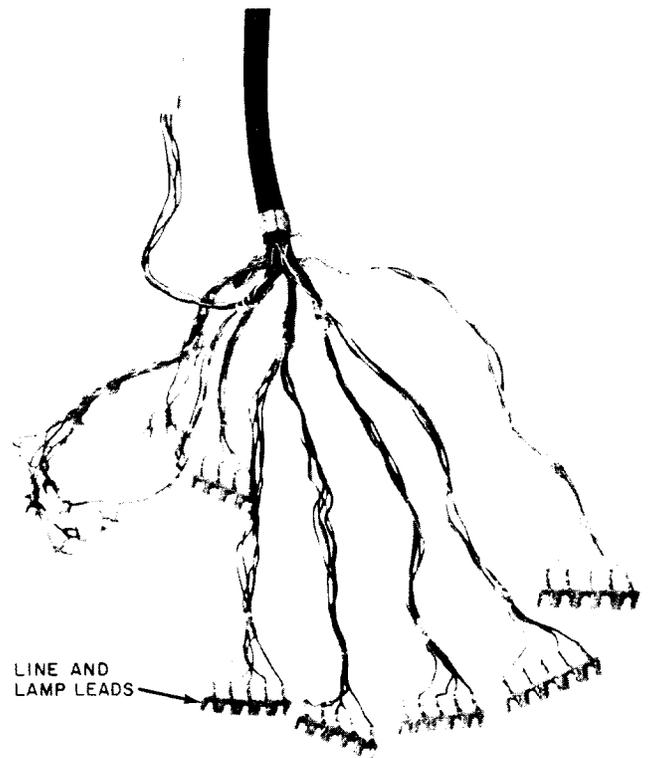


Fig. 11—Mounting Cord Used With 636A Key

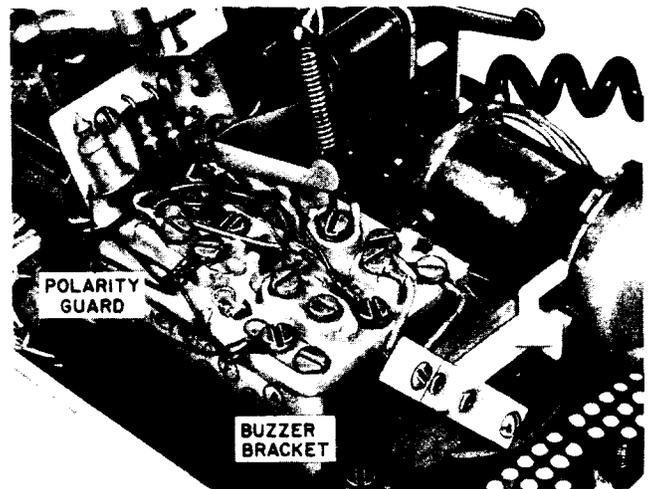


Fig. 12—819040528 (P-90D052) (MD) Guard Assembly, Installed

3.10 To replace defective lamp.

- (1) Remove dial from mounting bracket.
- (2) Carefully lift lamp from socket with KS-6320 orange stick.
- (3) Align lamp contact surfaces when placing new lamp in socket.
- (4) Remount dial.

3.11 The button and collar assembly should be carefully aligned to avoid interference with removal or replacement of housing.

F. Loose Number Card Retainers

3.12 Current production TOUCH-TONE sets are equipped with 812558039 (P-25E803) and 802695619 (P-269561) card retainers, which cannot be adjusted.

3.13 If the 812557858 (P-25E785) (MD) number card retainer becomes so loose on the faceplate that the number card or key designation strip slips, it can be tightened as follows.

- (1) Remove faceplate from set.
- (2) Remove card retainer from faceplate.
- (3) Bend the four arms of the retainer so that more pressure will be applied to the number card and designation strip. The bends should be made approximately 1/2-inch in from the tabs on the ends of the arms and in the opposite direction from the factory bent tabs.
- (4) Install the card retainer on the faceplate and insert the number card and key designation strip.
- (5) Install faceplate on telephone set.

Note: If adjusting the arms of the retainer does not result in sufficient holding power, replace the number card retainer.

G. 589- and 636-Type Keys

3.14 Field maintenance of the 589- and 636-type keys (Fig. 1, 13, and 14) consist of:

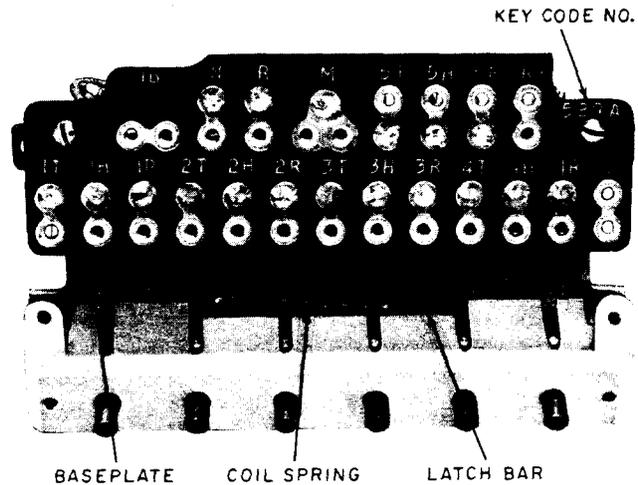


Fig. 13—589-Type Key, Top View

- Adjusting contacts with a 363 tool
- Cleaning contacts with a 265C tool
- Replacing loose or missing damper studs with 811818590 (P-18A859) vibration damper sleeves (Fig. 14). Later 589-type keys do not require this vibration damper.

3.15 Contact follow and separation is obtained by using a 363 tool at a point adjacent to contact spring pile-up (Fig. 14). When adjusting springs—

- There should be a minimum spring clearance of 1/64-inch between contact springs and those parts of the key which do not make contact with springs (Fig. 14).
- Normally open contacts should make with perceptible follow on locking keys before key plunger assumes locked position.

3.16 Replace set if the following requirements cannot be met.

- When depressed, locking plunger should release any previously locked plunger on its downstroke.
- When any pushbutton plunger is released from its operated position, it should return with a snap to its nonoperated position.

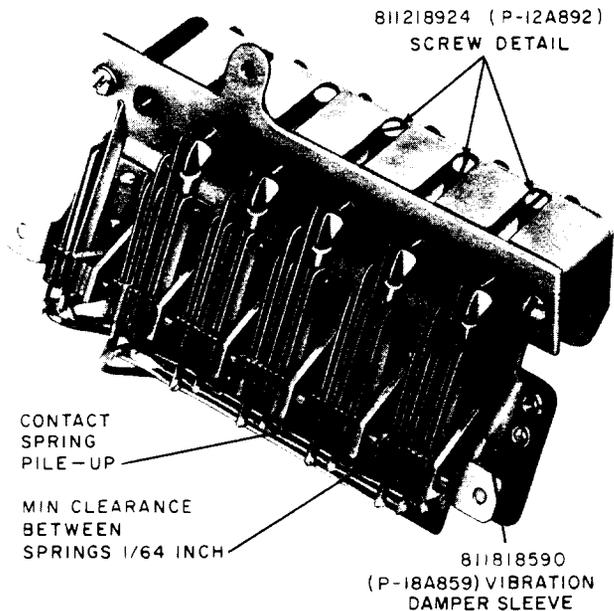


Fig. 14—589-Type Key, Bottom View

- An operated key plunger should not release during downstroke of hold button.
- An operated key plunger should release from its operated position on the upstroke of the hold button.
- A turnbutton operated plunger, when rotated 90 degrees clockwise, should maintain its operated position.
- When rotated counterclockwise from its operated position, it should be self-restoring the last 30 degrees of rotation.

H. 241-Type Amplifier

3.17 Used in telephone sets with headset jacks to amplify the output of the headset transmitter. **NO FIELD MAINTENANCE SHOULD BE ATTEMPTED ON 241-TYPE AMPLIFIERS.**

3.18 The 241A "Series II" (MD) or 241B amplifier must be used on all 563HB (MD), 563HBM, (MD), 563HBMS, 1563HB (MD), 2563HB (MD), 2563HBM (MD), and 2563HBMS sets to eliminate mechanical interference with the exclusion plunger.

3.19 Replace a 241-type amplifier if it is suspected of being defective (as evidenced by poor or no transmission).

I. TOUCH-TONE Dial

3.20 Check line polarity if no tones are heard in the receiver when a button is depressed.



The 25- and 35-type dial will function only when the green dial lead is positive (+) and when the orange-black lead is negative (-).

3.21 A hand test set connected to line terminations can be used to test for defective dials.



Do not attempt repair of TOUCH-TONE dials in the field. Replace defective dials.

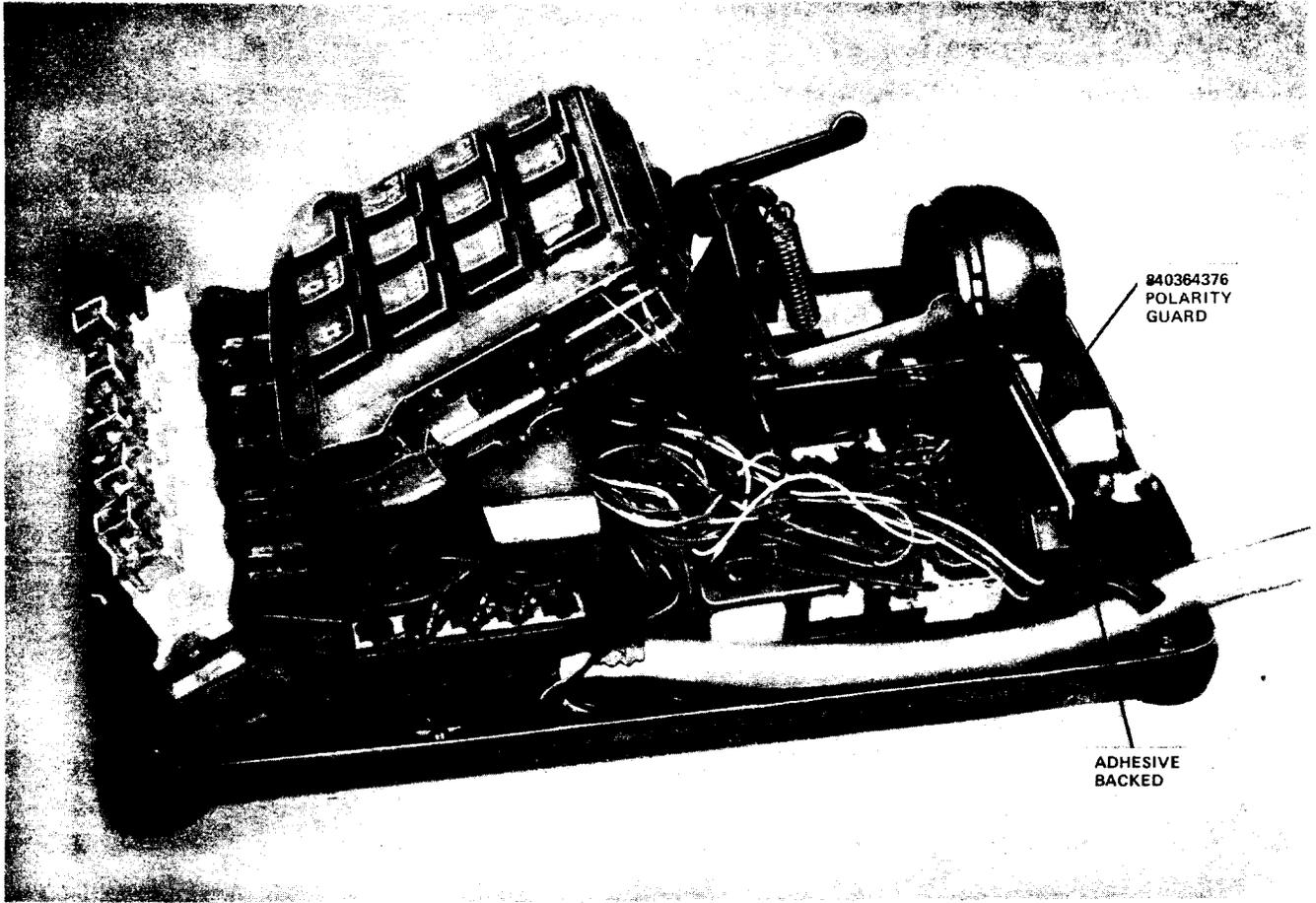


Fig. 15—♦2565-Type Telephone Set With 840364376 Polarity Guard Installed♦