

SINGLE SLOT COIN TELEPHONE SETS
1A/2A, 1C/2C, AND 1E TYPES

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NOTICE

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1. GENERAL

1.01 This section contains identification, installation, maintenance, and connection information on the 1A/2A-, 1C/2C- and 1E-type coin telephone sets (Fig. 1 and 2).

1.02 This section is reissued to:

- Include identification information
- Add comcode numbers to existing P-numbers
- Add information on 51A hopper for 1E1 sets
- Add information on plastic return chute assembly
- Show 8U dial MD
- Delete use of P-10E070 and P-12E798 security studs.

Since this reissue covers a general revision, arrows ordinarily used to indicate changes have been omitted.

1.03 Identification information in this section was previously contained in Section 506-401-100.

1.04 Codes are described in Table A.

1.05 A detailed description of the 1C- and 2C-type sets can be found in Section 506-100-120.

1.06 The 1A/1C rotary dial sets can be converted to 1A/1C TOUCH-TONE sets by replacing the cover unit assembly. No wiring changes are necessary. No provisions are made for modifying the 2A/2C rotary dial sets to 2A/2C TOUCH-TONE sets.

1.07 All 1C- and 2C-type coin telephone sets are shipped from the factory wired for coin first service but can be converted in the field or at the service center to dial tone first service (refer to 6.02).

1.08 Coin telephone sets converted to dial tone first can be used only with those central office switching systems that have been converted to dial tone first.

1.09 The 1E-type postpay coin telephone sets have no provision for coin refund; however, slugs or bent coins trapped in the chute can be cleared and will fall into the coin return when the coin release lever has been operated.

1.10 Overall dimensions of the 1A/1C/1E-type coin telephone sets are:

- Height—21 inches
- Width—7-3/4 inches
- Depth—6-1/4 inches

1.11 Overall dimensions of the 2A/2C-type coin telephone sets are shown in Fig. 3.

1.12 1A/2A-type sets are MD.

2. IDENTIFICATION

Ordering Guide

2.01 *Basic Telephone Set:*

- Set, Coin Telephone, 1C1*, 1C2*, 2C1*, 2C2*, 1E1*, or 1E3*.

* See Table B for color selection.

TABLE A
CODE SIGNIFICANCE

CODE	FIG.	HOUSING	MODE OF OPERATION	DIAL
1A1	1	Box Type	Coin First Only	Rotary
1A2				TOUCH-TONE
2A1	2	Panel Type		Rotary
2A2				TOUCH-TONE
1C1	1	Box Type	Coin First or Dial Tone First	Rotary
1C2				TOUCH-TONE
2C1	2	Panel Type		Rotary
2C2				TOUCH-TONE
1E1	1	Box Type	Post Pay	Rotary
1E3				None (Manual)

2.02 Components: See Table B and Fig. 1 and 2.

2.03 Associated Apparatus (Order Separately): See Table C.

Design Features

2.04 All parts are contained in a high-security steel housing. The cover unit/door and faceplate assembly has six locking points actuated by a 719A tool (Fig. 4) and secured by a 29A lock. A 32A lock may be used in 1A/1C/1E-type sets.

2.05 The 1A/1C/1E-type set cash compartment door has four locking points actuated by a 719A tool. The 2A/2C-type set cash compartment

door has five locking points; three are actuated by a 719A tool; two are stationary. All cash compartment doors are secured by a 30-type lock.

2.06 Provision is made for use of four security studs.

2.07 The set is designed to accept U.S. nickels, dimes, and quarters only.

2.08 All sorting of coins is done internally by the coin chute.

2.09 Sets have transmission characteristics of 500-type telephone sets.

2.10 Electrical connections of field replaceable cover unit and chute-totalizer are made by plug and jack arrangement.

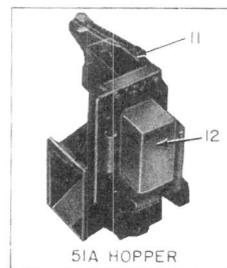
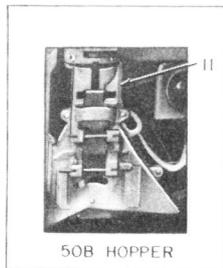
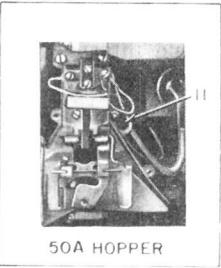
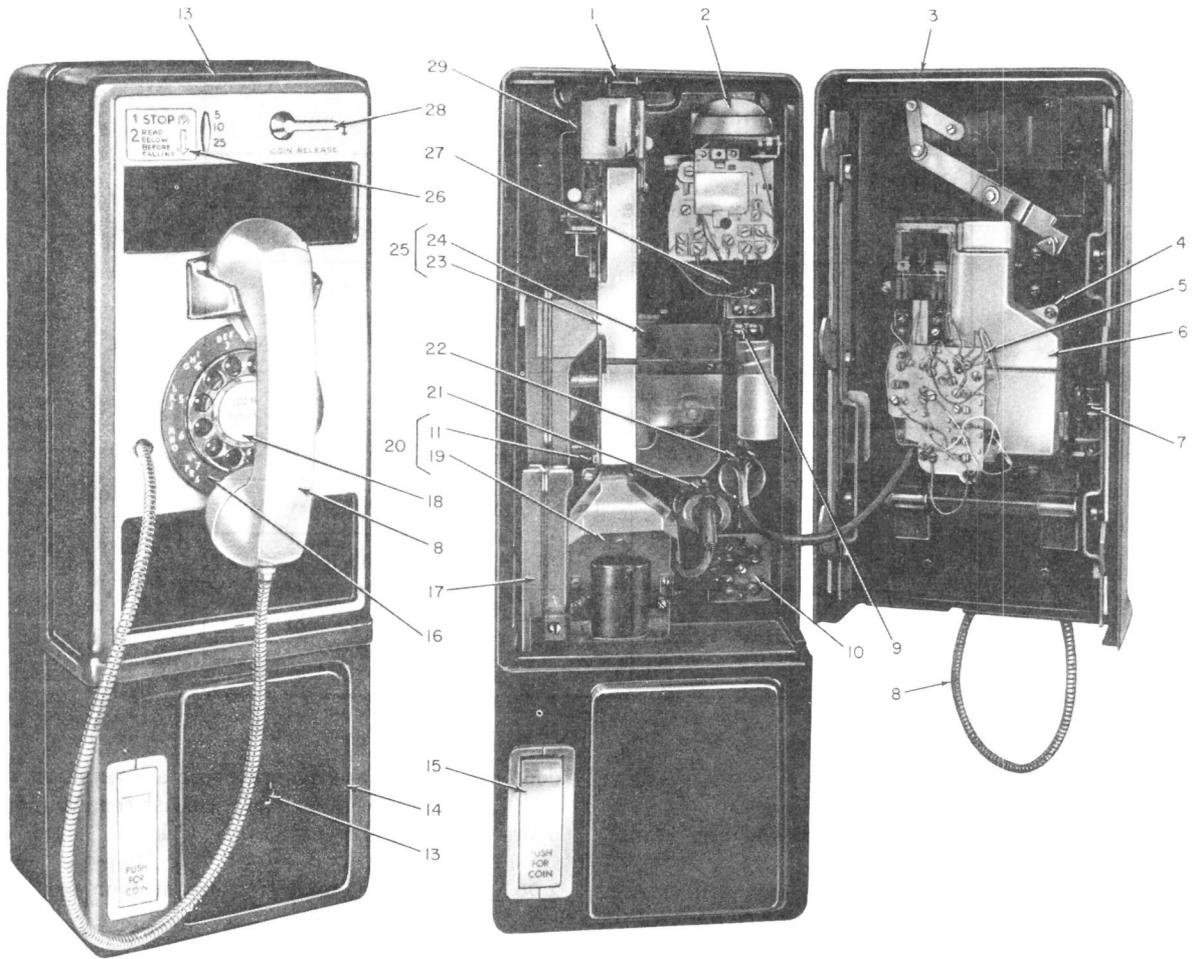


Fig. 1—1-Type Coin Telephone Set

LEGEND (FIG. 1)

- 1 — 812755429 (P-27E542) Chute Locking Lever and 812754976 (P-27E497) Spring
- 2 — C4-Type Ringer
- 3 — Cover Unit Assembly*
- 4 — 840157390 Self-locking Screw
- 5 — TB2
- 6 — Dial and Housing Assembly*
- 7 — 811554443 (P-15E444) Coverplate and 801816786 (P-181678) BHM Screw
- 8 — Handset*
- 9 — Coin Chassis*
- 10 — TB3 (1C Set Only)
- 11 — Hopper Assembly*
- 12 — 840708895 Delay Circuit Assembly
- 13 — Slot For 719A Tool
- 14 — 2-Type Door
- 15 — 812165462 (P-21F546) Coin Return Assembly
- 16 — Number Plate or Apparatus Blank*
- 17 — 811557304 (P-15E730) Return Chute Assembly
- 18 — Dial*
- 19 — Coin Relay (1A/1C-Type Sets Only)*
- 20 — Coin Relay and Hopper Assembly (1A/1C-Type Sets Only)*
- 21 — P2
- 22 — P1
- 23 — Chute*
- 24 — Totalizer*
- 25 — Chute-Totalizer*
- 26 — Information Plate*
- 27 — TB1
- 28 — 840358725 Shaft and Handle Assembly
- 29 — 812363612 (P-23F361) Entrance Stop

*Refer to Table B

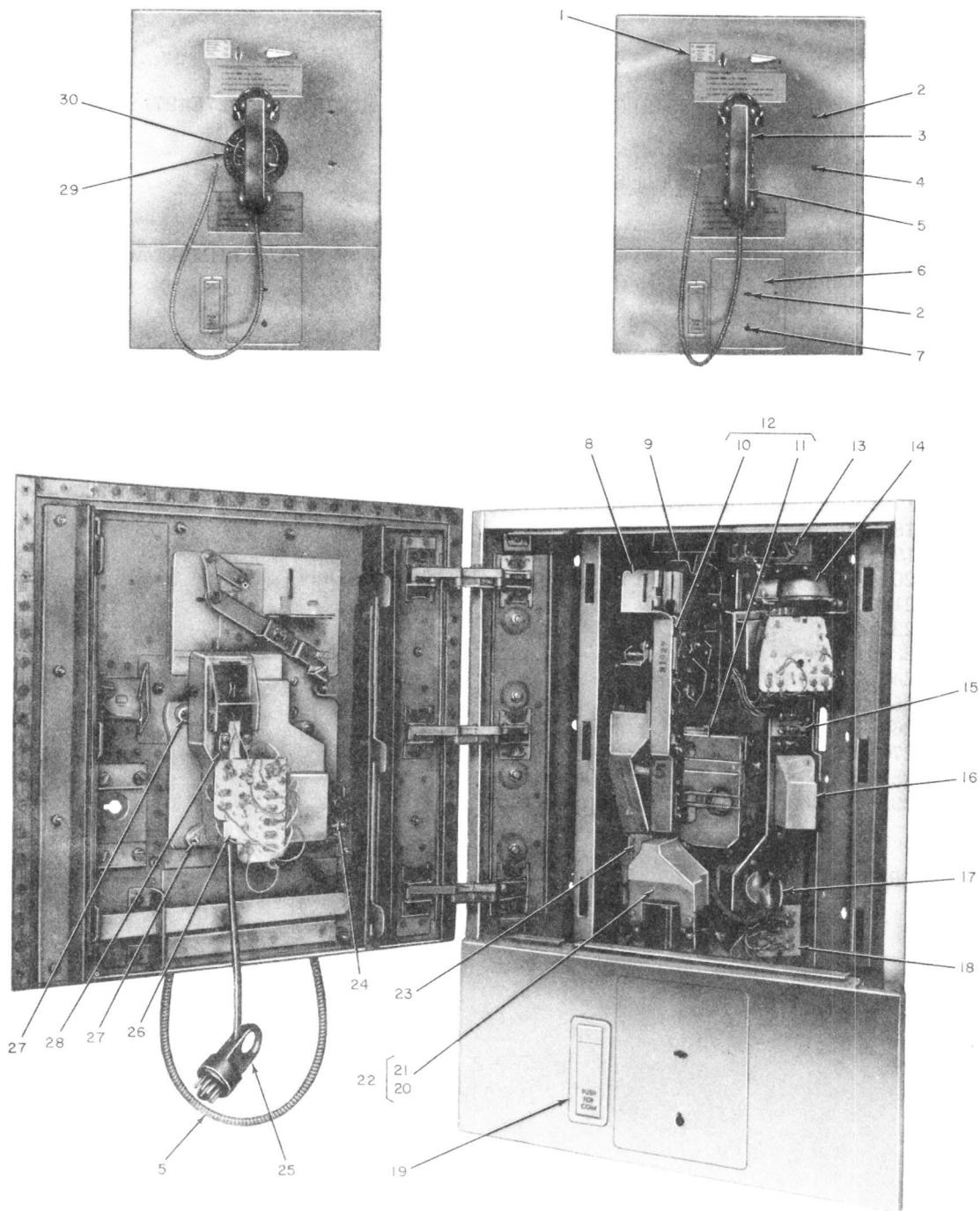


Fig. 2—2-Type Coin Telephone Set

LEGEND (FIG. 2)

- 1 — Information Plate*
- 2 — Slot for 719A Tool
- 3 — Number Card
- 4 — Slot for 29A Lock
- 5 — Handset*
- 6 — 5A Door
- 7 — Slot for 30-Type Lock
- 8 — 812363612 (P-23F361) Entrance Stop
- 9 — 812755429 (P-27E542) Chute Locking Lever and 812754976 (P-27E497) Spring
- 10 — Chute*
- 11 — Totalizer*
- 12 — Chute-Totalizer*
- 13 — 7A Clip
- 14 — C4-Type Ringer
- 15 — TB1
- 16 — Coin Chassis*
- 17 — P2
- 18 — TB3 (2C Set Only)
- 19 — Coin Return Assembly
- 20 — Coin Relay*
- 21 — Hopper Assembly*
- 22 — Coin Relay and Hopper Assembly*
- 23 — Return Chute Assembly*
- 24 — 811554443 (P-15E444) Coverplate and 801816786 (P-181678) BHM Screw
- 25 — P1
- 26 — TB2
- 27 — 840157390 Self-locking Screw
- 28 — Dial and Housing Assembly*
- 29 — Number Plate Assembly*
- 30 — Dial*

*Refer to Table B

TABLE B
COMPONENTS AND COLOR SELECTION

COIN TEL SET	COVER UNIT ASSY	DIAL * AND HOUSING ASSY	* DIAL	NUMBER PLATE ASSY	INFORMATION PLATE	* HANDSET
1A1/1C1-3 (Black)	819054032 (P-90E403)	841317241 or 819042748 (P-90D274) (MD)	8W, 8U (MD), or 8S (MD)	818418527 (P-84A852)	840156319 for Coin First	G3AH-52, GEAK-52, G3AD-52 (MD), G3AF-52 (MD), G3P-52 (MD)
1A1/1C1-44 (Chrome)	819054446 (P-90E444)					
1A1/1C1-51 (Moss Green)	819054511 (P-90E451)					
1A2/1C2-3 (Black)	819055039 (P-90E503)	840346977 (70A Dial) or 819042755 (P-90D275 [35T3A Dial)	70A or 35T3A	840156327 for Dial Tone First		
1A2/1C2-44 (Chrome)	819055443 (P-90E544)					
1A2/1C2-51 (Moss Green)	819055518 (P-90E551)					
2A1/2C1-67 (Brushed Stainless)	840658033	841317241 or 819042748 (P-90D274) (MD)	8W, 8U (MD), or 8S (MD)	818720526 (P-87B052)	(Used on 1C- and 2C-Type sets only)	G3AH-3, G3AK-3, G3AD-3 (MD), G3AF-3 (MD)
2C1-84 (Bronze)		841317258 or 840152227 (MD)	818720039 (P-87B003)			
2A2/2C2-67 (Brushed Stainless)		840346977	70A	840156087		
2C2-84 (Bronze)		819042755	35T3A			
		840347173	70A			G3AH-52, G3AK-52, G3AD-52 (MD), G3AF-52 (MD), G3P-52 (MD)
		840157580	35T3A			G3AH-3, G3AK-3, G3AD-3 (MD), G3AF-3 (MD)
1E1-3 (Black)	840658033	841317241 or 819042748 (P-90D274) (MD)	8W, 8U (MD), or 8S (MD)	818418527 (P-84A852)	840156087	G3AH-52, G3AK-52, G3AD-52 (MD), G3AF-52 (MD)
1E1-44 (Chrome)	840658447					
1E1-51 (Moss Green)	840658512					
1E3-3 (Black)	840659031	841317266 or 812366516 (P-23F651) Housing Assembly	840994727 Apparatus Blank Assembly	840659445		
1E3-44 (Chrome)	840659445					
1E3-51 (Moss Green)	840659510					

* Where two or more numbers exist, the first number listed is preferred.

TABLE B (Cont)
COMPONENTS AND COLOR SELECTION

HOUSING AND MTG PLATE ASSY	CHUTE-TOTALIZER	COIN CHASSIS	COIN RELAY AND HOPPER ASSY	RETURN CHUTE ASSY	COIN RETURN ASSY	COIN RECP RAIL	CASH COMPT. DOOR
818512036 (P-85A203)	1A/2A Sets use 811554286 (P-15E428) Consists of 20A Chute and 811555796 (P-15E579) Totalizer	1A/2A Sets use 840693634 with DF Oscillator or 811554377 (P-15E437) (MD) with SF Oscillator	1AA Coin Relay Consists of 1A or P-15E687 (MD) Coin Relay and 811557172 (P-15E717) Coin Hopper Assembly	811557305 (P-15E730) Current return chute assemblies are made of plastic instead of diecasting	812165462 P-21F546)	1B	2A-3 or 2B-3 (Optional)
818512444 (P-85A244)							2A-44 or 2B-44 (Optional)
818512519 (P-85A251)							2A-51 or 2B-51 (Optional)
818512036 (P-85A203)							2A-3 or 2B-3 (Optional)
818512444 (P-85A244)							2A-44 or 2B-44 (Optional)
818512519 (P-85A251)							2A-51 or 2B-51 (Optional)
	1C/2C Sets use 20A1A Consists of 20A Chute and 1A Totalizer	1C/2C Sets use 31A with DF Oscillator or 1A (MD) with SF Oscillator					5A-67
					840152219	1D	5A-84
					812165462 (P-21F546)		5A-67
					840152219		5A-84
840656037	20A10A Consists of 20A Chute and 10A Totalizer	30B with DF Oscillator or 30A (MD) with SF Oscillator	51A or 50A (MD) Hopper Assembly	812165462 (P-21F546)	1B	2A-3 or 2B-3 (Optional)	
840656441			2A-44 or 2B-44 (Optional)				
840656516			2A-51 or 2B-51 (Optional)				
840657035			2A-3 or 2B-3 (Optional)				
840657449			2A-44 or 2B-44 (Optional)				
840657514			2A-51 or 2B-51 (Optional)				
			50B Hopper Assembly				

2.11 Each set is equipped with a totalizer mounted on the side of the coin chute. The totalizer cam shaft is rotated 10 degrees by each nickel deposited, 20 degrees by each dime, and 50 degrees by each quarter. Each cog (10 degrees) on the gear wheel represents a 5-cent increment. The totalizer can be set for an initial rate of any amount from 5 cents to 45 cents in 5-cent increments. A call cannot be made, except as described in 2.16 until the correct initial rate has been deposited. All totalizers are preset at the factory for a 10-cent initial rate.

2.12 Operator identification of coin deposits is by oscillator generated beep tones. A nickel is identified as one beep, a dime as two beeps, and a quarter as five rapid beeps. These tones are not audible in the handset. In switching systems designed for machine detection of customer coin deposits, sets equipped with dual frequency (DF) type chassis must be used.

2.13 Several versions of totalizers may be found in the field as shown in Fig. 5. The CF-DTF

mode switch on current models or PP-DTF connector on older models can be moved manually from one position to another.

2.14 The black reference mark appearing on the ratchet wheel indicates whether the totalizer shaft is off-normal or in its "home" position. As viewed from the front of the coin telephone set, a totalizer is in its home position when the mark is at a point 1 tooth to the left of the 6 o'clock position.

Basic Operating Features

2.15 *Coin First Service (Prepay System):* For coin first operation, the coin station line circuit at the central office responds to ground start control. A start circuit must be completed between ring lead and the ground lead at the coin telephone set before the dialing and talking circuit is connected and energized.

2.16 *Dial Tone First Service (Prepay System):* System operation for dial tone first is on a

TABLE C

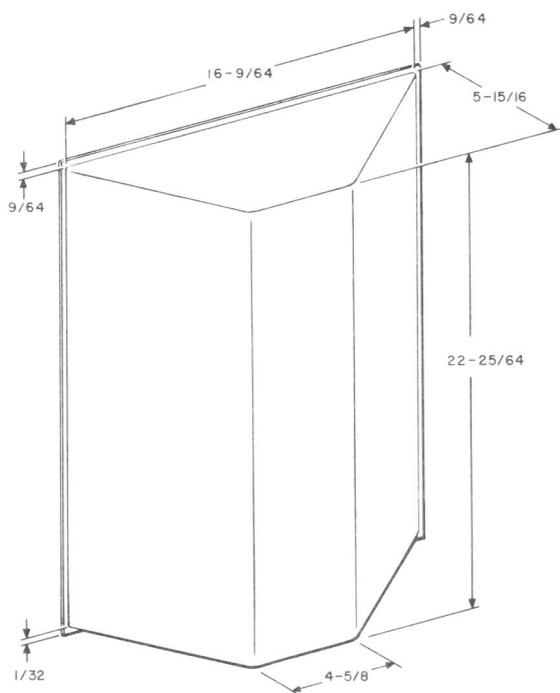
**ASSOCIATED APPARATUS
(Order Separately)**

COIN TEL SET	CASH COMPT DOOR	COIN RECEPTACLE	COIN RECEPTACLE COVER	CASH COMP LOCK	COVER UNIT ASSY OR DOOR AND FACEPLATE ASSY LOCK	ALARM SWITCH	DOOR ACTUATING TOOL
1A/1C/1E-Type	2A-3* (Black) 2A-44* (Chrome) 2A-51* (Moss Green)	1C-Type ‡	1E	30-Type	29A	1A Switch Kit & 257A Switch	719A (Fig. 4)
2A-Type	5A-67† (Stainless)					257A Switch	
2C-Type	5A-67† (Stainless) or 5A-84† (Bronze)						

* 2B door is optional.

† The cash compartment door is furnished with all panel phones.

‡ Sets equipped with false floor in coin vault will require a 1B receptacle.



NOTES:

1. ALL DIMENSIONS SHOWN ARE IN INCHES.
2. THE SWITCHHOOK AND HANDSET EXTEND 2-3/4 INCHES IN FRONT OF THE FACEPLATE.

Fig. 3—Rear View of Panel Set Showing Dimensions

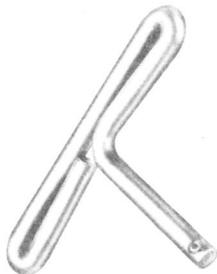


Fig. 4—719A Tool

loop start basis with ground present test for initial rate, and polarity reversal for subsequent deposits. This system provides dial tone before coin deposit and allows call completion to certain numbers without a coin deposit. Loop start circuit control is completed between the ring lead and the tip lead at the coin telephone set and the dialing and talking circuit is connected and energized.

2.17 Dial Postpay Service: The system provides negative battery to the ring side of the line with tip grounded. Dial tone is received and the party dialed before coin deposit. Upon called party answer and following coin deposit, the CO switches the circuit for conversation.

2.18 Manual Postpay Service: The system provides negative battery to the ring side of the line with tip grounded. The operator is alerted when handset is lifted. Coin deposits are requested by the operator after connection to called party has been made.

3. INSTALLATION

LOCATION

3.01 The 1-type coin telephone sets can be installed per Table D.

3.02 The 2-type coin telephone set can be installed per Table E.

3.03 Consider the following:

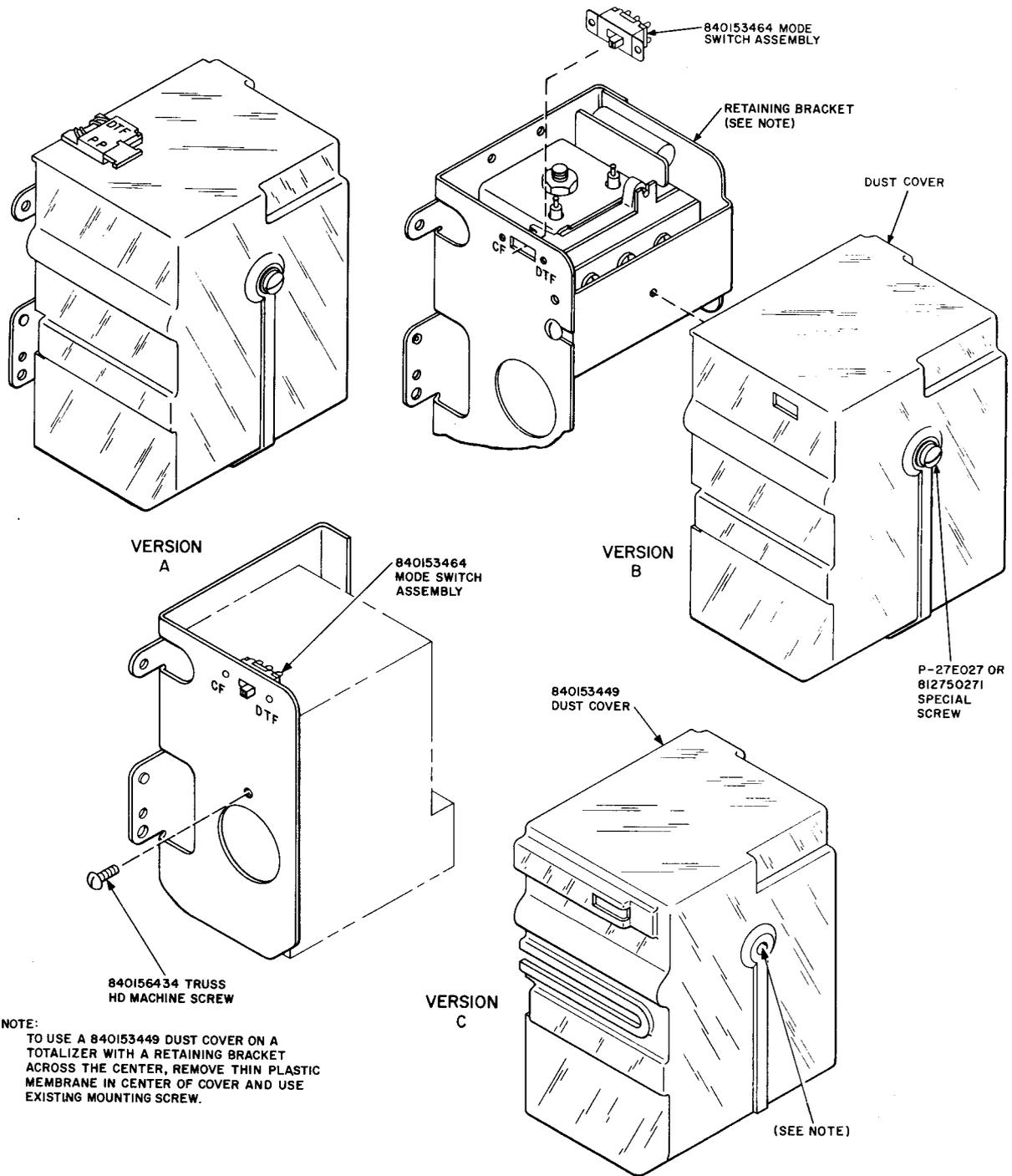
- Protection of Drop and/or Inside Wires.
- Visibility, accessibility, and possible accident hazards in selecting locations.
- Mounting surfaces—Consult a supervisor before locating coin telephone set on finishes that would be expensive to repair if the set is removed.
- Inductive effects—Locate set and associated wiring at least 6 inches from neon fixtures, transformers, or other interference-causing equipment.

BACKBOARDS AND SECURITY STUDS

3.04 Refer to Section 506-100-101 and observe the following:



When mounting the coin telephone set, a vertical surface must be provided. A tilt greater than 1-1/2 degrees in any direction can cause chute



NOTE:
 TO USE A 840153449 DUST COVER ON A TOTALIZER WITH A RETAINING BRACKET ACROSS THE CENTER, REMOVE THIN PLASTIC MEMBRANE IN CENTER OF COVER AND USE EXISTING MOUNTING SCREW.

Fig. 5—Partial View of Totalizer

TABLE D
MOUNTING OF 1-TYPE SET (NOTE 3)

BACKBOARD, BOOTH, SHELF, MOUNTING, OR KIOSK	BACKBOARD REQUIRED	SECURITY STUDS (4 REQUIRED)	
		834080608 (P-40Y060) (SHORT SHOULDER-SHORT THREAD)	834080616 (P-40Y061) (LONG SHOULDER-SHORT THREAD)
178A-3 or -51 Backboard (Note 1)	Use on a vertical surface	•	
KS-21676, L2 Backboard	Use on a horizontal surface	•	
10- and 11-Type Booths	D-179939 or D-179940 Kit of Parts	•	
KS-14611 Booth	Furnished	•	
KS-16797 Booth	B-190387		•
KS-19206 Booth	KS-19206 List 6 Installation Kit	•	
KS-19267 Shelf	Furnished	•	
KS-19340 Booth	KS-19340 List 53	•	
KS-19425 Booth	Furnished		•
KS-19426 Mounting	KS-19426 List 7 Installation Kit		•
KS-19580 Booth	Furnished	•	
KS-19945 Shelf	Existing or 178A		•
KS-20194, L5 Shelf	178A-3 (Note 2)	•	
KS-20255 Kiosk	Furnished		•
KS-20842 Mounting	Furnished	•	

Notes:

1. Top edge of 178A backboard should be approximately 67-1/4 inches from floor for a standard coin slot height of 66 inches; it should be approximately 55-1/4 inches from floor for a universal coin slot height of 54 inches.
2. A 178A backboard is furnished with each KS-20194 shelf unless otherwise specified.
3. Seven 1/4-20 by 5/8-inch hardened RHM screws 812367902 (P-23F790) are furnished with each coin telephone set for mounting to backboard.

malfunction. A vertical surface may be determined by the following steps:

- (a) Place a spirit level vertically against the mounting surface on which the set is to be installed.
- (b) When a vertical reading is obtained, the end of the level opposite the point of contact shall be no farther from the mounting surface than shown in Table F.
- (c) The left to right mounting axis shall also be within 1-1/2 degrees of true vertical.

3.05 Refer to Fig. 7 and 8 and Tables D and E for security stud requirements.

MOUNTING ARRANGEMENTS

3.06 To gain access to the coin telephone set mounting holes:

- (1) Remove cover unit assembly (1-type) per 3.10 or open door and faceplate assembly (2-type) per 3.11.
- (2) Remove chute-totalizer per 3.12.
- (3) Remove coin chassis per 3.22.

1-Type

3.07 Refer to Table D for mounting applications.

2-Type

3.08 To fully recess a 2-type set in a wall:

- (a) Ensure that wall thickness will accept the depth of set.
- (b) Refer to Fig. 3 for dimensions of the set.
- (c) Cut a hole in the wall.

- Height—22-25/64 inches
- Width—16-9/64 inches
- Depth—6 inches
- Bottom edge of cutout should be approximately 46 inches from floor for a standard coin

TABLE E

MOUNTING OF 2-TYPE SET (NOTE 2)

BOOTH, SHELF, OR MOUNTING	BACKBOARD REQUIRED	SECURITY STUDS (4 REQUIRED)		COVER REQUIRED (NOTE 1)
		834080608 (P-40Y060) (SHORT SHOULDER SHORT THREAD)	834080616 (P-40Y061) (LONG SHOULDER SHORT THREAD)	
KS-19206 Booth	KS-19206, List 7 Installation Kit	•		127B Fig. 6
KS-19340 Booth	KS-19340 List 54 Backboard	•		127B Fig. 6
KS-19426 Mounting	Furnished		•	KS-19426, List 34 Top Assembly
KS-19442 Booth	KS-19340 List 54 Backboard	•		127A Fig. 6
KS-20194 Shelf	Furnished	•		
KS-20630 Booth	Furnished	None Required (Note 3)		

Notes:

1. Three No. 8-32 by 3/16 RHM screws are furnished with cover for installation.
2. Thirteen 1/4-20 by 5/8-inch hardened RHM screws 812367902 (P-23F790) are furnished with each coin telephone set for mounting to backboard.
3. Use thirteen 1/4-20 by 3/8 RHM screws in a KS-20630 booth in place of the 1/4-20 by 5/8 lg. furnished screws.

slot height of 66 inches; it should be approximately 34 inches from floor for a universal coin slot height of 54 inches.

3.09 Refer to Table E for all other applications.

COMPONENTS**Cover Unit Assembly (1-Type Set)**

Ensure that the lip of the faceplate overlaps the wall around the hole.

3.10 To remove cover unit assembly:

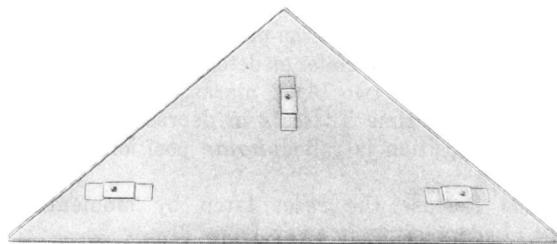
- (1) Unlock 29A lock.



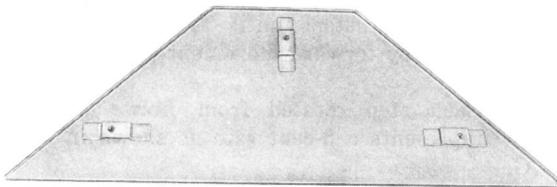
TABLE F

METHOD OF DETERMINING
A VERTICAL SURFACE

SPIRIT LEVEL LENGTH	MAXIMUM ALLOWABLE DISTANCE OUT OF PLUMB
18 inches	15/32 inch
24 inches	5/8 inch
30 inches	25/32 inch
36 inches	15/16 inch



127A-BOTTOM SIDE



127B-BOTTOM SIDE

Fig. 6—127A and 127B Covers

- (2) Release locking mechanism with 719A tool by turning tool 1/8-turn counterclockwise.
- (3) Pull cover off about 3 inches to gain access to P1.
- (4) Disconnect P1 by carefully pulling straight out as cover is removed.

Door and Faceplate Assembly (2-Type Set)

Exercise care to keep the set from tipping over when door is opened.

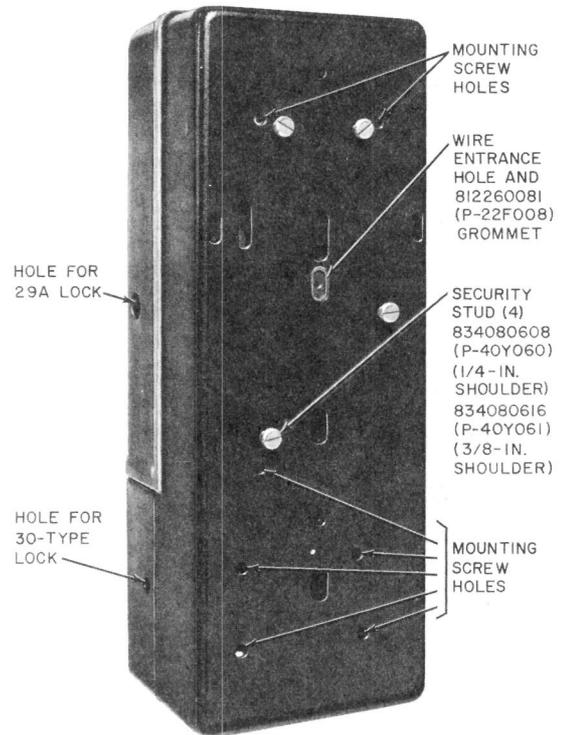


Fig. 7—Location of Mounting Screw Holes and Security Studs in 1-Type Set

3.11 To open door and faceplate assembly:

- (1) Unlock 29A lock.
- (2) Release locking mechanism with 719A tool by turning 1/8-turn counterclockwise.
- (3) Open door approximately 3 inches to gain access to P1.
- (4) Disconnect P1 by carefully pulling straight out as door is opened.

Chute-Totalizer**3.12 To remove chute-totalizer:**

- (1) Disconnect P2.
- (2) Release chute locking lever.

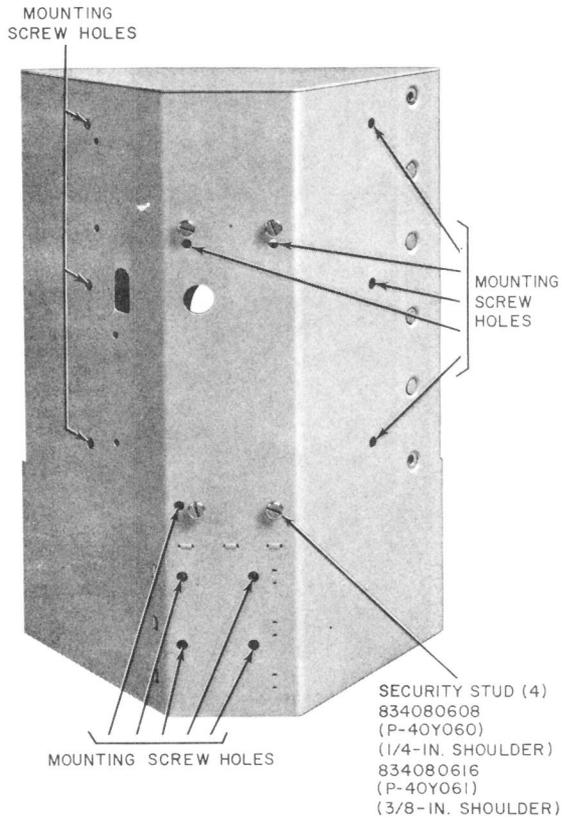


Fig. 8—Location of Mounting Screw Holes and Security Studs in 2-Type Set

- (3) Lift spring out of groove in chute.
- (4) Tilt top of chute forward and lift out.

3.13 To install chute-totalizer in set:

Caution: Before installing a chute in set, swing upper plate assembly open and clean off any foreign material adhering to chute magnets.

- (1) Place chute on locating pins at rear of hopper assembly, and back of housing (Fig. 9).

Note: Ensure that reject chute, return chute, and coin return assemblies line up properly.

- (2) Place spring in groove on chute.

- (3) Lock spring in place by pushing chute locking lever down.

- (4) Connect totalizer plug P2 to J2.

3.14 To determine totalizer initial rate setting:



Use extreme care when checking initial rate or resetting totalizer. Avoid damaging pawl and spring pile-ups. Do not attempt to turn totalizer cam shaft in direction opposite to that shown in Fig. 10.

- (1) Remove chute-totalizer per 3.12.
- (2) Loosen retaining screw and remove transparent dust cover.
- (3) Rotate shaft in the proper direction (Fig. 10) until detent roller on detent wheel is positioned between the two black marks. This occurs at the same time T2 rests in depression in shaft. This position is called **home** position.
- (4) Release the reset latch by momentarily depressing it away from T1.
- (5) Slowly rotate shaft in proper direction, and count the steps until T1 springs operate (indicated by forward movement of reset latch).
- (6) Each step rotated from **home position** represents a 5-cent rate as shown in Table G.

3.15 To reset totalizer rate:

Note: Use two KS-21107 releasers or two paper clips to reset the rate.

Increasing Rate (Fig. 11)

- (1) Rotate shaft in proper direction (Fig. 10) until it is in home position as described in 3.14(3).
- (2) Further rotate shaft approximately 10 steps until a tab on the T1 cam is accessible as shown in Fig. 11 and 12.
- (3) Insert a KS-21107 releaser or a paper clip into one of the four holes indicated as hole

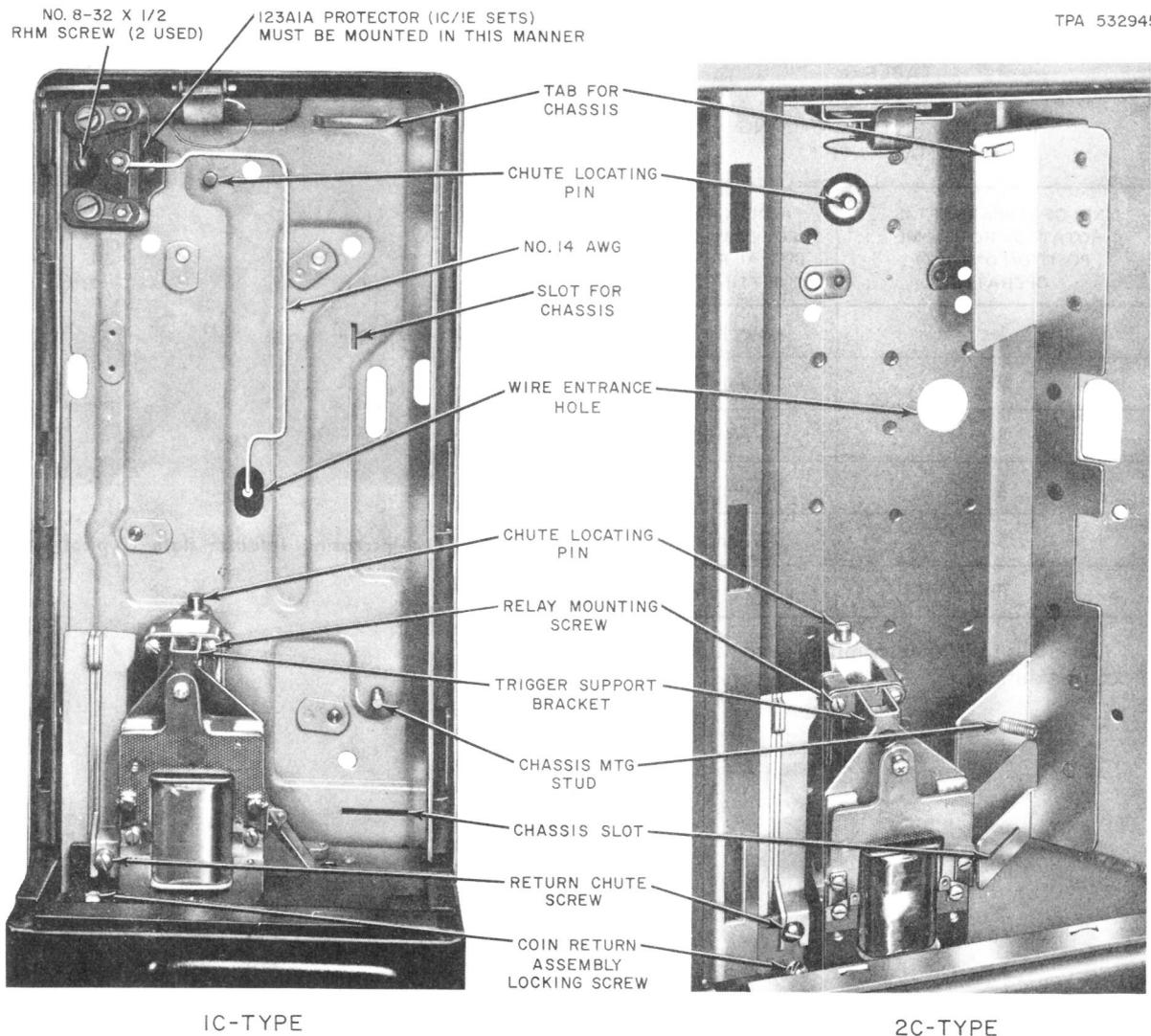


Fig. 9—Housing and Mounting Plate Assembly

2 in center of shaft. Hold paper clip firmly so that shaft cannot move.

Caution: Do not push end of releaser or paper clip too far through shaft hole or it will damage insulation of coil located beneath shaft.

(4) Position a second releaser or paper clip into the hole on T1 cam indicated as hole 1 and

rotate cam in direction of the curved arrow as shown.



If hole 1 in T1 cam has been mutilated or clogged preventing use, place releaser or paper clip against tab as shown in Fig. 11 and push tab in direction of the straight arrow.

(5) One step of rotation of the T1 cam in this direction increases the rate by 5 cents.

(6) Check new initial rate setting per 3.14.

TABLE G

METHOD FOR DETERMINING INITIAL RATE *

NO. OF STEPS SHAFT IS ROTATED FROM HOME POSITION UNTIL T1 OPERATES	INDICATES FOLLOWING INITIAL RATE SETTING
1	5 cents
2	10 cents
3	15 cents
4	20 cents
5	25 cents
6	30 cents

*30 cents is not the maximum setting that can be obtained.

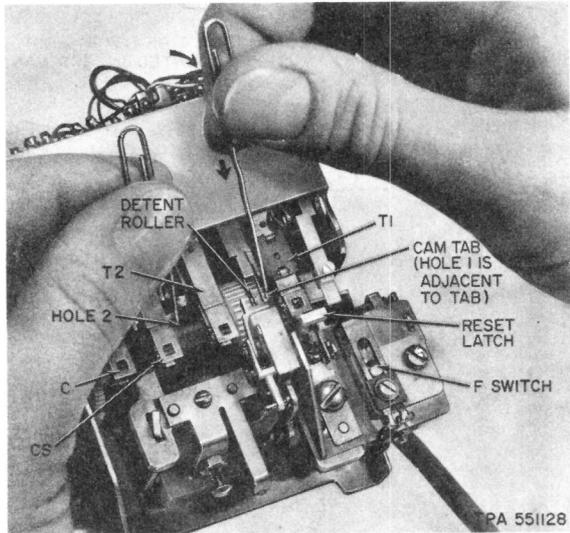


Fig. 11—Increasing Totalizer Rate (Typical)

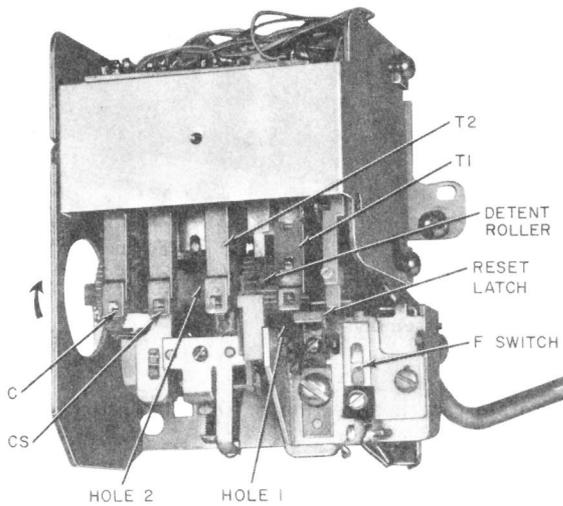


Fig. 10—Checking Totalizer Rate (Typical)

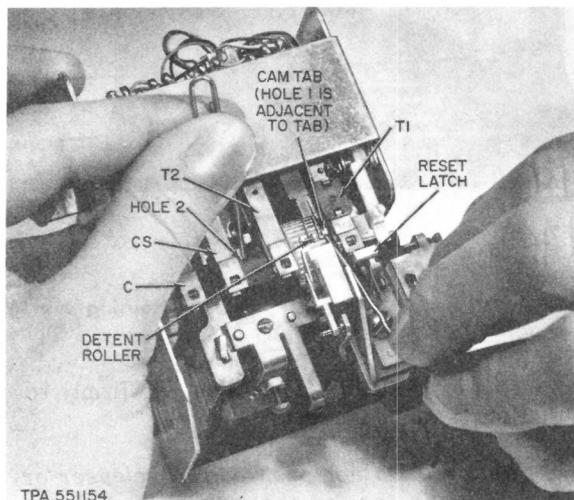


Fig. 12—Decreasing Totalizer Rate (Typical)

Decreasing Rate (Fig. 12)

- (7) Repeat steps (1) through (3).
- (8) Position a second releaser or paper clip into the hole on T1 cam indicated as hole 1 (Fig. 12) and rotate cam in direction of the curved arrow as shown.



If hole 1 in T1 cam has been mutilated or clogged preventing use, place releaser or paper clip against tab as shown in Fig. 12 and push tab in direction of the straight arrow.

- (9) One step of rotation of the T1 cam in this direction decreases the rate by 5 cents.
- (10) Check new initial rate setting as described in 3.14.

3.16 To remove totalizer from chute:

Do not damage totalizer arms when removing or replacing totalizer on chute or when returning damaged totalizers to service center. Do not turn screws that are sealed with glyptal. When returning totalizers or chutes to service center, reuse packing material from which the new item was removed.

- (1) Unscrew three captive-type mounting screws from chute.
- (2) Carefully remove totalizer from chute.

3.17 To install totalizer on chute:

- (1) Replace totalizer cover, if removed previously.
- (2) Line up the long guide pins on the totalizer with holes in the chute.
- (3) Place totalizer on chute making sure that totalizer arms enter slots in chute. Be sure short guide pins on chute are in mating totalizer bracket holes.
- (4) Tighten three captive totalizer mounting screws.

Coin Chassis

3.18 The 811554377 (P-15E437) single frequency (SF) coin chassis used in 1A/2A-type sets, can be replaced with an 840693634 dual frequency (DF) coin chassis (Fig. 13).

3.19 The 1A (SF) coin chassis used in 1C/2C-type sets can be replaced with a 31A (DF) coin chassis (Fig. 14).

3.20 The 30A (SF) coin chassis used in 1E-type sets can be replaced with a 30B (DF) coin chassis (Fig. 15).

3.21 DF oscillator-equipped coin chassis have the following features:

- (a) Prior to August 1975, two screw terminals were furnished on the side of the oscillator. When these terminals are shorted, the oscillator is in the SF mode.
- (b) All coin chassis and all sets containing them are shipped from the factory in the DF mode.

3.22 To remove coin chassis:

- (1) Disconnect Tip, Ring, and Grd connections. Disconnect 14 AWG Grd strap if protector is mounted in set.
- (2) Remove chute-totalizer per 3.12.
- (3) On 1A/2A/1C/2C-type sets, disconnect (BK) and (Y) leads from coin relay and carefully pull leads through eyelet on side of hopper.
- (4) On 1E1 set, disconnect (S-R) and (G) leads from coin hopper and carefully pull leads through eyelet on side of hopper.
- (5) Loosen chassis mounting captive screw.
- (6) Pull chassis assembly out at bottom and slide down to remove.

3.23 To install coin chassis:

Note: When installing coin chassis assembly, dress inside wire behind chassis and to the right of TB1. Allow for wires to be connected to TB1 from right side.

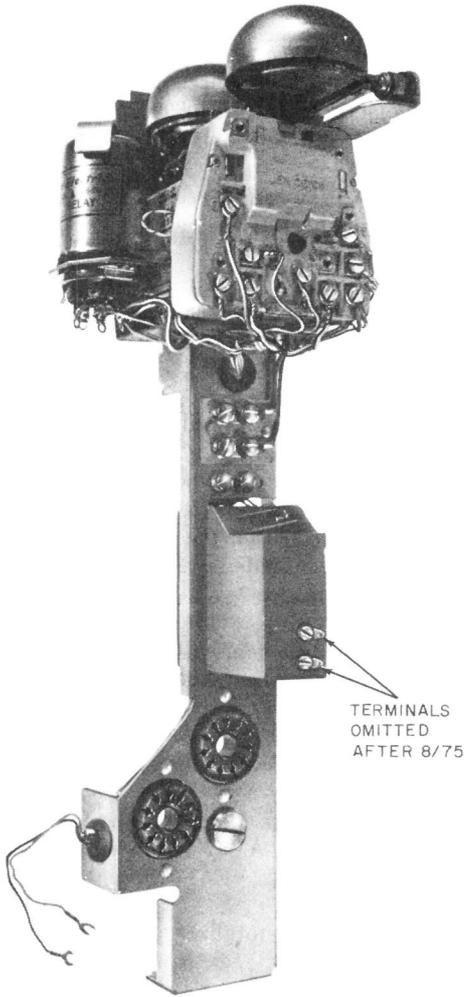


Fig. 13—840693634 Coin Chassis—For Use in 1A/2A-Type Sets

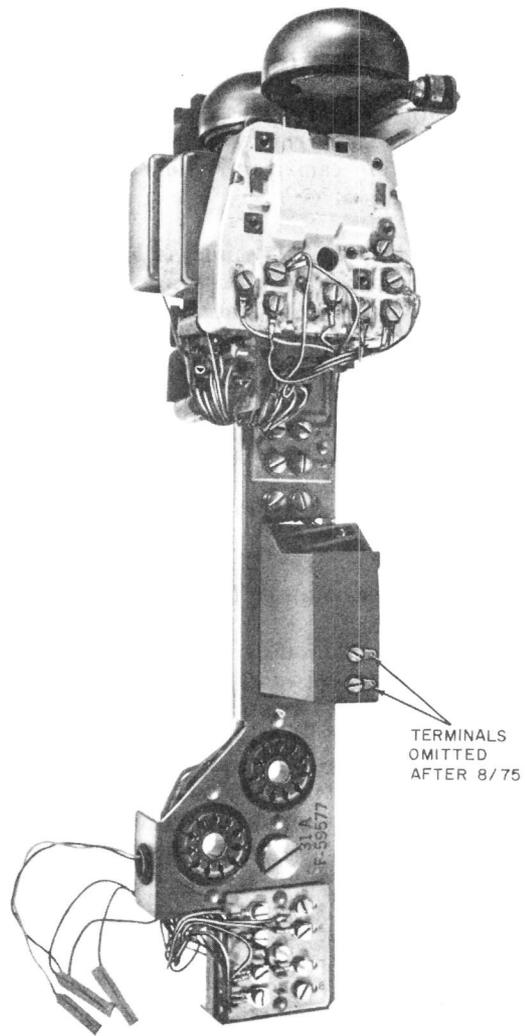


Fig. 14—31A Coin Chassis—For Use in 1C/2C-Type Sets

- (1) Slide chassis under tab (Fig. 9).
- (2) Seat chassis tabs in slots.
- (3) Tighten chassis mounting captive screw.
- (4) On 1A/2A/1C/2C-type sets, thread (BK) and (Y) leads through eyelet on side of hopper.
 - Connect (BK) lead to terminal 3 on coin relay
 - Connect (Y) lead to terminal G on coin relay.

- (5) On the 1E1 set, thread (S-R) and (G) leads through eyelet on side of hopper.
 - Connect (S-R) lead to left side of resistor on 50A hopper or terminal 15 on 51A hopper
 - Connect (G) lead to right side of resistor on 50A hopper or terminal 8 on 51A hopper.
- (6) On 1E3 set, tie the (S-R) and (G) leads together using a D-161488 connector. Ensure that connector is insulated.

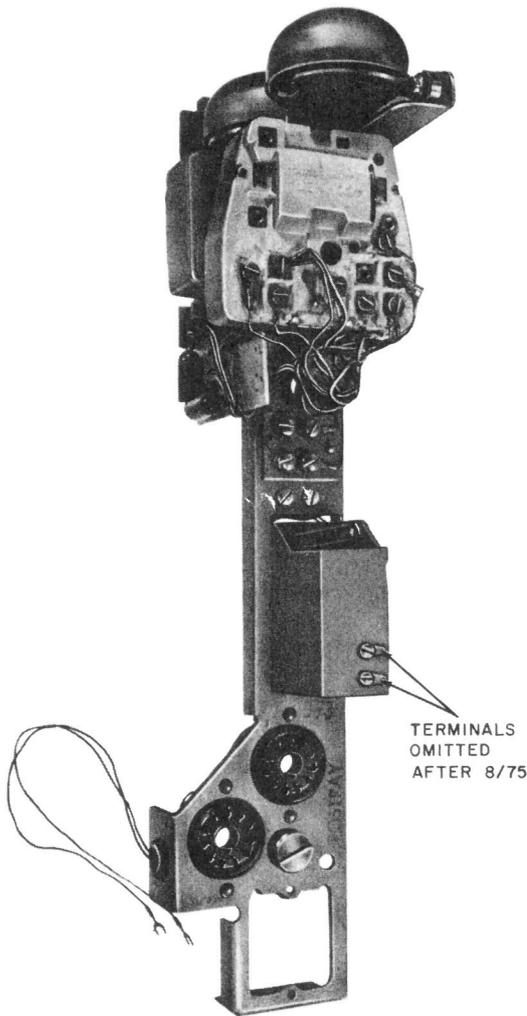


Fig. 15—30B Coin Chassis—For Use in 1E-Type Sets

- (7) Connect Tip, Ring, and Grd leads, and 14 AWG Grd strap if protector is mounted in set.

Coin Receptacle (Cash Box)

3.24 Coin telephone sets manufactured prior to July 15, 1972 were equipped with a false floor to accommodate a 1B-type coin receptacle. They can be modified to accept a 1C-type receptacle as follows:

- (1) Remove cash compartment door.

- (2) Remove 1B-type coin receptacle.
- (3) Remove false floor from bottom of cash compartment.
- Break spot welding at front tab
 - Pry out with large screwdriver or equivalent.
- (4) Install 1C-type coin receptacle.
- (5) Install cash compartment door.

Instruction Cards (1-Type Set)

3.25 Customer instruction cards are not furnished and must be procured locally.

3.26 To install card:

- (1) Loosen card locking setscrew (if provided) in faceplate using a No. 4 (.050) Allen wrench. Turn counterclockwise to loosen.
- (2) Push up with fingers (Fig. 16).
- (3) Snap card in place.
- (4) Ensure that card is seated properly in slot.
- (5) Tighten the No. 4-40 by 3/16-inch hex socket setscrew (840153381), if applicable, in faceplate (Fig. 17). Turn clockwise to tighten.



Fig. 16—Installing Instruction Cards (Typical)



Fig. 17—Securing Instruction Cards (Typical)



Do not over tighten setscrew after it becomes snug as this may bow the faceplate.

3.27 To remove card:

- (1) Loosen setscrew in faceplate, if provided, by turning it counterclockwise.
- (2) Push up with fingers.
- (3) Pry bottom out with small screwdriver or equivalent.

Instruction Cards (2-Type Set)

3.28 Instruction cards are not furnished and must be procured locally.



There are two different methods for securing instruction cards in the 2-type sets.

(1) An 812360410 (P-23E041) card spring (MD) is provided in the bottom of each card slot on early 2-type sets. This spring puts pressure on bottom of card to hold it in place.

(2) A cam located in the top of each card slot on later 2-type sets holds the card secure. The cam is operated with a No. 4 (.050) Allen wrench.

3.29 To install card in a set equipped with a spring:

- (1) Push down with fingers (Fig. 18).
- (2) Snap card in place.
- (3) Ensure that card is seated properly.

3.30 To remove card from a set equipped with a spring:

- (1) Push down with fingers.
- (2) Pry out from top with small screwdriver or equivalent.

3.31 To install card in a set equipped with a cam:

- (1) Using a No. 4 (.050) Allen wrench, turn the cam until the low side is adjacent to card opening.
- (2) Push up with fingers (Fig. 19).
- (3) Snap card in place.
- (4) Ensure that card is seated properly in slot.
- (5) Secure card by turning cam 180 degrees, either clockwise or counterclockwise.

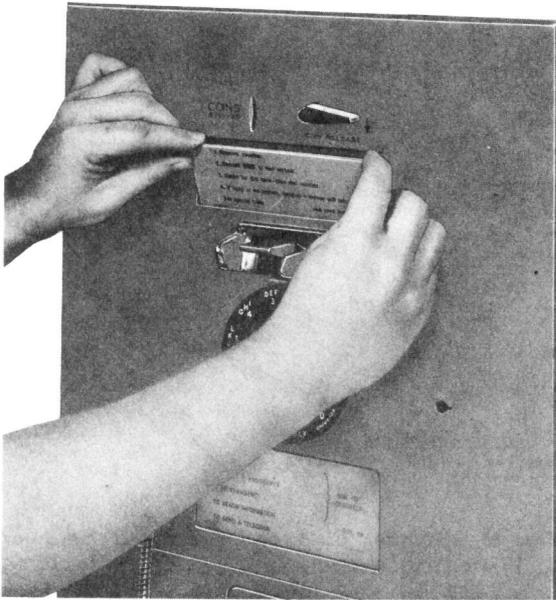


Fig. 18—Installing Instruction Card in 2-Type Set With 812360410 (P-23F041) Card Spring



Fig. 19—Installing Instruction Card in 2-Type Set With Cam

3.32 To remove a card from a set equipped with cam:

- (1) Turn cam 1/2 turn away from card using a No. 4 (.050) Allen wrench.
- (2) Push up with fingers.
- (3) Pry out from bottom with a small screwdriver or equivalent.

3.33 A gummed OUT-OF-SERVICE sticker (Form E-4914) is available in books of five. Place over coin slot when required.

Number Card (8S Dial [MD])

Note: The fingerwheel for an 8S dial is packaged separately.

3.34 Place number card in fingerwheel.

3.35 Place fingerwheel on dial with operator hole over the 9 position.

3.36 Rotate fingerwheel counterclockwise until spring clamp snaps in place.

Number Card (8U [MD] or 8W Dial)

Note: The fingerwheel (840151872) is shipped assembled to the 8U or 8W dial and must be removed to install number card. It is secured with a No. 4-40 setscrew (840158331).

3.37 To remove 840151872 fingerwheel:

- (1) Refer to Fig. 20, use a No. 4 (.050) Allen wrench and turn the setscrew in a clockwise direction until it clears fingerwheel.

Caution: Do not turn setscrew beyond stopping point as this may damage screw or wrench.

- (2) Turn fingerwheel in a clockwise direction until operator hole is in the 9 position and lift off.

3.38 Install number card.

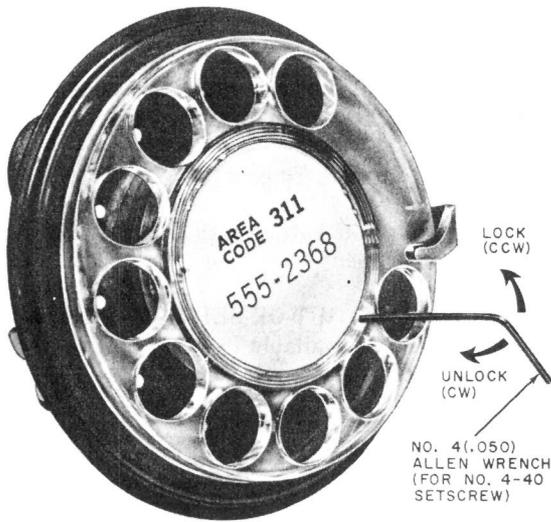


Fig. 20—Installing Fingerwheel on 8U (MD) or 8W Dial

3.39 To install fingerwheel:

- (1) Ensure that setscrew is all the way in (clockwise).
- (2) Place fingerwheel on dial with operator hole over the 9 position.
- (3) Rotate fingerwheel counterclockwise until it is in its normal position.
- (4) Using a No. 4 (.050) Allen wrench, turn the setscrew in a counterclockwise direction until the stop is reached (Fig. 20).

Caution: DO NOT OVERTIGHTEN SETSCREW.

Number Card (TOUCH-TONE Set)

3.40 The number card shall be furnished locally.

3.41 An 812169472 (P-21F947) card holder bracket, 812169480 (P-21F948) window, and two nuts (Fig. 21) are packaged separately and shipped from the factory in the cash compartment.

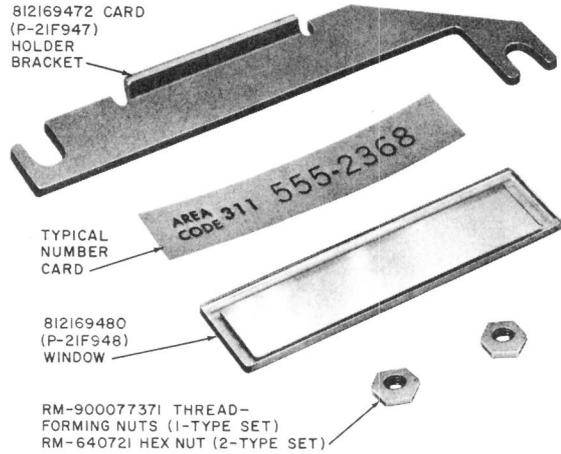


Fig. 21—Number Card and Associated Hardware (TOUCH-TONE Set)

3.42 Install number card as follows:

- (1) Remove dial housing.
- (2) Insert window in faceplate from rear (Fig. 22).
- (3) Insert number card in window (Fig. 22).
- (4) Secure window and number card using the 812169472 (P-21F947) card holder bracket and two nuts (Fig. 23).

Note: RM-900077371 thread-forming nuts are used on 1-type sets. RM-640721 hex nuts are used on 2-type sets.

- (5) Install dial housing.

Note: Ensure that the four dial housing mounting screws are tight to prevent dial housing from becoming loose due to vibration.



The window, bracket, and nuts are available in a kit for maintenance purposes.

- D-180567 kit for a 2-type set
- D-180655 kit for a 1-type set.

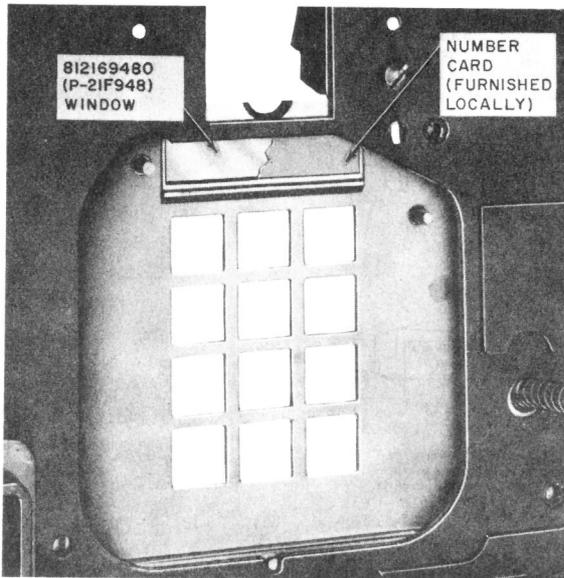


Fig. 22—Window and Number Card Installed in Faceplate (TOUCH-TONE Set)



Fig. 23—Card Holder Bracket Installed (TOUCH-TONE Set)

WIRING AND GROUNDING

3.43 Provide individual signaling ground for each station. Select and place wire in accordance with Section 461-200-100. Provide individual and multiple station grounding in accordance with Section 460-100-400. Refer to Fig. 24 for additional information on protection.

- 3.44 Feed inside wire through wire entrance hole (Fig. 9) as set is mounted on backboard.
- 3.45 Dress inside wire behind and run to right side of coin chassis.
- 3.46 Conceal wiring near telephone. Use approved molding or tubing if necessary.
- 3.47 Locate protectors, connecting blocks, etc, where they will be inaccessible to person using coin telephone set.
- 3.48 For outdoor installations where drop comes directly into set, a 123A1A protector can be installed inside some sets as follows:
- Install the protector inside a 1C- or 1E-type set as shown in Fig. 9 using two 802056077 (P-205607) No. 8-32 by 1/2-inch RHM screw provided locally.
 - Install the protector inside a 2A- or 2C-type set on a 7A clip (Fig. 25). Push the 7A clip, with protector, in the set so its spring loaded flange fastens on the right leg of the chute lock bracket (Fig. 26). Dress leads to avoid interference with moving parts.

Caution: When protector is mounted inside set, bond the protector ground to signal ground (terminal G on coin chassis) with No. 14 AWG wire (Fig. 24).



After installation has been completed, refer to Part 4 and verify that the coin telephone set is operating correctly and that information plate agrees with mode of service. Also verify that entrance stop is adjusted properly to prevent rubbing of parts.

4. OPERATION TESTS AND TROUBLE ANALYSIS



On trouble reports of coins collected or returned in error, try to obtain area code and telephone number of called party to facilitate tracing trouble in central office. Tests specified in Tables H, I, J, or K shall be used to ensure proper set operation on installation and maintenance visits. For additional tests relating to general coin service,

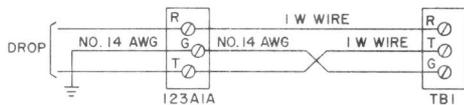
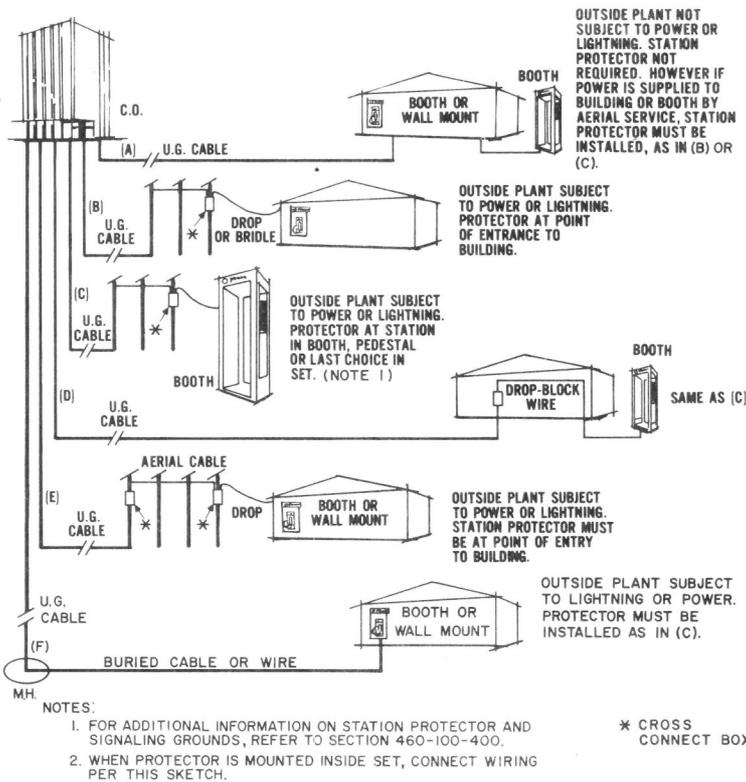


Fig. 24—Special Protection Requirements

refer to Section 506-900-503 or the Coin Maintenance Check Booklet.

4.01 Apparatus Required:

- KS-20950, List 1 cover parking tool (Fig. 27)—1-type set only

Note: A P11C cord (Fig. 28) may be used with 1-type sets in lieu of the cover parking tool, and on all 2-type sets.

- Coins: 1 penny, 2 nickels, 1 dime, 2 quarters
- KS-14995, List 3 Coin Trap and Vane Release Tool (Fig. 29)
- 146B Bias Margin Gauge (Fig. 30).

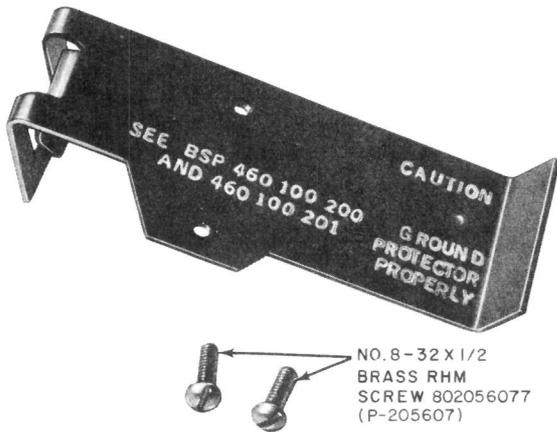


Fig. 25—7A Clip For Mounting 123A1A Protector and 840362024 Capacitor Board Assembly in Panel Phone

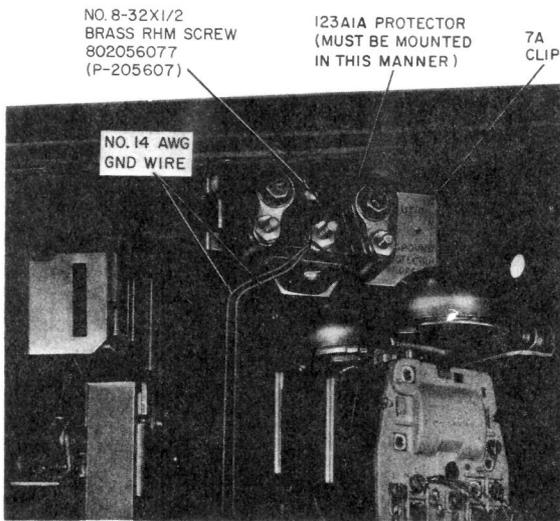


Fig. 26—123A1A Protector Installed in Panel Phone

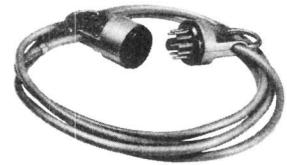


Fig. 28—P11C Test Cord

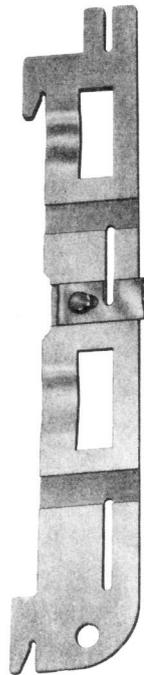


Fig. 27—KS-20950, List 1 Cover Parking Tool

MULTISLOT COIN COLLECTOR MAINTENANCE	SINGLE SLOT COIN TELEPHONE SET MAINTENANCE
INSPECT EXTERIOR Handset, Cords, Dial Cards: Instruction & No. Coin Release, Return Bucket	INSPECT EXTERIOR Handset, Cords, Dial Cards: Instruction & No. Coin Release, Return Bucket
COIN TESTS 5c, 10c, 25c Dial Tone, Coin Return Trouble Analysis	COIN TESTS 5c, 10c, 25c Dial Tone Coin Return On-Hook Coin Return Trouble Analysis
INSPECT INTERIOR Gauge, Connections Security Fasteners Housing Contacts	INSPECT INTERIOR Chute Assembly Connections, Plugs Switchhook
COIN CHUTE Dirt, Corrosion	COIN RELAY Bias Margin, Trap, Vane
SWITCHHOOK Spring Pileups	RESISTANCE TESTS Loop, Ground
COIN RELAY Bias Margin, Trap, Vane	STATION WIRING Ground Connections Protector Booth Ground
RESISTANCE TESTS Loop, Ground	OPERATIONAL TESTS Coins Operator, Ring-Back
STATION WIRING Ground Connections Protector Booth Ground	INSPECT BOOTH Glass, Door, Lights Blower, Directories
OPERATIONAL TESTS Coins Operator, Ring-Back	KS-14995 L3 TOOL
INSPECT BOOTH Glass, Door, Lights Blower, Directories	

Fig. 29—KS-14995, List 3 Tool

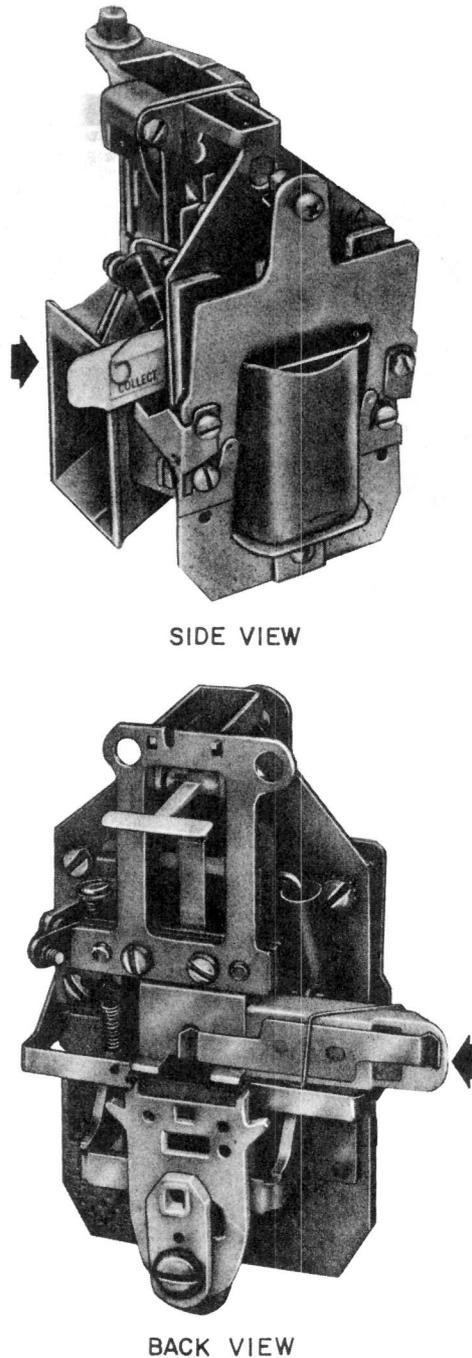


Fig. 30—Bias Margin Gauge in Position for Collect Test

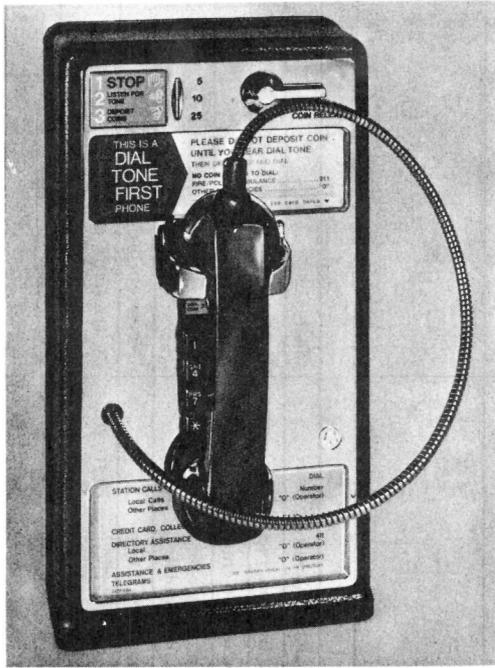


Fig. 31—Cover Unit Assembly With Handset Inverted

4.02 Table H includes following trouble analysis tests for ***Coin First Service***:

- Totalizer and Coin Relay Operation (On-Hook)
- Totalizer Operation (Off-Hook)
- Dial Shorting Test
- Trap and Vane Release Test
- Coin Relay Bias Margin Test

4.03 Table I includes the following trouble analysis tests for ***Dial Tone First Service***.

- Dial Tone Test
- Totalizer and Coin Relay Operation

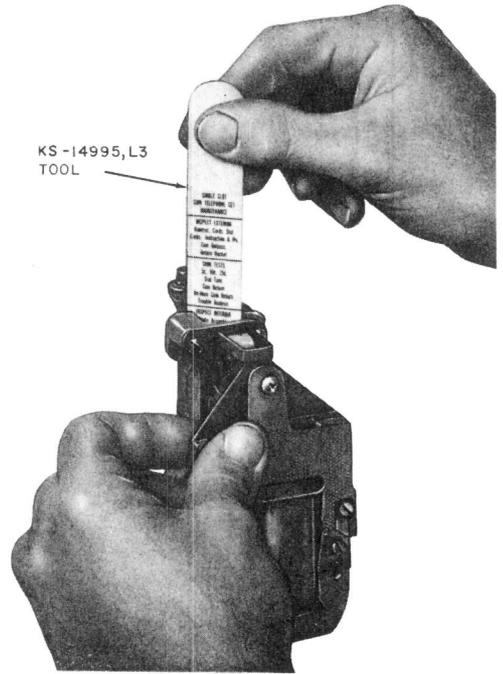


Fig. 32—Trap and Vane Release Test

- Trap and Vane Release Test

- Coin Relay Bias Margin Test

4.04 Table J includes trouble analysis test for ***Dial Post Pay Service***.

4.05 Table K includes trouble analysis test for ***Manual Post Pay Service***.

4.06 Refer to Table L for Long Loop Treatment.

4.07 Refer to Table M for loop ranges.

4.08 Refer to Table N for operate values of coin relay.

TABLE H

**TROUBLE ANALYSIS – 1A/1C- AND 2A/2C-TYPE SETS
COIN FIRST**

STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
Preparation For All Tests Except Trap and Vane Release					
1	Invert handset on switchhook (Fig. 31) (1-type only) to prevent cord from pushing handset off switchhook when cover is set down				
2	For a 1-type set: Remove cover unit assembly and hang it on a KS-20950, List 1 cover parking tool (Fig. 27). If parking tool is not available, or cannot be used with the station, disconnect P1, place cover unit assembly on a firm level surface, and connect a P11C cord between P1 and J1 of coin chassis.				
3	For a 2-type set: Open door and faceplate assembly and connect a P11C cord (Fig. 28) between P1 and J1.				
Totalizer and Coin Relay Operation (On-Hook)					
4	Deposit penny and operate coin release mechanism	Coin is returned	Coin does not return	Blocked coin chute	Clear
				Defective coin release mechanism	Replace defective linkage
5	Deposit quarter in chute	Coin relay refunds coin	Coin does not return or coin is collected	Blocked coin chute	Clear
				Tip and ring reversed or coin trunk trouble	Reconnect or refer to testdesk
				P1 and P2 reversed	Reconnect properly
				Totalizer in DTF mode (1C/2C set only)	Switch to CF mode
				TB3 not wired correctly (1C/2C set only)	Wire correctly

TABLE H (Cont)
TROUBLE ANALYSIS – 1A/1C- AND 2A/2C-TYPE SETS
COIN FIRST

STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
5 (Cont)				Traffic overload	Wait for refund pulse
				Coin jam in hopper	Clear jam
				Full coin receptacle	Level coins and notify coin collection department
				Coin relay HT contacts not making	Clean contacts or replace coin relay
				Switchhook transfer contacts SH1 (NC) or SH3 (NC) not making	Clean contacts or replace dial and housing assembly
				Switchhook contacts SH2 and SH4 not breaking	Adjust contacts or replace dial and housing assembly
				Defective totalizer	Replace defective apparatus
				Defective A relay	
				Defective handset	
				Defective dial (TOUCH-TONE only)	
				Defective wiring in dial housing or chassis assembly	
				Defective coin relay	
				Coin relay improperly wired	Wire properly
6	Deposit nickel	Nickel returned	Nickel does not return	Switchhook transfer contacts SH1 (NC) or SH3 (NC) not making	Clean contacts or replace dial and housing assembly
				TB2 not wired correctly	Wire correctly
				Defective wiring in dial housing or chassis assembly	Replace defective apparatus
				Traffic overload	Wait for refund pulse
Totalizer Operation (Off-Hook)					
7	Go off hook and deposit nickel in coin chute	No dial tone	Dial tone heard	T1 contacts remain latched after refund	Replace totalizer

**TROUBLE ANALYSIS – 1A/1C- AND 2A/2C-TYPE SETS
COIN FIRST**

STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
7 (Cont)				Switchhook transfer contacts SH3 (NC) not breaking (rotary dial sets only)	Replace dial and housing assembly
				Defective chassis or chassis wiring	Replace chassis
				Defective wiring in dial and housing assembly	Replace dial and housing assembly
8	Deposit additional coins up to initial rate	Dial tone is heard	No dial tone. Reduced level or intermittent dial tone	Traffic overload	Wait for dial tone
				Defective handset	Replace handset
				Switchhook contacts SH3 (NO) or SH2 and SH4 (NO) not making	Clean contacts or replace dial and housing assembly
				Switchhook transfer contacts SH1 (NO) not making	
				Totalizer set for more than initial rate	Reset totalizer rate
				T1 contacts (NO) not making	Replace totalizer
				F contacts (NC) not making	
				Defective wiring in dial and housing assembly	Replace dial and housing assembly
				Defective dial	Replace defective apparatus
				Defective chassis	
				Defective totalizer	
				Totalizer transfer contacts T2 (NC) not making (totalizer steps continuously)	Replace totalizer
9	Dial any digit but "0" or "1"	Dial tone breaks	Cannot break dial tone	Totalizer contacts T1 not latching	Replace totalizer
				Defective dial	Replace defective apparatus
				Defective handset (TOUCH-TONE only)	
				Defective wiring in chassis, or dial and housing	

TABLE H (Cont)
TROUBLE ANALYSIS – 1A/1C- AND 2A/2C-TYPE SETS
COIN FIRST

STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
9 (Cont)		Coins not returned	Coins returned	Defective dial	Replace dial
10	Go on hook	Coins returned	Coins not returned	Traffic overload	Wait for refund pulse
				Coin trunk trouble	Refer to testdesk
11	Go off hook and deposit initial rate	Dial tone heard	No dial tone	Defective totalizer	Replace totalizer
				Traffic overload	Wait for dial tone
12	Dial any digit but "0" or "1"	Dial tone breaks	Cannot break dial tone	Defective totalizer	Replace totalizer
13	Go on hook	Coins returned	Coins not returned	Traffic overload	Wait for refund pulse
				Coin trunk trouble	Refer to testdesk
Dial Shorting Test					
14	Remove coin relay dust cover. Lift handset and operate hopper trigger by hand	Dial tone heard	No dial tone	Traffic overload	Wait for dial tone
15	Dial any digit but "0" or "1"	Dial tone remains after dialing	Dial tone breaks	Totalizer transfer contacts T1 (NC) not making	Replace totalizer
				Defective chassis	Replace chassis
16	Deposit nickel	Dial tone remains after deposit	Line drops off coin returned	Defective chassis	Replace chassis
				Defective A relay (1A/2A only)	Replace A relay
17	Hang up handset	Nickel returns	Nickel does not return	Traffic overload	Wait for coin return pulse
				Defective coin trunk	Refer to testdesk
Trap And Vane Release Test					
18	Remove chute – totalizer from set				
19	Remove coin relay dust cover				

TROUBLE ANALYSIS – 1A/1C- AND 2A/2C-TYPE SETS
COIN FIRST

STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
<p><i>Caution: Tilt selector card by pressing down on one of the ears before manually operating the coin relay. This avoids jamming selector card and cam engaging surfaces.</i></p>					
20	Press down on left ear of selector card and manually operate coin relay armature to its full extent of travel	Coin vane moves to collect (left) position; coin trap moves downward			
21	With armature fully operated, insert KS-14995,L3 tool into hopper to operate trap to the limit of its travel (Fig. 32)				
22	Release armature and slowly withdraw tool	Armature, trap, and vane should return to nonoperated position and trap should lock	Armature, trap, or vane does not return to its normal position	Relay could be binding	Loosen mounting screws and re-align relay; tighten screws
			Vane does not restore properly	Vane binds	Remove coin relay from hopper and free vane
				Vane broken	Replace vane per Section 506-100-110
			Trap does not operate, restore, or lock properly	Trap broken	Replace defective apparatus
				Trap spring bent or broken	
				Trap lever broken	
Trap pin bent or broken					
23	Press down on right ear of selector card and manually operate coin relay armature to its full extent of travel	Coin vane moves to refund (right) position. Coin trap moves downward			

TABLE H (Cont)

TRUBLE ANALYSIS – 1A/1C- AND 2A/2C-TYPE SETS
COIN FIRST

STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
24	With armature fully operated, insert KS-14995,L3 tool into hopper to operate trap to the limit of its travel (Fig. 32)				
25	Release armature and slowly withdraw tool	Same as 22	Same as 22	Same as 22	Same as 22
26	Install dust cover				
27	Install chute — totalizer				
Coin Relay Bias Margin Test					
<i>Note: Make this test when coin relay fails to operate properly</i>					
28	Remove coin relay dust cover				
29	Go off hook, obtain dial tone, call testdesk and request bias margin test. (Use central office test circuit where available)				
30	Slip 146B bias margin gauge over left polepiece extension arm from left side of coin relay (Fig. 30)				
31	Request deskman to apply central office collect (or return) voltage as indicated in the lower left corner of gauge	Relay operates to collect (or return) coins as indicated in lower left corner of gauge	Relay does not operate properly	Defective coin relay	Replace coin relay
32	Reverse the 146B bias margin gauge by turning it around on the same polepiece extension arm				

TABLE H (Cont)

TROUBLE ANALYSIS – 1A/1C- AND 2A/2C-TYPE SETS
COIN FIRST

STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
33	Request deskman to apply central office collect (or return) voltage as indicated on the left corner of gauge	Relay operates to collect (or return) coins as indicated in lower corner of gauge	Relay does not operate properly	Defective coin relay	Replace coin relay
34	Remove 146B gauge				
35	Go on hook				
36	Install dust cover				
Returning Set To Normal Operation					
37	Call operator. Deposit nickel, dime, and quarter	Coins identified by operator	Improper coin tones	Defective totalizer Defective chassis	Replace totalizer Replace chassis
38	Listen for coin tones in handset as coins are deposited	No coin tones heard in handset	Coin tones heard in handset	Defective chassis	Replace chassis
39	Request operator to return coins	Coins returned	Coins not returned	Nonstation trouble	Repeat request, and if failure reoccurs refer to testdesk
40	Request operator to call. Go on hook. Wait for incoming ring.	Ringer operates at maximum volume	No ringback or low volume	Defective ringer or leads	Replace ringer
				Ringer out of adjustment	Adjust
				Open ringer capacitor in network	Replace chassis
				Improper line assignment	Verify and correct
41	Call the dial test number and verify all TOUCH-TONE frequencies (if applicable)				

TABLE I

TROUBLE ANALYSIS – 1C- AND 2C-TYPE SETS
DIAL TONE FIRST

STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
Preparation For All Tests Except Trap and Vane Release					
1	Invert handset on switchhook (Fig. 31) (1-type only) to prevent armored cord from pushing handset off hook when cover is set down				
2	For 1-type set: Remove cover unit assembly and hang it on a KS-20950, List 1 cover parking tool (Fig. 27). If parking tool is not available, or cannot be used at the station, disconnect P1, place cover unit assembly on a firm level surface, and connect a P11C cord between plug P1 and jack J1 of the coin chassis.				
3	For 2-type set: Open door and faceplate assembly. Connect a P11C cord between P1 and J1.				
Dial Tone Test					
4	Go off hook	Dial tone received	No dial tone	Defective handset	Replace handset
				Traffic overload	Wait
				Switchhook contacts SH1 (NO), or SH2 and SH4 (NO), not making	Clean contacts or replace dial and housing assembly
				P1 and P2 reversed	Reconnect properly
				Totalizer in CF mode	Switch to DTF mode
				TB2 not wired correctly	Wire correctly
				TB3 not wired correctly	Wire correctly

TABLE I (Cont)

TROUBLE ANALYSIS - 1C- AND 2C-TYPE SETS
DIAL TONE FIRST

STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
4 (Cont)				Defective totalizer	Replace totalizer
				Defective wiring in chassis, or dial and housing assembly	Replace defective apparatus
				Nonstation trouble	Refer to testdesk
Totalizer and Coin Relay Operation					
5	Deposit quarter	Quarter does not return	Quarter falls in return bucket	TB3 not wired correctly	Wire correctly
				Chute path blocked	Clear
				Defective totalizer	Replace defective apparatus
				Defective chassis	
6	Depress switchhook	Quarter returned	Quarter does not return	Switchhook contacts SH2 (NO) and SH4 (NO) not breaking	Replace dial and housing assembly
				Defective coin trunk	Refer to testdesk
				Defective totalizer	Replace defective apparatus
				Defective chassis	
				Defective coin relay	
7	Deposit nickel, dial a number that requires initial deposit	Dial tone breaks	Dial tone does not break	Defective dial	Replace dial
				Tip, ring, or grd reversed	Wire correctly
		Recording states that insuffi- cient deposit was made	Recording not heard	Defective chassis	Replace chassis
				Initial rate set for 5 cents	Reset totalizer rate
				TB3 not wired correctly	Wire correctly
				Totalizer contacts T1 making for nickel deposit	Reset totalizer rate or replace totalizer

TABLE I (Cont)

TROUBLE ANALYSIS – 1C- AND 2C-TYPE SETS
DIAL TONE FIRST

STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
8	Depress switchhook	Coin returned	Coin not returned	Switchhook contacts SH2 (NO) or SH4 (NO) not breaking	Replace dial and housing assembly
				Defective coin trunk	Refer to testdesk
				Defective totalizer	Replace defective apparatus
				Defective chassis	
				Defective coin relay	
9	Deposit initial rate, dial a number that requires a deposit <i>Note:</i> Ensure that called number will not be answered.	Ringing tone heard in handset	Insufficient deposit recording heard	Initial rate set for more than the deposit	Reset totalizer
				Defective T1 or F contacts in totalizer	Replace totalizer
				Defective chassis	Replace chassis
				Switchhook SH3 (NO) not making	Clean contacts or replace dial housing
				TB3 not wired correctly	Wire correctly
10	Go on hook	Coins returned	Coins not returned	Defective coin trunk	Refer to testdesk
11	Deposit penny and operate coin release lever	Penny returned	Coin does not return	Defective coin chute	Clear
				Defective coin release mechanism	Replace defective linkage
Trap and Vane Release Test					
<i>Note:</i> Refer to Table H.					
Coin Relay Bias Margin Test					
<i>Note:</i> Refer to Table H.					
Returning Set To Normal Operation					
12	Call operator. Deposit nickel, dime, and quarter	Coins identified by operator	Improper coin tone signals	Defective totalizer	Replace totalizer
				Defective chassis	Replace chassis
13	Listen for coin tones in handset as coins are deposited	No coin tones heard in handset	Coin tones heard in handset	Defective chassis	Replace chassis

**TROUBLE ANALYSIS – 1C- AND 2C-TYPE SETS
DIAL TONE FIRST**

STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
14	Request operator to return coins	Coin returned	Coins not returned	Nonstation trouble	Repeat request, and if failure reoccurs refer to testdesk
15	Request operator to ring back (hang up)	Ringer operates at maximum volume	No ringback or low volume.	Defective ringer or leads	Replace ringer
				Ringer out of adjustment	Adjust
				Open ringer capacitor in network	Replace chassis
16	Call the dial test number and verify all TOUCH-TONE frequencies (if applicable)				

TABLE J
TROUBLE ANALYSIS – 1E1 SET
DIAL POST PAY

STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
Preparation For All Tests					
1	Invert handset on switchhook to prevent armored cord from pushing handset off switchhook when cover is set down.				
2	Remove cover unit assembly and hang it on a KS-20950, List 1 cover parking tool (Fig. 27). If parking tool is not available or cannot be used at the station, disconnect P1, place cover unit assembly on a firm level surface and connect a P11C cord between P1 and J1 of the coin chassis				
3	If set has a 51A hopper, a KS-14995, List 3 tool can be installed between coin chute and hopper to prevent loss of deposited coins. If set has a 50A hopper, test cannot be performed without losing coins.				
Dial Tone Tests					
4	Go off hook	Dial tone heard	No dial tone	Defective handset.	Replace handset.
				Traffic overload.	Wait and repeat test.
				Switchhook contacts SH1 (NO), or SH2 & SH4 (NO), not making	Clean contacts or replace dial and housing assembly.
				P1 and P2 reversed	Reconnect properly.
				Totalizer in CF mode	Switch to DTF mode
				TB2 not wired correctly.	Wire correctly.
				Defective totalizer.	Replace totalizer.

TROUBLE ANALYSIS – 1E1 SET
DIAL POST PAY

STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
Dial Tone Tests					
4 (Cont)				Defective wiring in chassis, or dial and housing assembly.	Replace defective apparatus.
				Nonstation trouble.	Refer to testdesk.
5	Dial operator.	Dial tone breaks.	Dial tone does not break.	Defective dial.	Replace defective apparatus.
				Defective chassis.	
				TB2 not wired correctly.	Verify wiring.
				Nonstation troubles.	Refer to testdesk and correct trouble.
	Operator answers.	Transmission path not established.	Defective handset.	Replace handset.	
Totalizer Operation					
6	With operator on line, deposit nickel, dime, and quarter.	Operator correctly identifies signal tones.	Operator cannot identify signals properly.	Defective totalizer.	Replace defective apparatus.
				Defective chassis.	
				Defective 840708895 hopper delay circuit assembly (51A hopper only)	
				Defective 446F diode. (50A hopper only)	
			Ring and tip reversed.	Correct	
7	Listen for coin tones in handset as coins are deposited.	Tones should not heard.	Tones are heard.	Defective chassis.	Replace chassis.
8	If KS-14995, L3 tool was installed, disengage chute locking spring; <i>slowly pull top of chute forward while holding KS-14995, L3 tool.</i> Lift chute and tool out of set and retrieve coins.				

TABLE J (Cont)

TROUBLE ANALYSIS – 1E1 SET
DIAL POST PAY

STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
9	Check for noise or cutout in handset cord	Noise should not be heard.	Noise is heard.	Defective handset.	Replace handset.
10	Give operator number of station under test, request operator to call back, go on hook	Ringer operates at maximum volume.	No ring or rings at low volume.	Improper line assignment.	Verify and correct.
				Defective ringer.	Replace ringer or chassis.
				Ringer out of adjustment.	Adjust.
				Open capacitor in network.	Replace chassis.
11	Repeat step 3, deposit initial rate, and request operator to identify coin signal	Identification properly made.	Identification cannot be made.	Nonstation trouble.	Refer to testdesk.
12	Repeat step 8. Go on hook				
13	Go off hook, get dial tone, and dial a local charge number (this should be prearranged).	Dial tone received, station number dialed, audible ringing heard, called party answers, switches to deposit coin tone	No dial tone	Traffic overload.	Wait and repeat test.
			Audible ringing not heard		
			Deposit coin tone not heard.	Nonstation troubles.	Refer to testdesk.
14	Refer to step 3 and deposit 5 cents less than initial rate	Deposit coin tone remains.	Deposit coin tone stops.	Initial rate set for 5 cents.	Reset totalizer.
				Wrong code totalizer or defective totalizer.	Replace totalizer.
				Totalizer reads out.	Defective chassis.
15	Deposit additional coins up to initial rate.	Deposit coin tone stops. Talk path is established.	Deposit coin tone does not stop.	Initial rate set for more than the deposit.	Reset totalizer.
				Defective hopper.	Replace defective apparatus.
				Defective totalizer.	
				Nonstation troubles.	Refer to testdesk.

TROUBLE ANALYSIS – 1E1 SET
DIAL POST PAY

STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
16	If KS-14995, L3 tool was installed, disengage chute locking spring; <i>slowly pull top of chute forward while holding KS-14995, L3 tool.</i> Lift chute and tool out of set and retrieve coins.				
17	Hang up.	Totalizer restores.	Totalizer does not restore.	Defective dial and housing assembly. Defective chassis.	Replace defective apparatus.
18	Return set to normal operation.				

TABLE K

TROUBLE ANALYSIS – 1E3 SET
MANUAL POST PAY

STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
Preparation For All Tests					
1	Invert handset on switchhook. <i>Note:</i> Prevents armored cord from pushing handset off switchhook when cover is set down.				
2	Remove cover unit assembly and hang it on a KS-20950, L1 cover parking tool (Fig. 27). If parking tool is not available or cannot be used at the station, disconnect P1, place cover unit assembly on a firm level surface and connect a P11C cord between P1 and J1 of the coin chassis				
3	Insert KS-14995, L3 tool between coin chute and hopper to prevent loss of deposited coins				
Dial Tone Tests					
4	Go off hook	Operator answers	Operator does not answer	Defective handset.	Replace defective apparatus.
				Defective chassis.	
				Defective switchhook.	
				TB2 not wired correctly.	Verify and correct.
				Nonstation troubles.	Refer to testdesk.
Totalizer Operation					
5	With operator on line, deposit nickel, dime, and quarter.	Operator identifies proper coin tone signals	Operator cannot properly identify coin signals	Defective totalizer.	Replace defective apparatus.
				Defective chassis.	
				Ring and tip reversed.	Correct.
				Totalizer mode switch in CF position.	Reposition switch to DTF.

TABLE K (Cont)

TROUBLE ANALYSIS – 1E3 SET
MANUAL POST PAY

STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
6	Listen for coin tones in handset as coins are deposited.	Tones should not be heard.	Tones are heard.	Defective chassis.	Replace chassis.
7	Disengage chute locking spring; slowly pull top of chute forward while holding KS-14995, L3 tool. Lift chute and tool out of set and retrieve coins.				
8	Check for noise of cutout in handset cord.	Noise should not be heard.	Noise is heard.	Defective handset.	Replace handset.
9	Repeat step 3				
10	Request operator to call back.	Ringer operates at maximum volume.	No ringing or rings at low volume.	Improper line assignment.	Verify and correct.
				Defective ringer.	Replace ringer or chassis.
				Ringer out of adjustment.	Adjust.
				Open capacitor in network.	Replace chassis.
11	With operator on line deposit a coin and request operator to identify coin signal.	Identification properly made.	Identification cannot be made.	Nonstation trouble.	Refer to testdesk.
12	Thank operator and hang up.				
13	Disengage chute locking spring; slowly pull top of chute forward while holding KS-14995, L3 tool. Lift chute and tool out of set and retrieve coins.				
14	Return set to normal operation.				

TABLE L

**COIN LOOP RANGES REQUIRING
LONG LOOP TREATMENT
(FOR LIMITATIONS OTHER THAN COIN CONTROL)
(ASSUMES 300-OHM STATION SET RESISTANCE)**

TYPE OF CENTRAL OFFICE	REQUIREMENTS
Step-by-Step	Over 1050 ohms*
Panel	Over 885 ohms
No. 1 Crossbar	Over 1200 ohms
No. 5 Crossbar	Over 1300 ohms
No. 1 ESS	Over 1300 ohms
No. 2 ESS	Over 1300 ohms

*1E-type sets (Post Pay Service) require long loop treatment with loops over 700 ohms. 1900 ohms is maximum range for Post Pay service.

TABLE M.

**MAXIMUM ALLOWABLE LOOP RANGES FOR CENTRAL OFFICE
COIN SUPPLY VOLTAGES – COLLECT AND RETURN ONLY
(MAXIMUM GROUND RESISTANCE 50 OHMS;
MAXIMUM DC EARTH POTENTIAL ± 3 VOLTS)**

TYPE OF CENTRAL OFFICE	MINIMUM COIN VOLTAGE	LOOP RANGE	
		1A/2A SETS	1C/2C SETS
SXS, Panel, No. 1 XBar	100 volts (100-120V)	1400 ohms	1900 ohms
SXS, Panel, No. 1 XBar	115 volts (115-120V)	2000 ohms	2700 ohms
No. 5 XBar, No. 1 ESS, No. 2 ESS	125 volts (125-135V)	2400 ohms	3100 ohms

Note: Loop Range = Conductor Loop Resistance (excluding coin telephone set resistance).

TABLE N

OPERATE VALUES OF COIN RELAYS

MARKING ON RELAY	OPERATING TIME	OPERATE CURRENT	NON-OPERATE CURRENT
P-15E687	625 ±75 milliseconds (Notes 2 and 3)	48 milliamps	40 milliamps
1A*	450 ±50 milliseconds	41 milliamps	30 milliamps
1A (Note 1)			

Notes:

1. Coin relays marked 1A without the asterisk symbol have bifurcated rather than solid contact springs.
2. 625 ms relay should be retimed to 450 ±50 ms. Use coin test line circuit or KS-21250 test set.
3. On repeated visits indicating coin relay troubles, and local ground requirements have been met, it is recommended that 48 ma operate relays be replaced with 41 ma operate relays.

5. MAINTENANCE**Clearing Chute of Foreign Material or Stuck Coin**

5.01 When troubles indicate foreign objects or stuck coins in chute:

- (a) Operate coin release lever in attempt to clear coins from chute.
- (b) If trouble does not clear:
 - (1) Remove cover unit assembly (1-type) or open door and faceplate assembly (2-type).
 - (2) Remove chute-totalizer.
 - (3) Swing upper plate assembly open (Fig. 33).
 - (4) Where possible, use an orange stick to remove any foreign objects or stuck coins. Do not use screwdriver. Do not loosen chute assembly screw.

- (5) Clean off any foreign material adhering to chute magnets.



Exercise extreme care when closing the upper plate assembly. If the quarter divider is not positioned properly, it will become damaged when the upper plate assembly is closed against it.

5.02 If trouble cannot be cleared using an orange stick, use a 787A tool (Fig. 34) as follows:

- (a) Remove totalizer from chute.
- (b) Swing upper plate assembly open per Fig. 34.

Note: Several conditions can be encountered with dime jams. Most jams involve only two or three dimes but others may involve as many as six dimes blocked at both ends as shown in Fig. 35, with the top two overlapped.

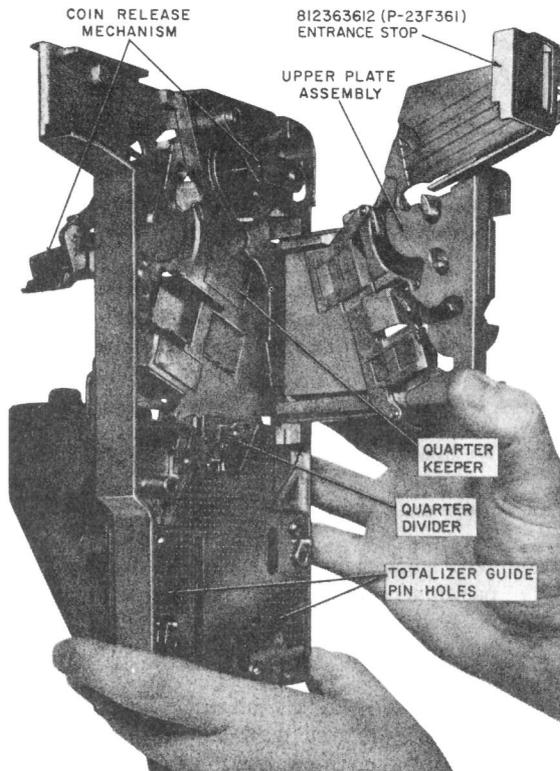


Fig. 33—Chute

- (c) If two dimes are partially overlapped, the top dime can be hooked on the face and pulled out as shown in Method I (Fig. 36).
- (d) If two dimes are completely overlapped as shown in Fig. 35, proceed as follows:
- (1) Begin unjamming the dimes by inserting the 787A tool as shown in Method II (Fig. 36), hooking onto the dime's edge, and pulling up.

Caution: Do not pull the two overlapped dimes past the lower dime divider leg with the tool hooked on the dime's edge.

- (2) If the overlapped dimes move up together as shown in Method II, any dimes below can probably be shaken out. Access to the overlapped dimes is through the channel from below as shown in Method III. Once the

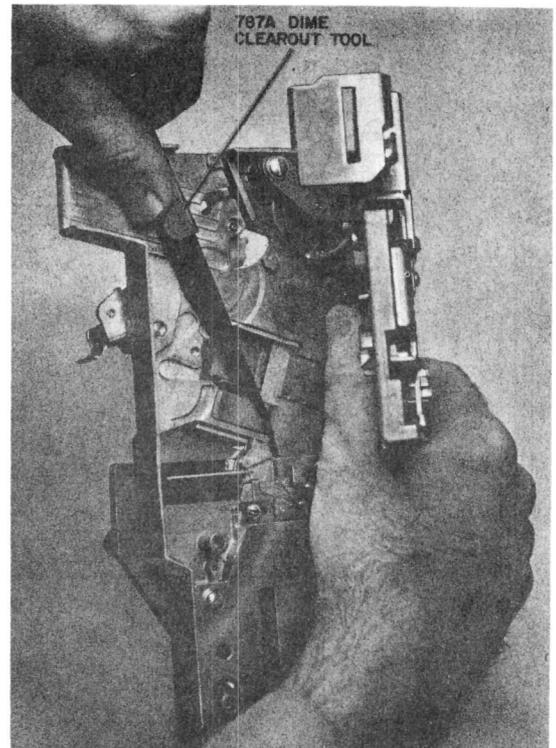


Fig. 34—Using a 787A Dime Clearout Tool in Chute

two dimes become only partially overlapped (Method III), utilize Method I to finish extracting them.

- 5.03 Test chute by depositing coins with cover unit assembly both off and on housing (1-type) or with door and faceplate assembly both opened and closed (2-type).
- 5.04 If trouble cannot be cleared, replace chute.



When returning chute-totalizer to service center, reuse packing material from which the new item was removed.

Electrical Troubles

- 5.05 If electrical troubles are indicated, refer to Part 4 (Operation Tests and Trouble Analysis) and Part 9 (Connections).

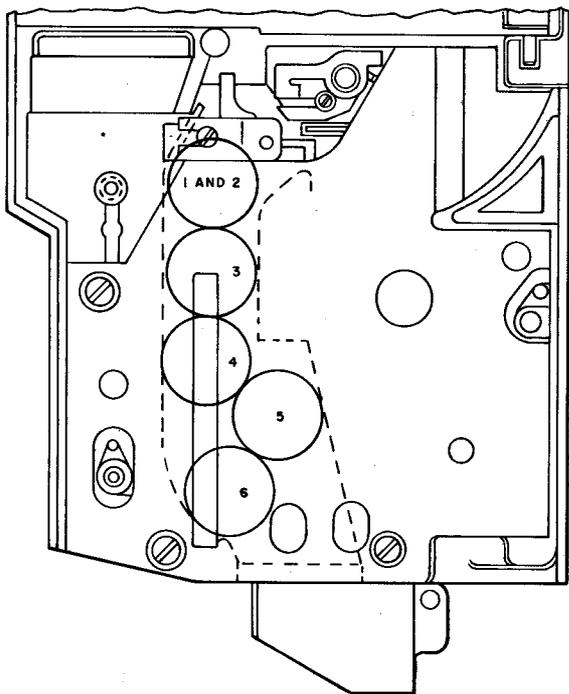


Fig. 35—Lower Portion of Coin Chute With Six Dimes Jammed

5.06 Refer to Part 3 for the removal and replacement of the following components:

- Chute-totalizer
- Chute
- Totalizer
- Coin chassis.
- Instruction cards
- Number cards

5.07 Components other than those listed in 5.06 can be removed as outlined below.

1A Coin Relay (1A/2A/1C/2C Sets Only)

5.08 To remove 1A coin relay without removing hopper assembly:

- (1) Disconnect (BK) and (Y) leads.

- (2) Remove two relay mounting screws on top front of coin relay (Fig. 9).
- (3) Remove two slotted hex head screws on sides of coin relay.
- (4) Check that the hopper trigger (Fig. 37) is in horizontal (up) position and pull off coin relay. **Do not damage hopper trigger.**



When returning defective 1A coin relays to service center, reuse packing material from which the replacing item was removed.

5.09 To install 1A coin relay (Fig. 37):

- (1) Move coin vane to left (collect) position.
- (2) With hopper trigger in nonoperated (horizontal) position, move relay into position until trigger enters T-shaped slot in hopper and trap lever tab just enters opening in selector card.
- (3) Press down slightly on ear of left side of selector card and manually move armature forward to its operated position. Hold armature in this position.
- (4) Move coin relay forward until square stem on vane enters hole in cam and mounting screw holes line up.

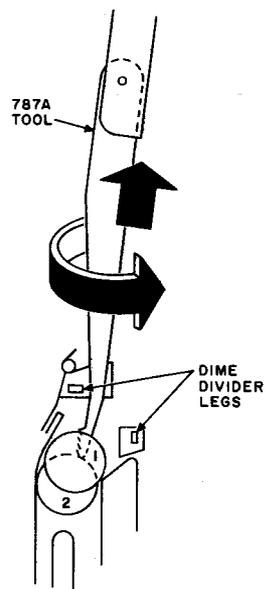
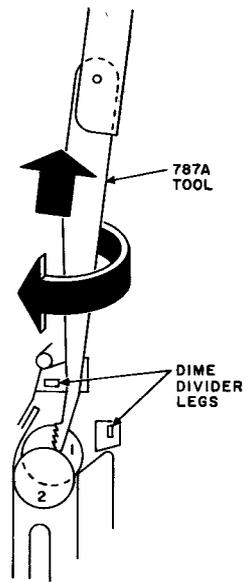
Note: Do not attempt to install relay if trigger support bracket is so distorted that mounting holes do not engage hopper bosses.

- (5) Place and tighten evenly two mounting screws on top of coin relay and two slotted hex head mounting screws in each side of relay.
- (6) Make sure that trigger, armature, trap, and vane operate without binding. Refer to trap and vane release test in Table H.
- (7) Reconnect (Y) lead to terminal G and (BK) lead to terminal 3.

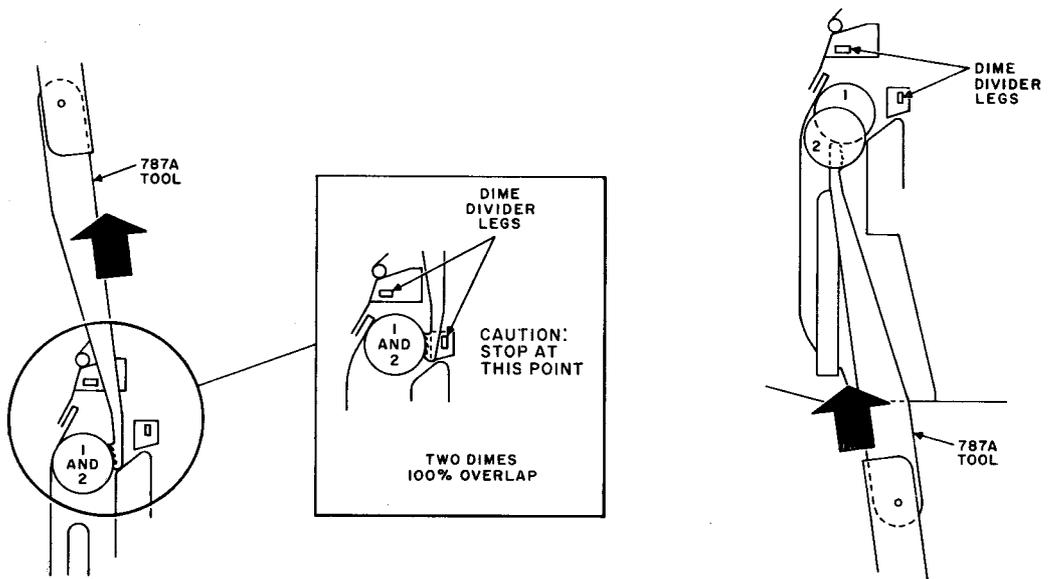
Coin Hopper

5.10 To remove coin hopper:

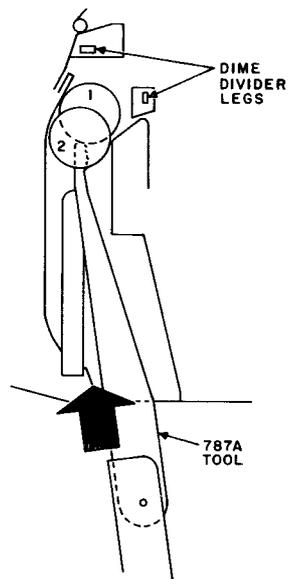
- (1) Remove coin relay from 1A/2A/1C/2C sets.



METHOD I



METHOD II



METHOD III

Fig. 36—Method for Removing Jammed Dimes From Chute

- (2) In 1E1 sets, disconnect (G) and (S-R) leads from hopper.
- (3) Remove vault door and coin receptacle.
- (4) Remove two 811058098 hex socket head cap screws from inside vault.
- (5) Lift hopper out of set.

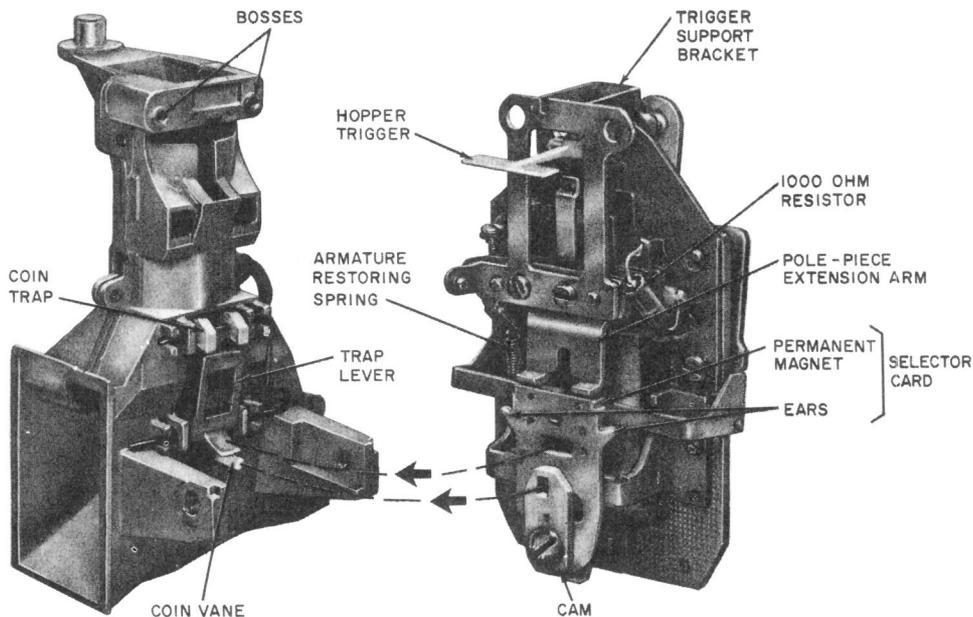


Fig. 37—Coin Hopper and Rear View of Coin Relay

5.11 To install coin hopper, use reverse procedure.

- (1) For 1E1 sets, connect (G) and (S-R) leads to hopper in accordance with Fig. 60.

Caution: *Observe polarity of diode on 50A hopper. Do not torque the terminal screws excessively to avoid canting the spring pile-up.*

Note: The 840708895 delay circuit assembly on the 51A hopper is replaceable.

Coin Trap and Associated Parts (1A/2A/1C/2C Sets Only)

5.12 Check coin trap spring tension as follows:

- (1) Manually operate the coin relay armature to its fully closed position.
- (2) Allow relay to slowly return to its nonoperate position.
- (3) Insert KS-14995, List 3 tool into hopper (Fig. 32). Apply firm downward pressure with tool on coin trap in hopper throat; but **DO**

NOT FORCE down enough to bend or break parts.

- (4) If this firm **but not excessive** downward force does not cause the trap lever spring to release the trap, the existing spring is operating adequately. If the trap is released by this action, a new 840157333 wire spring (Fig. 38) should be installed.

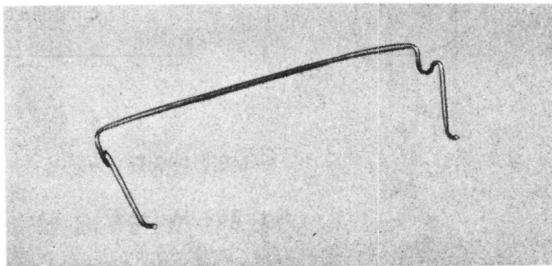
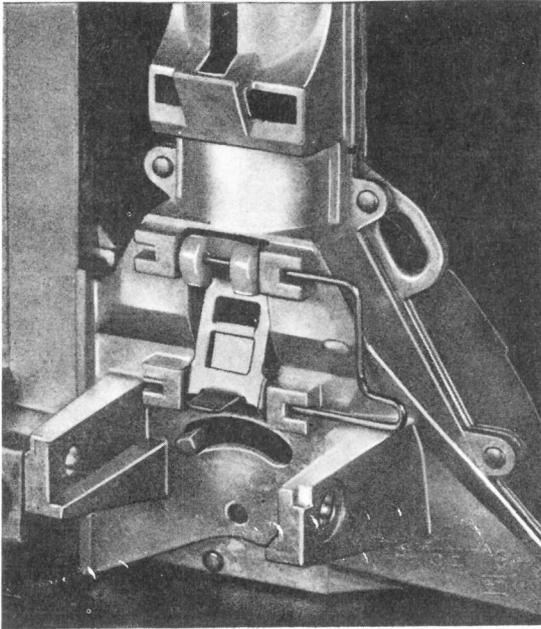
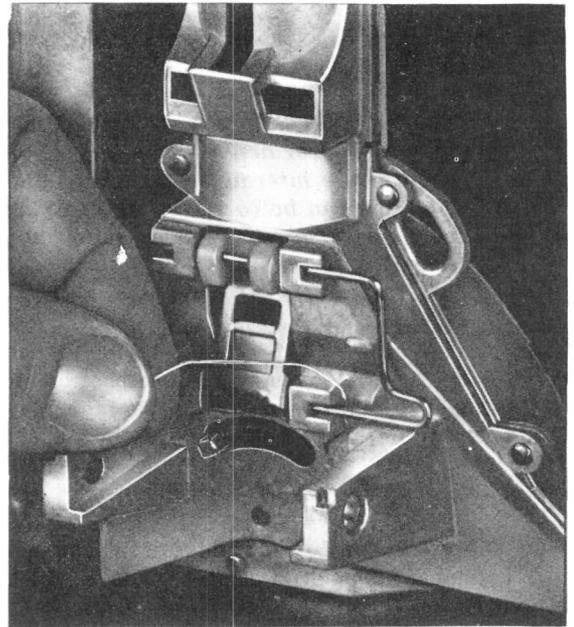


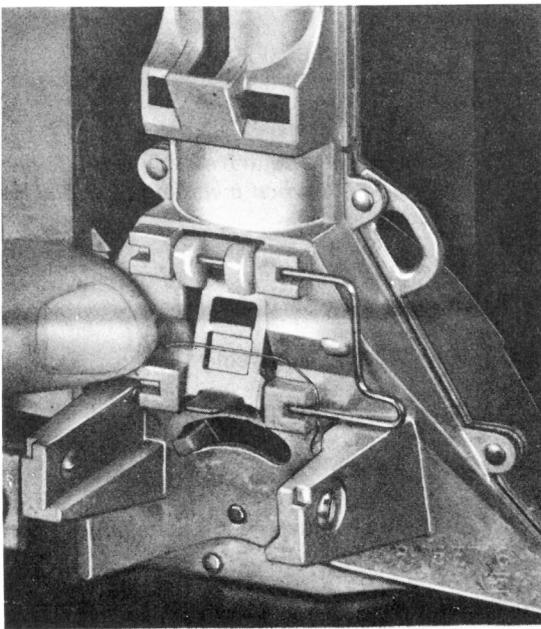
Fig. 38—840157333 Trap Lever Spring



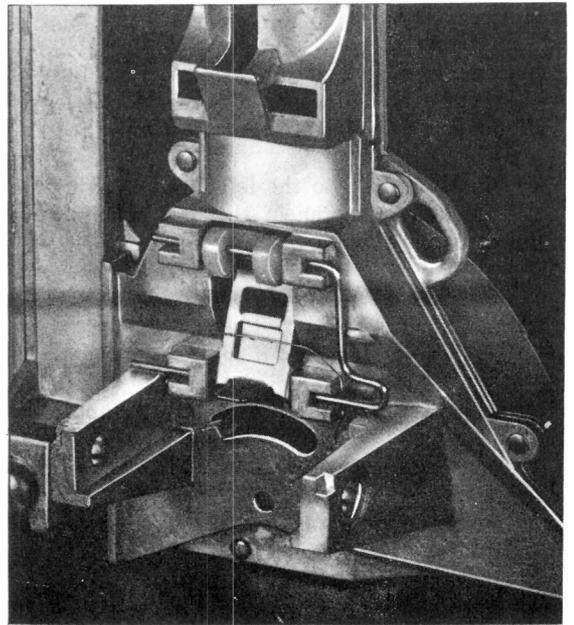
STEP 1



STEP 2



STEP 3



STEP 4

Fig. 39—Installing 840157333 Trap Lever Spring (Typical)

- 5.13 Install 840157333 trap lever spring as follows (Fig. 39):



The 840157333 trap lever springs may become deformed or twisted when several are intermixed together. This situation can be corrected by grasping each leg of a loose spring with one's fingers and countertwisting them until both legs are aligned properly as illustrated in Fig. 38.

Note: A weakened or broken phospher bronze spring can remain in the hopper assembly after the new wire type spring is installed.

- (1) Remove coin relay, if applicable.
- (2) Move trap pin to the right so that left end of pin is flush with hopper guide (Fig. 39, Step 1).
- (3) Holding notched left leg of new spring at an angle away from hopper, slide the right notched leg of the spring under trap pin (Step 2).
- (4) Swing loose end of spring across face of trap lever and position notch of left leg in alignment with end of trap pin (Step 3).
- (5) Push trap pin to the left, over and through the left leg notch of the new spring, until the trap pin detents (Step 4).
- (6) Install coin relay, if applicable.

- 5.14 To remove trap lever and coin trap:

- (1) Remove coin relay from hopper, if applicable.
- (2) Move vane to right.
- (3) Remove trap pin (Fig. 40) by sliding vertical portion over boss on front of hopper.
- (4) Turn coin trap sideways and remove through opening.

- 5.15 To replace coin trap and trap lever.

- (1) Partially insert trap pin into hole in hopper (Fig. 41) and place trap lever on trap pin.

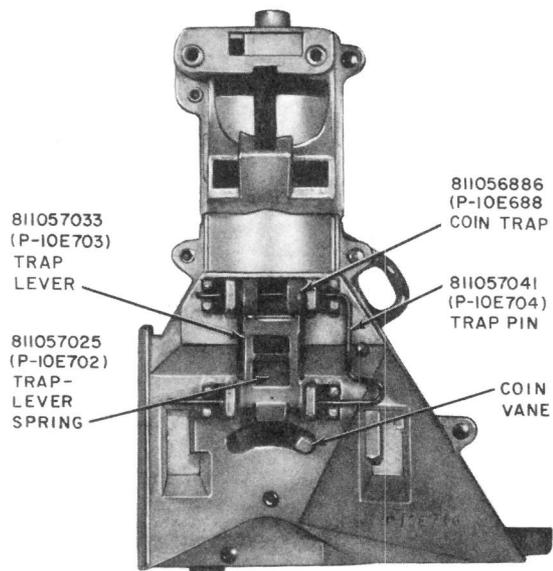


Fig. 40—Coin Trap and Trap Lever Assembly

- (2) Insert coin trap in hopper and engage pin in trap (Fig. 42).



Always use the wire-type trap lever spring (5.13) when installing or replacing a coin trap.

- (3) Push trap pin into position.
- (4) Check operation per Table H.
- (5) Install relay on hopper, if applicable.

Return Chute Assembly

Note: Latest return chute assemblies are made of plastic.

- 5.16 To remove return chute assembly.

- (1) Remove chute-totalizer.
- (2) Loosen return chute screw (Fig. 9).
- (3) Lift assembly up and off.

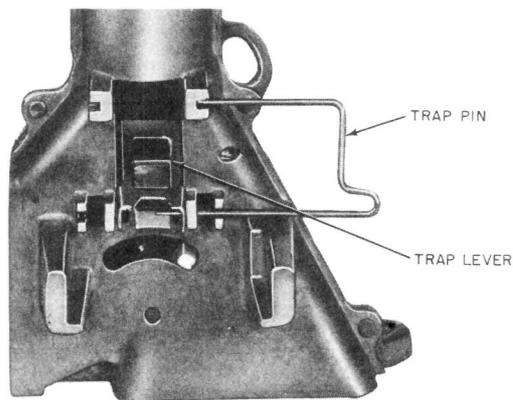


Fig. 41—Placing Trap Lever Pin on Hopper

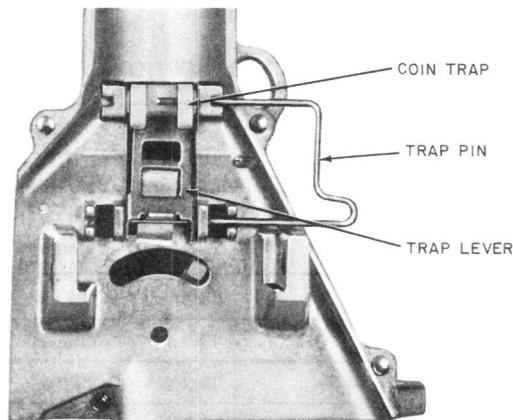


Fig. 42—Placing Coin Trap in Hopper

5.17 To replace return chute assembly, reverse procedure.

Coin Return Assembly

5.18 To remove coin return assembly:

- (1) Remove chute-totalizer.
- (2) Remove return chute assembly.
- (3) Remove coin return assembly locking screw (Fig. 9).
- (4) Insert finger in coin return and tilt top forward.
- (5) Lift coin return. Pull coin return assembly out and up.

5.19 To install coin return assembly:

- (1) Tilt top of coin return assembly toward set.
- (2) Push coin return assembly into set.
- (3) Push in and down on bottom of coin return assembly until flush with front of housing.
- (4) Install coin return assembly locking screw.
Tighten screw only enough to hold return assembly in place. Further tightening will bend screw.

(5) Replace return chute assembly.

(6) Replace chute-totalizer.

Ringer

5.20 To remove C4A ringer:

- (1) Remove chute-totalizer.
- (2) Remove coin chassis.
- (3) Disconnect four ringer leads; two from TB1 and two from network.
- (4) Remove two ringer mounting screws and lift off ringer.

5.21 To install C4A ringer, reverse procedure making sure that locating pin on bottom of ringer is in grommet on chassis assembly. Make connections per Table O.

Auxiliary Ringer

5.22 Where high ambient noise makes it difficult to hear the C4A ringer in the coin telephone set, a 687A subscriber set can be used to improve the situation. Install the 687A subscriber set as follows:

- (1) Disconnect, insulate, and store the four ringer leads from the ringer in coin telephone set.

TABLE O

COMPONENT CONNECTIONS

COMPONENT	WIRE COLOR	CONNECT TO	
		COIN FIRST MODE	DIAL TONE FIRST OR POST PAY MODE
Rotary Dial	BL	TB2-9	TB2-9
	G	TB2-10	TB2-10
	W	TB2-2	TB2-2
	W	TB2-3	TB2-3
	Y	TB2-9	*
	Y	TB2-9	TB2-13
35T3A TOUCH-TONE Dial	G	TB2-4	TB2-4
	W	TB2-2	TB2-2
	R	TB2-5	TB2-5
	R-G	TB2-6	TB2-6
	BK	TB2-1	TB2-1
	O-BK	TB2-11	TB2-11
	O-R	TB2-12	TB2-12
	BL	TB2-3	TB2-3
	W-BL	TB2-7	TB2-7
	O-W	TB2-10	TB2-9
V	TB2-10	TB2-13	
70A TOUCH-TONE Dial	G	TB2-4	TB2-4
	W	TB2-2	TB2-2
	R	TB2-5	TB2-5
	R-G	TB2-6	TB2-6
	BK	TB2-1	TB2-1
	O-BK	TB2-11	TB2-11
	O-R	TB2-10	TB2-10
	W-BL	TB2-7	TB2-7
	O-W	TB2-10	†
	V	TB2-10	TB2-13

TABLE O (Cont)

COMPONENT CONNECTIONS

COMPONENT	WIRE COLOR	CONNECT TO	
		COIN FIRST MODE	DIAL TONE FIRST OR POST PAY MODE
Handset (Rotary Set)	W	TB2-2	TB2-2
	R	TB2-3	TB2-3
	BK	TB2-6	TB2-6
	W	TB2-8	TB2-8
Handset (TOUCH-TONE Set)	W	TB2-7	TB2-7
	R	TB2-3	TB2-3
	BK	TB2-5	TB2-5
Ringer	W	TB2-8	TB2-8
	BK	TB1-T	TB1-T
	R	TB1-R	TB1-R
	S-R	Term A on Net.	Term A on Net.
Coin Chassis	S	Term K on Net.	Term K on Net.
	G	TB3-1	TB3-2
	G-BK	TB3-2	TB3-3
	R	TB3-3	TB3-1
	S-R	TB3-3	TB3-8
	BL	TB3-4	TB3-6
	S-W	TB3-4	Insulate and Store
	G-W	TB3-5	
	V	TB3-6	Insulate and Store
	BK	TB3-7	
W-BR	Insulate and Store	TB3-9	
V-O		TB3-6	
R-G	Insulate and Store	TB3-8	
Switchhook		R§	TB2-12

TABLE O (Cont)

COMPONENT CONNECTIONS

COMPONENT	WIRE COLOR	CONNECT TO	
		COIN FIRST MODE	DIAL TONE FIRST OR POST PAY MODE
Switch-hook	G	TB2-13	TB2-9
	S	TB2-9	TB2-9
	BR	TB2-11	TB2-11
	BR	TB2-10 (ROT)	TB2-10 (ROT)
		TB2-9 (TT)	TB2-9 (TT)
	O	TB2-10 (ROT)	TB2-10 (ROT)
		TB2-9 (TT)	TB2-9 (TT)
	O	TB2-11	TB2-11
	W	TB2-8	TB2-8
Y	TB2-3	TB2-3	

* TB2-9 on dial and housing assemblies 819042748 and 840152227 (P-90D274).

TB2-12 on dial and housing assemblies 841317241 and 841317258.

† TB2-9 on dial and housing assemblies 840155402 and 840155394.

TB2-12 on dial and housing assemblies 840346977 and 840347173.

§ The (R) switchhook lead appears on the following dial and housing assemblies only:

- | | |
|-------------|-------------------|
| ● 840346977 | } TOUCH-TONE Dial |
| ● 840347173 | |
| ● 840155402 | |
| ● 840195394 | |
| ● 841317241 | } Rotary Dial |
| ● 841317258 | |

Note: Bold areas indicate differences between CF and DTF modes.

(2) Install an 840362024 capacitor board assembly (Fig. 43).

(a) Install capacitor board assembly on backplate in 1-type sets (Fig. 44).

(b) Install capacitor board assembly on rear of 7A clip in panel sets (Fig. 45).

(3) Interconnect 687A subset and capacitor board assembly, using inside wire, as shown in Fig. 46.

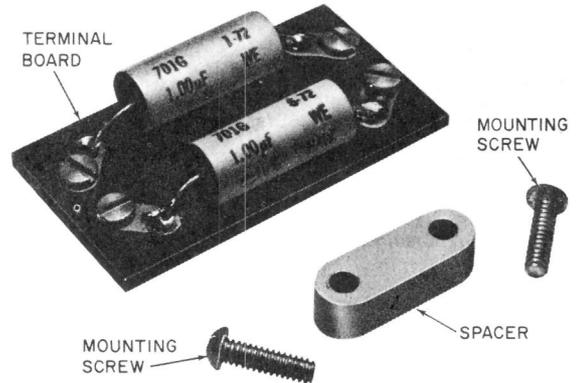


Fig. 43—840362024 Capacitor Board Assembly

Handset

5.23 The G3AD- and G3AF-type handsets previously used on single slot coin telephone sets are replaced with G3AH- and G3AK-type coded handsets respectively, which have the following features:

(1) They are equipped with an LB-type receiver unit and special field coil adapter in the handset which provides a uniform magnetic field of use to hard-of-hearing customers having inductive pick up-type hearing aids.

(2) They are identified by the blue rubber grommet around the armored cord at the transmitter end of the handle.

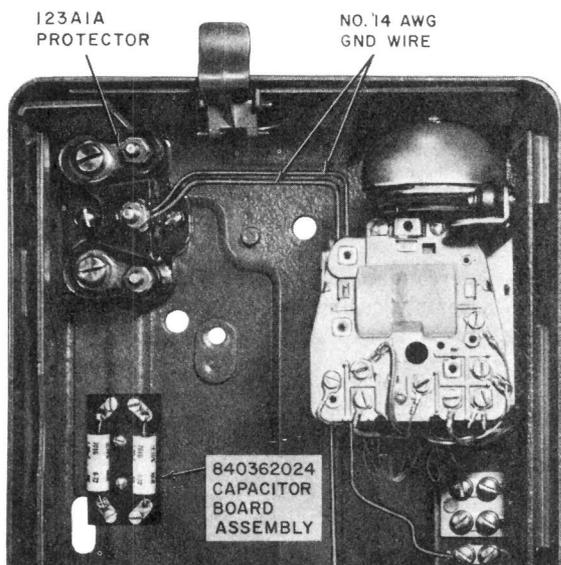


Fig. 44—Housing and Mounting Plate Assembly

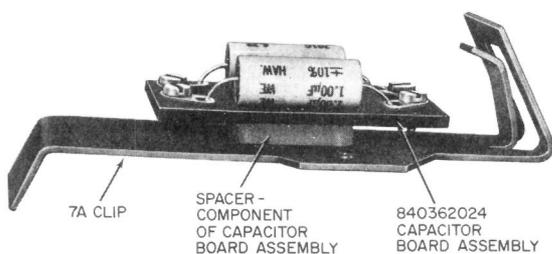


Fig. 45—Capacitor Board Assembly Mounted on 7A Clip

(3) The G3AK-type handset is equipped with a moisture-proof transmitter barrier and special transmitter cap. (Refer to Section 501-210-102.)

(4) Transmitter and receiver caps are bonded to the handle.

5.24 To test the field coil adapter in the G3AH- or G3AK-type handset.

(1) Place a KS-21468, List 1 tone pick-up coupler (Fig. 47) around the receiver cap of handset.

(2) Connect a lineman's test set to the two tone coupler terminals.

(3) Place the TALK-MONITOR switch in the TALK position.

(4) Dial the 1000 Hz test number from the coin telephone set. Listen in the test set for the 1000 Hz tone.

(5) If tone is not heard, the field coil adapter is defective and the coin phone handset should be replaced.

5.25 To remove handset:

(1) Disconnect handset leads from terminal board (TB2) on rear of dial housing.

(2) Remove 801816786 (P-181678) BHM screw, and 811554443 (P-15E444) coverplate (Fig. 1 and 2) which secure handset cord to dial housing.

(3) Loosen stay-hook screw and remove handset cord.

5.26 To install handset, reverse procedure. Make connections per Table O.

Note: A G13-type amplified handset can be used with coin sets. If required, refer to Section 501-211-102.

Dial and Housing Assembly



The 70A and 35T3A TOUCH-TONE dials cannot be physically interchanged without changing the complete dial and housing assembly.

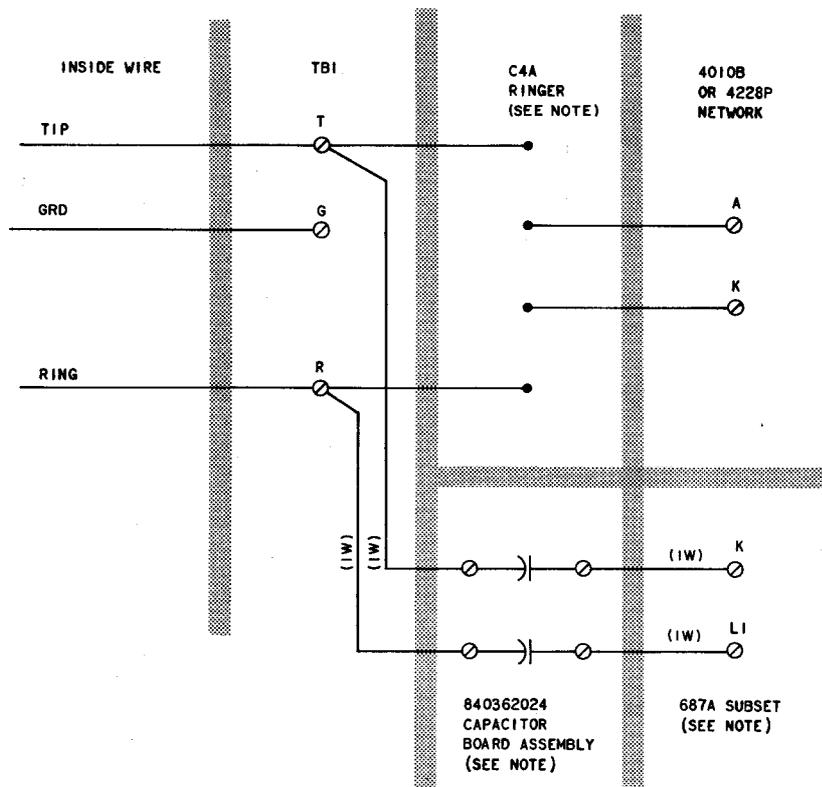
5.27 To remove dial and housing assembly:

(1) Remove handset.

(2) Remove four 840157390 nylon locking mounting screws (Fig. 1 and 2) and remove dial and housing assembly from cover.

5.28 To install dial and housing assembly, reverse procedure.

Note: Ensure that the four dial housing mounting screws are tight to prevent dial housings from becoming loose due to vibration.



NOTE:
DISCONNECT, INSULATE AND STORE THE FOUR RINGER LEADS. MOUNT AN 84036204 CAPACITOR BOARD ASSEMBLY AS DIRECTED IN PART 5. CONNECT CAPACITOR BOARD AND 687A SUBSET AS SHOWN USING INSIDE WIRE. DO NOT PUT THE CAPACITOR OF AN AUXILIARY RINGER IN SERIES WITH THE CAPACITOR BOARD.

Fig. 46—Optional Ringer Connections

5.29 To remove dial:

- (1) Remove mounting screws and pull dial and housing assembly away from cover unit assembly.

Note: It is not necessary to remove handset when removing dial.

- (2) Disconnect dial leads from TB2.
- (3) Loosen two mounting screws on sides of dial through access holes in housing.

- (4) Lift off dial.

Note: Before installing a new rotary dial, remove and discard the dust cover.

5.30 To install dial, reverse procedure making sure that dial is properly seated on four locating pins. Make connections per Table O.

Fingerwheel (85 Dial (MD))

Note: The releasing hole has been partially plugged to deter tampering.



Fig. 47—KS-21468, List 1 Tone Pick-up Coupler

5.31 To remove 812162998 (P-21F299) fingerwheel:

- (1) Use a KS-21107 releaser and rap sharply to break out the remaining plastic below the blind releasing hole.
- (2) Rotate the fingerwheel in a clockwise direction as far as possible.
- (3) Insert KS-21107 releaser or paper clip in hole and push down to disengage fingerwheel clamp. Continue to rotate the fingerwheel in a clockwise direction.
- (4) When clamp spring releases, remove fingerwheel. Dial will return to normal.

5.32 To install 812162998 (P-21F299) fingerwheel, place fingerwheel on dial with operator hole over the 9 position and rotate fingerwheel counterclockwise until spring clamp snaps in place.

Fingerwheel (8U [MD] or 8W Dial)

5.33 To remove 840151872 fingerwheel refer to 3.37.

5.34 To install 840151872 fingerwheel refer to 3.39.

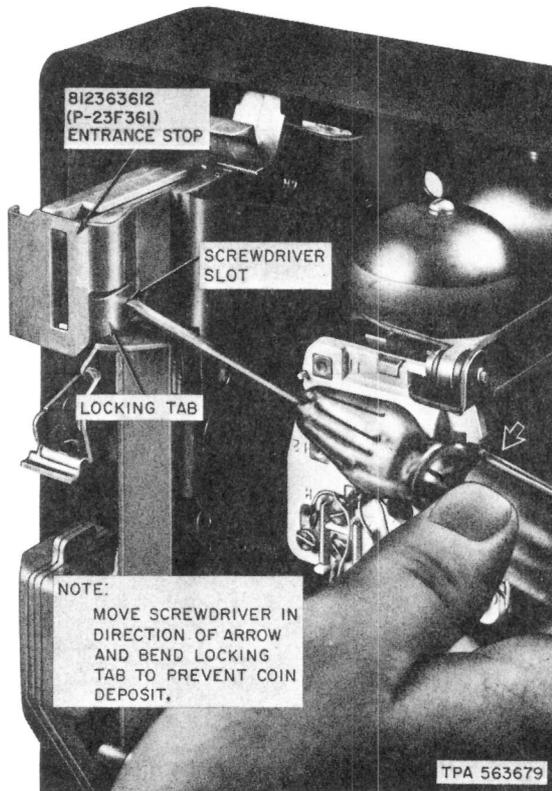


Fig. 48—Operation of Entrance Stop

812363612 (P-23F361) Entrance Stop

5.35 The entrance stop (Fig. 48) is installed on the chute to minimize coin losses due to chute stuffing. When the coin release lever or knob is operated or a stuffing condition exists the entrance stop moves sideways and closes the coin slot.

5.36 There should be no binding or rubbing of parts when coin release lever is operated fully and allowed to return to normal without force.

5.37 A prefabricated locking tab arrangement can be bent with a screwdriver (Fig. 48) to hold the upper plate assembly off normal. This will prevent customer coin deposits in newly installed coin telephone sets awaiting initial service connection, or those that are out of service which require further maintenance or repair.

Information Plate and Plate Assemblies

5.38 The 1C- and 2C-type sets are shipped from the factory or service center with an 840156319 information plate, indicating Coin-First service. When specified, these sets may be obtained wired for Dial-Tone-First service and equipped with an 840156327 information plate assembly. These plates are equipped with studs and are secured with thread-forming hex nuts.

5.39 Studded plates for field replacement can be ordered as follows:

- **For Coin First Service**—840156319 Information Plate e/w two RM-900077371 thread-forming nuts* and two 840702948 spacers †
- **For Dial-Tone-First Service**—840156327, Assembly, Information Plate e/w two RM-900077371 thread-forming nuts* and two 840702948 spacers †
- **For Post Pay Service**—840156087, Assembly, Information Plate e/w two RM-900077371 thread-forming nuts.*

*Use a 216B tool (3/8-inch socket wrench) to install or remove nuts from studs.

† Spacers are used on panel phones only.

5.40 If sets do not have holes for studded information plates, arrangements can be made to procure studless plates and affix them to the flat surface of the undrilled faceplate.

5.41 To install studless plates on coin telephone set:

- (1) Clean faceplate or panel of dirt and grime using KS-19578, List 1 cleaning fluid.
- (2) Wipe dry with a different, lint-free cloth.
- (3) Apply 3M Company double sided industrial tape No. 9122 (or equivalent) to the back surface of the information plate and trim neatly to size.
- (4) Peel off the back protective tape covering, carefully orient the plate on the faceplate or front cover (Fig. 1 and 2) and press in place. Apply firm pressure to ensure complete adhesion.

Modification of Cover Unit Chute Guide (Limit Stop)

5.42 If there is a clearance problem between chute and cover unit assembly on the 1-type set, bend the horizontal guide flange, located adjacent to the coin slot inside cover, as shown in Fig. 49.

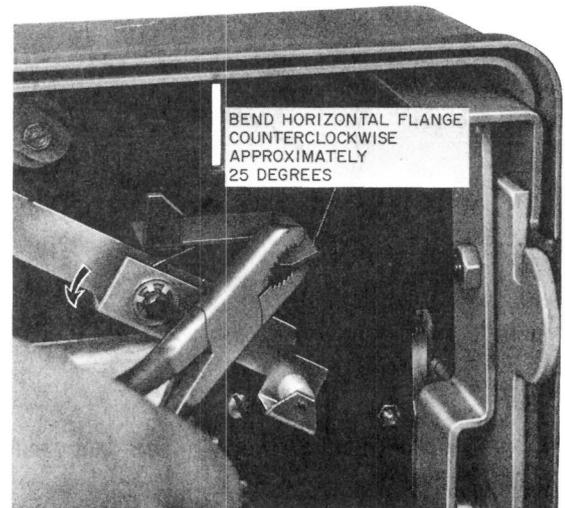


Fig. 49—Bending Chute Guide (Limit Stop)

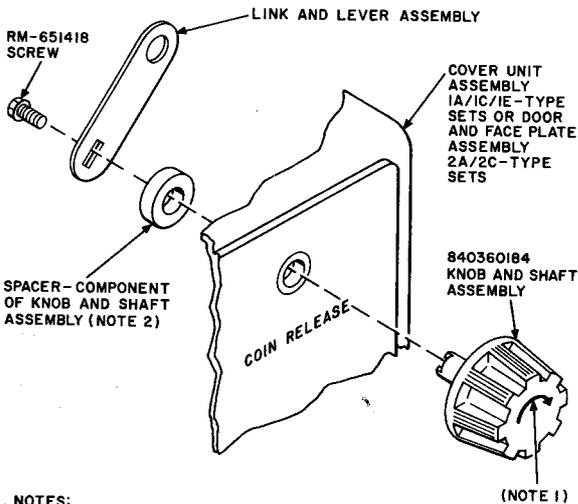
840360184 Knob and Shaft Assembly

5.43 The 840360184 knob and shaft assembly (Fig. 50) can be used to replace the lever-type coin release handle and shaft assembly in areas where vandalism causes damage to internal linkage and other chute actuating components.

5.44 A built-in clutch arrangement ensures that the chute actuating components are neither damaged nor destroyed if the knob is forcibly turned beyond its normal rotational limit.

5.45 To replace the lever-type coin release with the knob-type:

- (1) Remove cover unit assembly (1-type set) or open door and faceplate assembly (2-type set).
- (2) Remove and retain RM-651418 screw which secures link and lever assembly to coin release lever shaft. Remove lever and shaft assembly.



- NOTES:
1. INSTALL KNOB WITH ARROW IN THIS POSITION.
 2. USE THIS SPACER ON 2A/2C-TYPE SETS ONLY.

Fig. 50—Installation of 840360184 Knob and Shaft Assembly

- (3) Insert knob and shaft assembly and orient arrow on knob as shown.
- (4) On a panel coin telephone set, the steel spacer must be used.

Note: Do not use spacer on a 1-type set.

- (5) Place link and lever assembly over rear of shaft and secure with the RM-651418 screw retained in (2).

840358725 Handle and Shaft Assembly

5.46 The 840358725 handle and shaft assembly (Fig. 1) can be replaced on the 1-type set as follows:

- (1) Remove cover unit assembly.
- (2) Repeat 5.45(2).

- (3) Insert handle and shaft assembly through faceplate and orient it per Fig. 1.
- (4) Repeat 5.45(5).

6. CONVERSIONS

6.01 To convert a 1A/2A-type coin telephone set to 1C/2C-type:

(a) New chute-totalizer coin chassis, and dial and housing assembly are required. The following are preferred:

- 20A1A chute-totalizer
- 31A coin chassis
- 841317241 dial and housing assembly w/rotary dial or 840346977 dial and housing assembly w/TOUCH-TONE dial.

Note: On a 1-type set, a complete cover unit assembly equipped with appropriate dial can be used.

(b) Replace chute-totalizer, coin chassis, and dial and housing assembly with components listed in (a). Refer to Parts 3 and 5 for installation procedures.

(c) Verify connections per Table O.

6.02 To convert a 1C/2C-type set from CF to DTF mode:

(a) Use Table O as a guide and relocate following leads where applicable:

- Two (Y) leads on TB2 (rotary dial only)
- (O-W) and (V) leads on TB2 (TOUCH-TONE dial only)
- All leads on TB3
- (G) switchhook lead on TB2.

(b) Move slide switch on totalizer to DTF position.

(c) Change information plate and instruction cards.

7. MANUAL EXTENSION STATION

7.01 A manual extension station can be used with a 1C/2C-type and 1E3 sets using a 500C desk set equipped with a D-180405 Kit of Parts or a 554-type wall set equipped with a D-180406 Kit of Parts (Section 506-100-108). Do not use a kit-equipped extension set with a 1A/2A-type or 1E1 set.



Not more than one manual extension station should be associated with a coin set if the coin set privacy control feature is needed.

8. CLEANING AND TOUCH-UP

8.01 When necessary, the external surface of the coin telephone set may be cleaned with KS-7860 petroleum spirits or a suitable liquid wax such as Johnson's No. 7700 cleaning and polishing wax emulsion.

Warning: Use safety precautions while using highly flammable KS-7860 petroleum spirits.

8.02 An overspray lacquer, available in 12-ounce aerosol cans can be used for touch up work on 1-type coin telephone set with vinyl paint finishes.

- KS-21462, List 1 (Black -03)
- KS-21462, List 2 (Moss Green -51).

8.03 Apply per label instructions on can.



After all maintenance is completed, refer to Part 4 and verify if the coin telephone set is working correctly.

9. CONNECTIONS

9.01 Refer to Fig. 51 through 61 for connecting diagram.

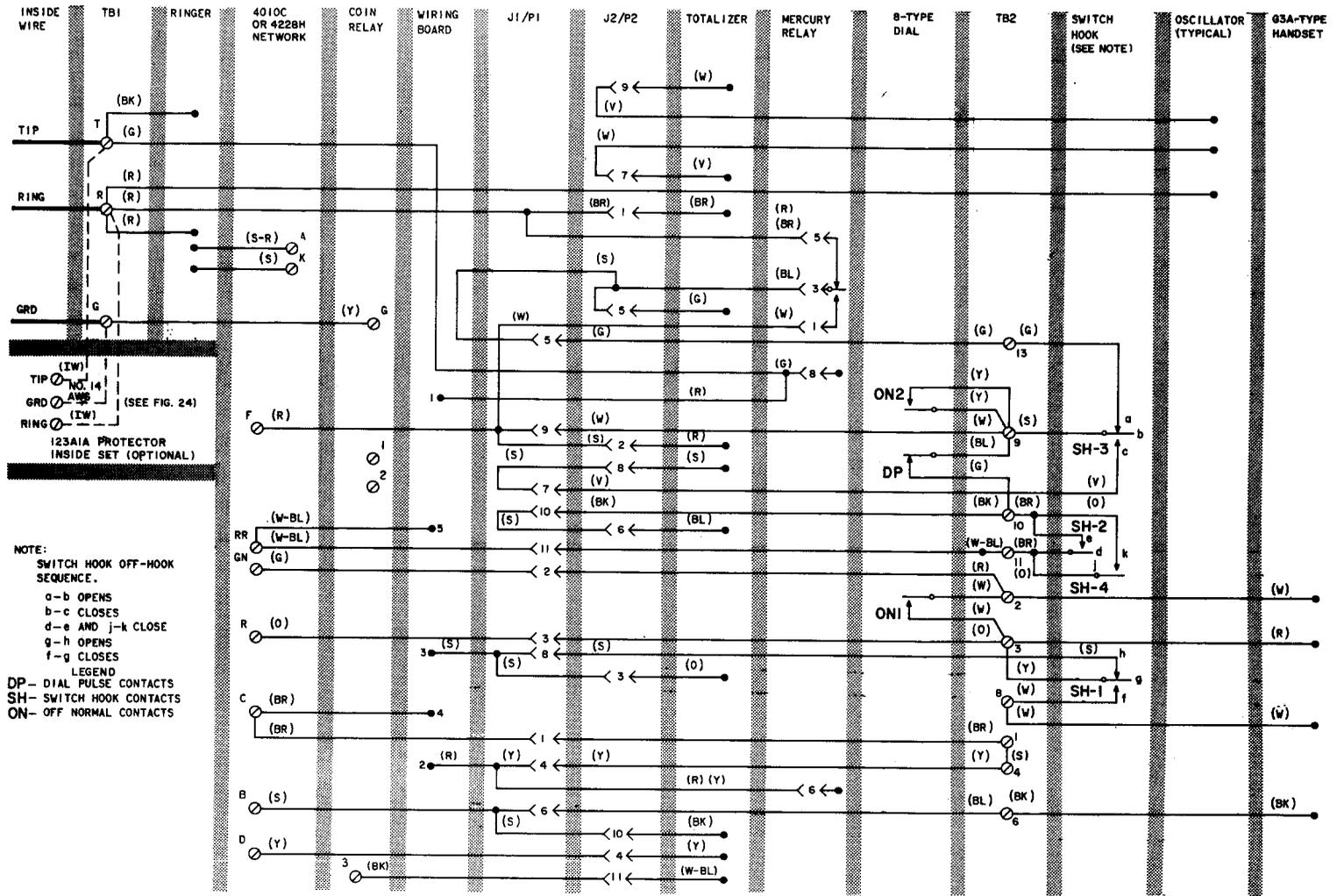


Fig. 51-1A1 or 2A1 Coin Telephone Set—Connections

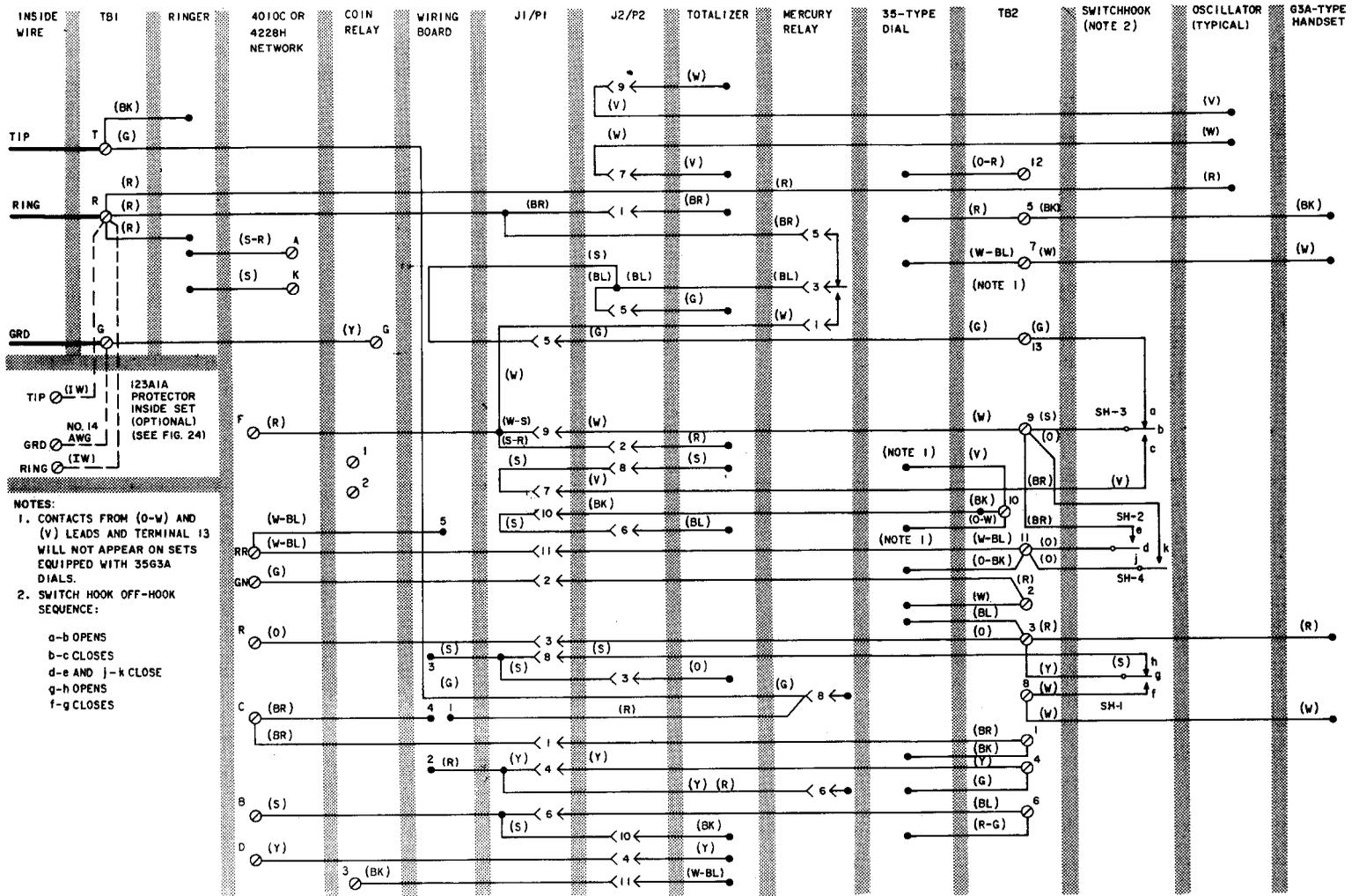


Fig. 52—1A2 or 2A2 Coin Telephone Set With 35-Type Dial—Connections

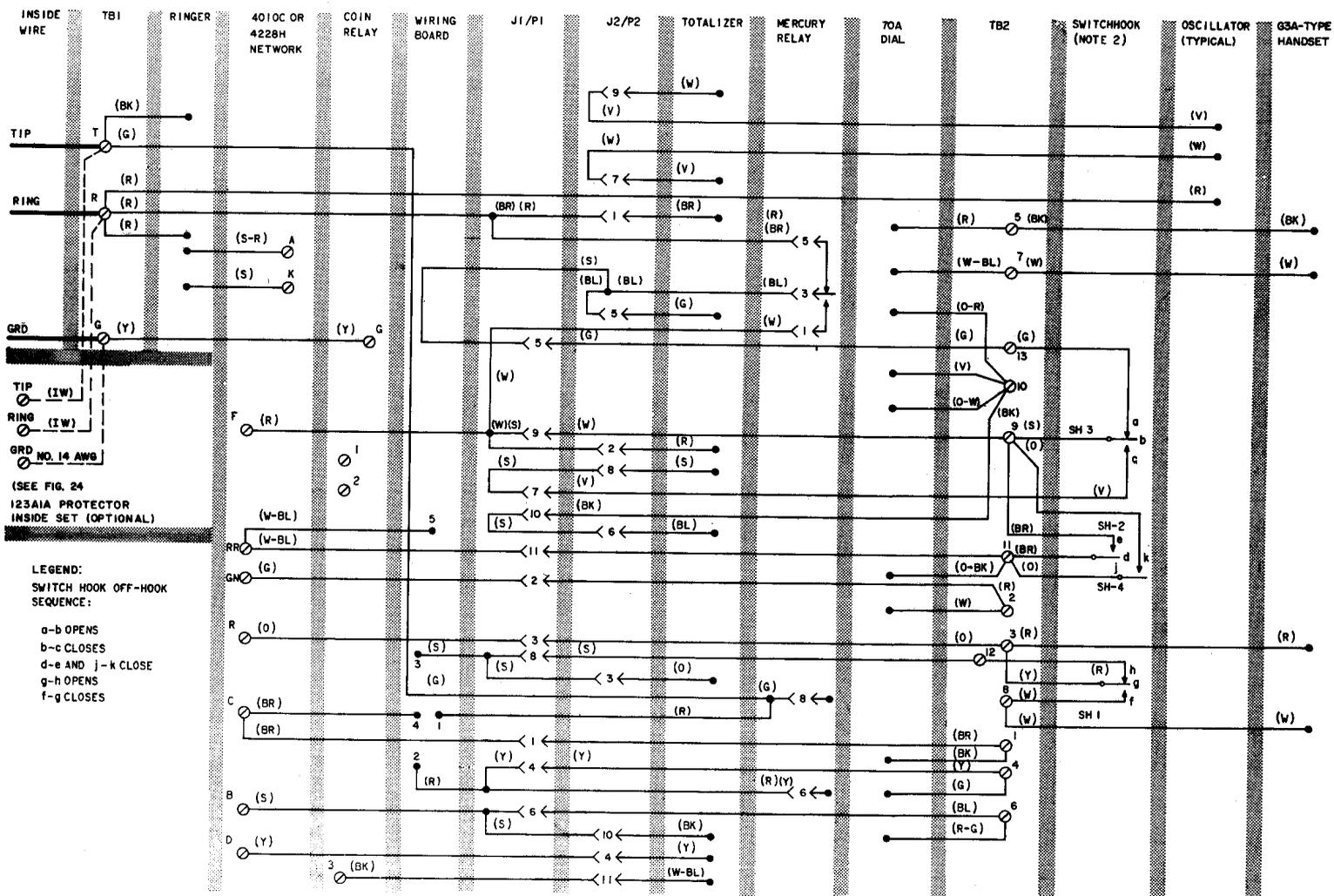


Fig. 53—1A2 or 2A2 Coin Telephone Set With 70A Dial—Connections

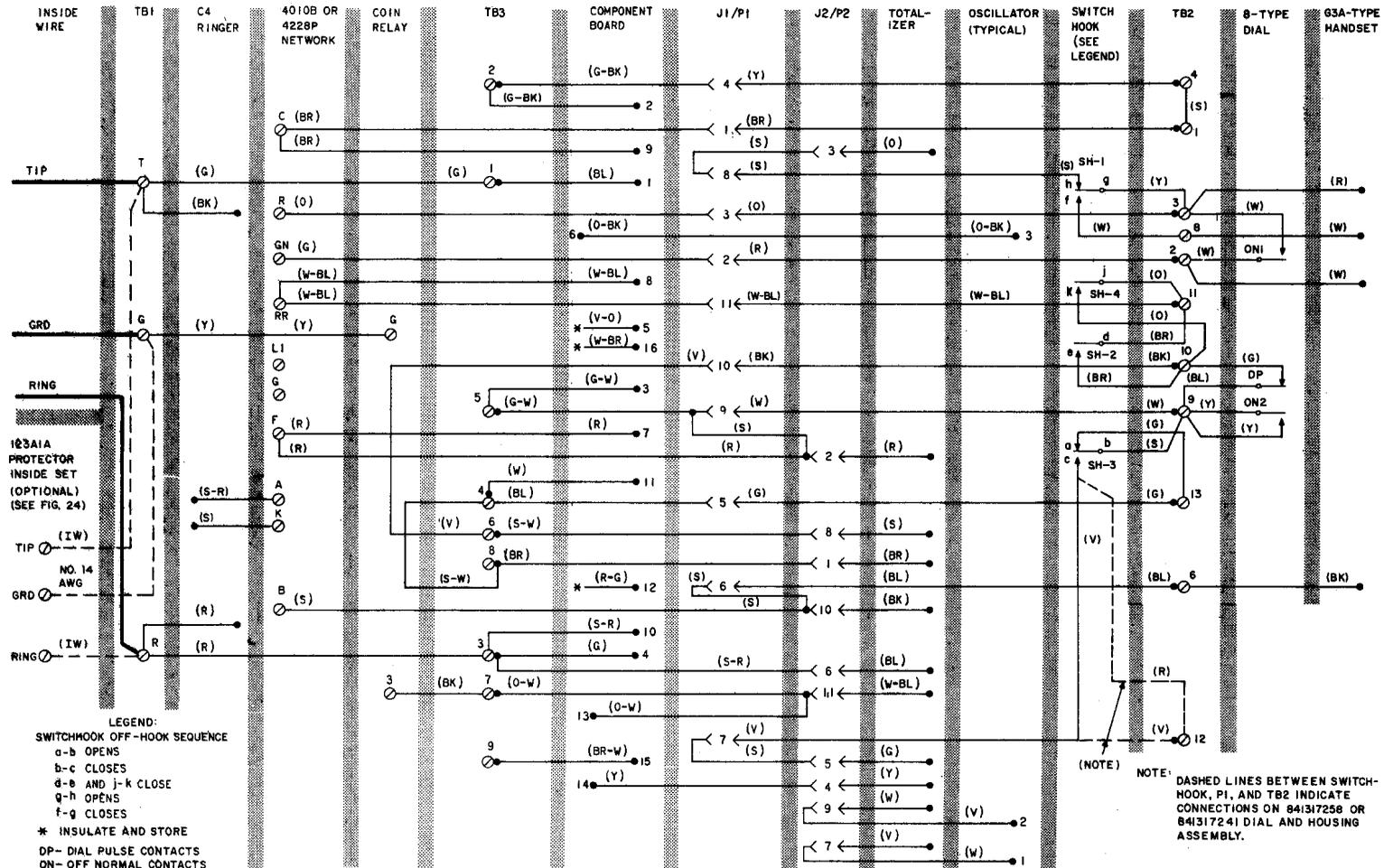


Fig. 54—1C1 or 2C1 Coin Telephone Set—CF Connections

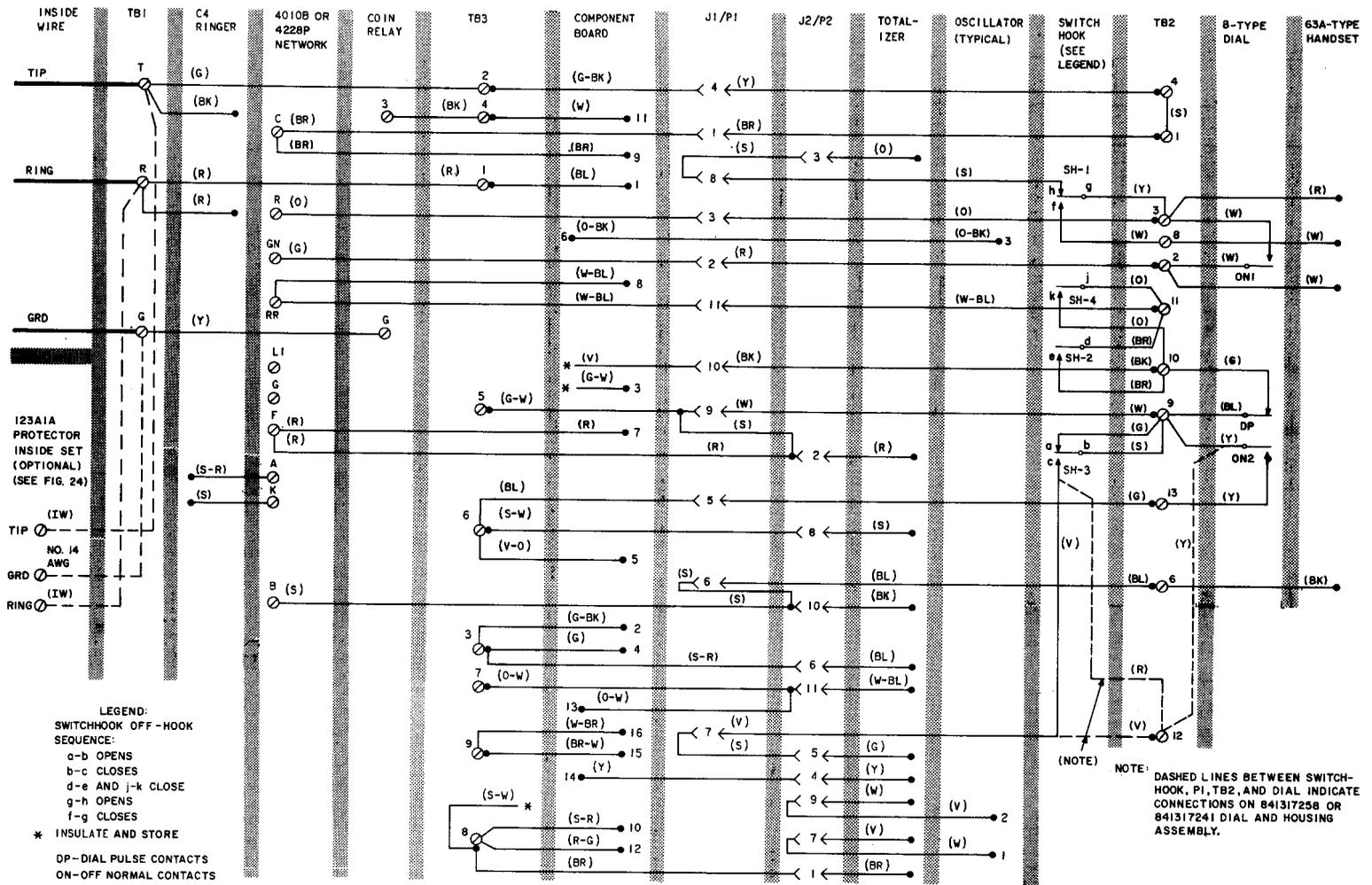


Fig. 55—1C1 or 2C1 Coin Telephone Set—DTF Connections

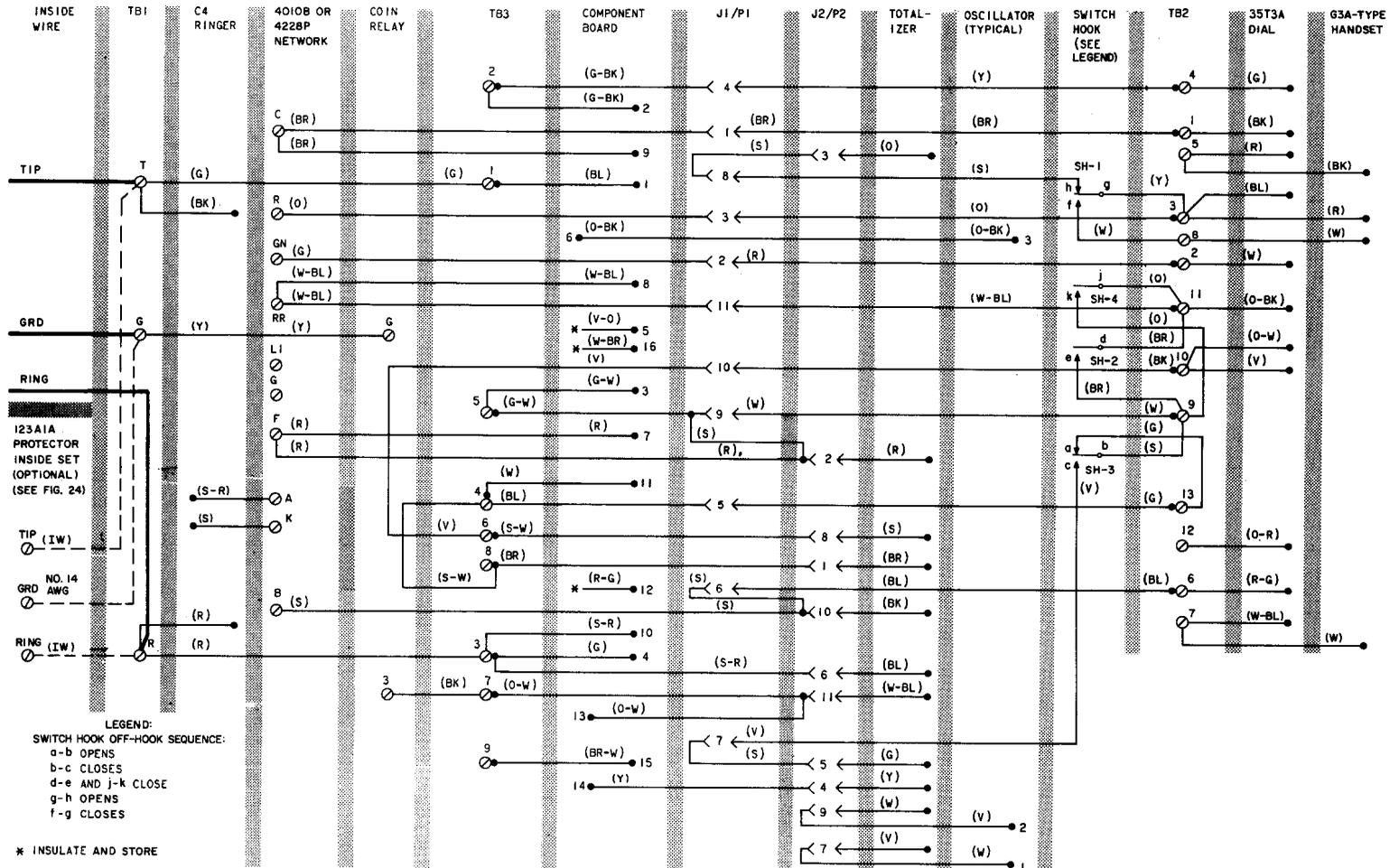


Fig. 56—1C2 or 2C2 Coin Telephone Set With 35T3A Dial—CF Connections

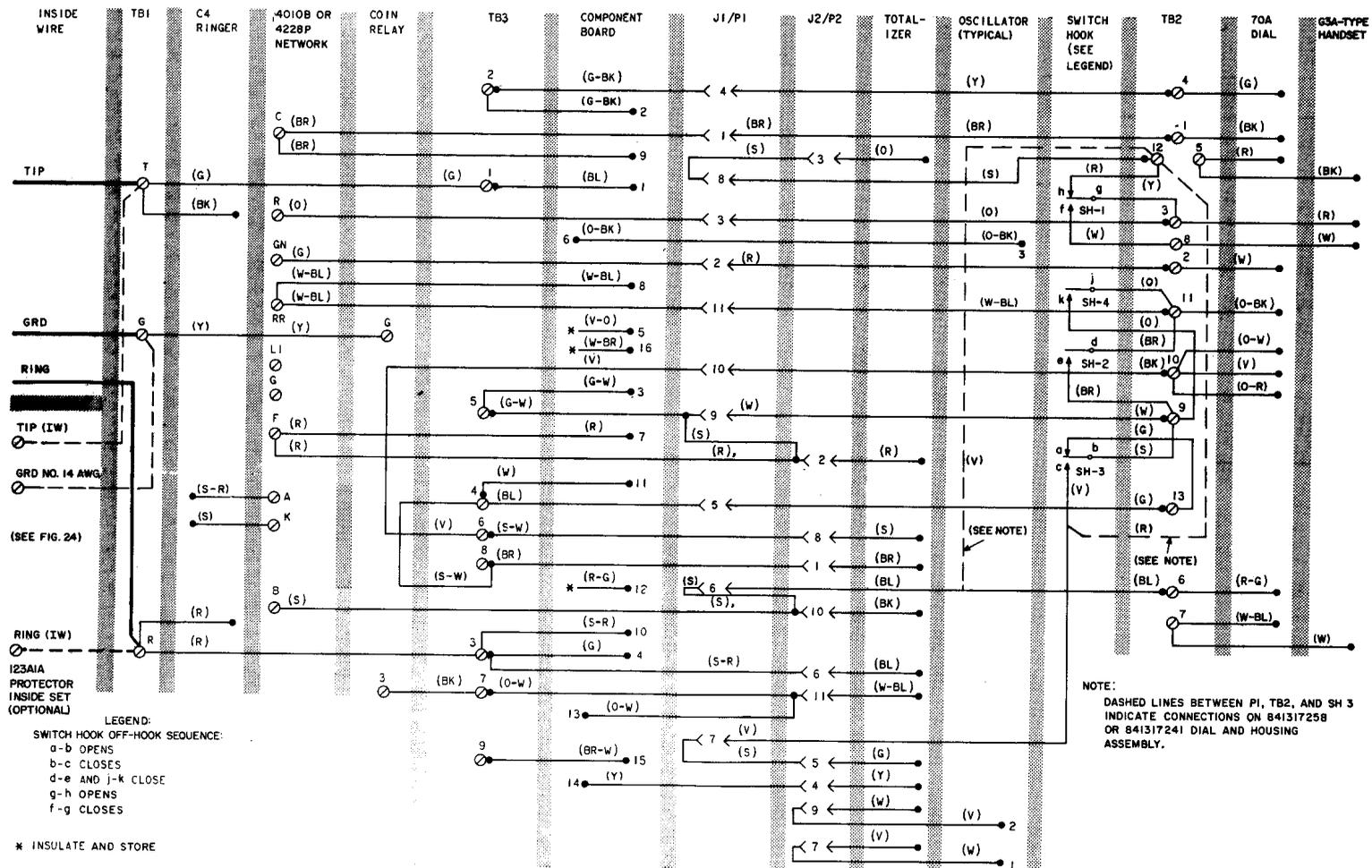


Fig. 57—1C2 or 2C2 Coin Telephone Set With 70A Dial—CF Connections

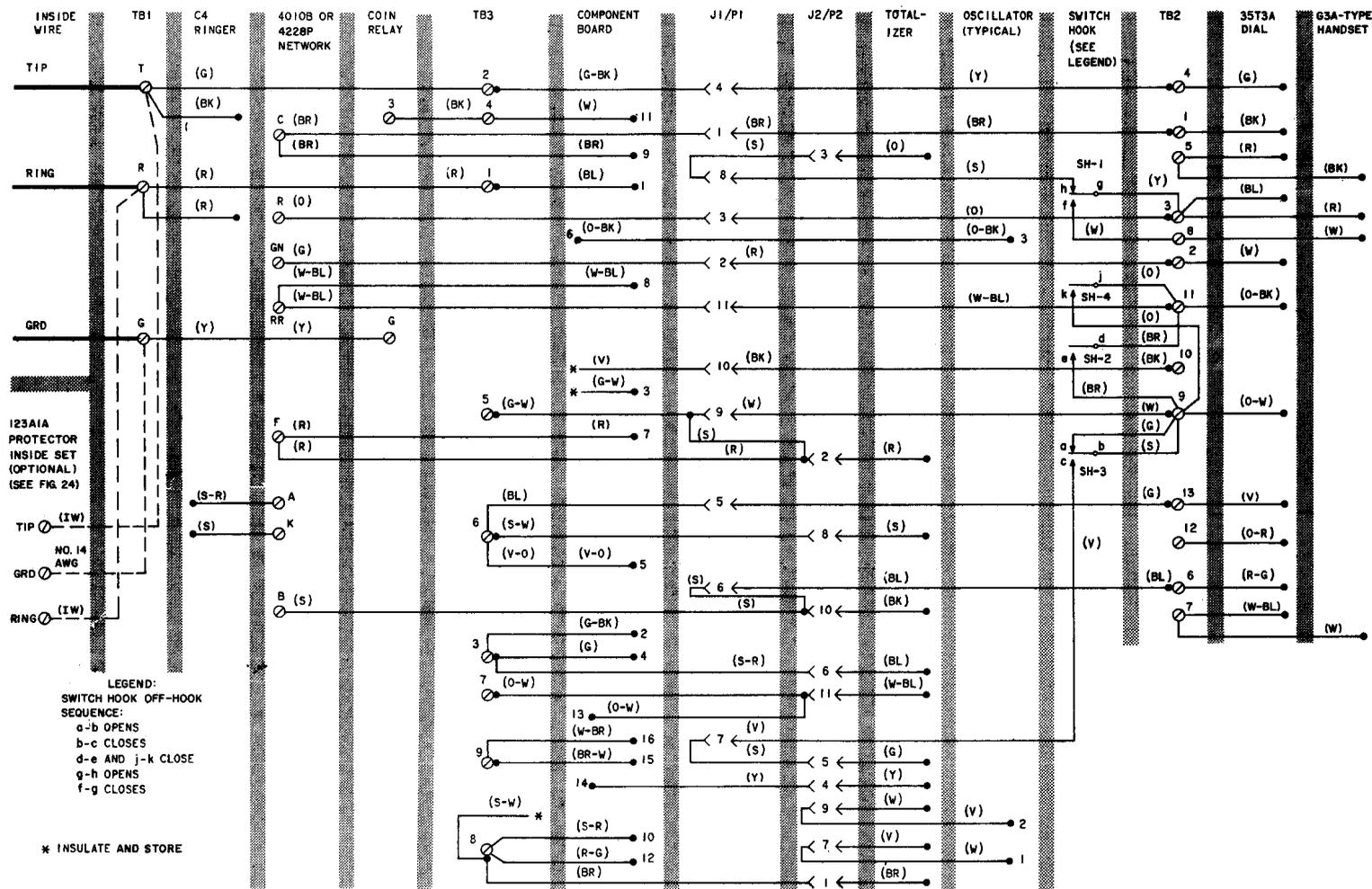


Fig. 58—1C2 or 2C2 Coin Telephone Set With 35T3A Dial—DTF Connections

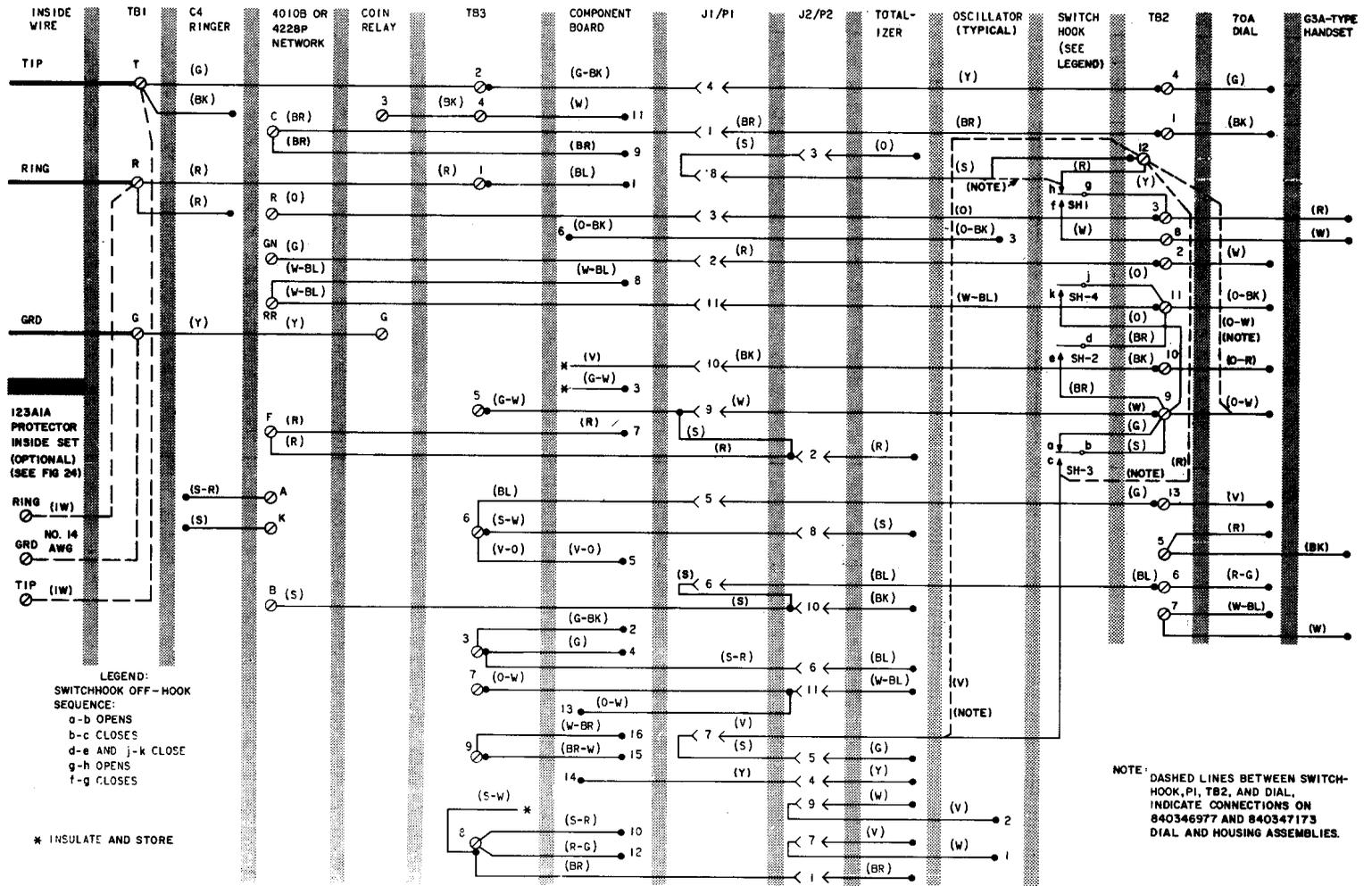


Fig. 59—1C2 or 2C2 Coin Telephone Set With 70A Dial—DTF Connections

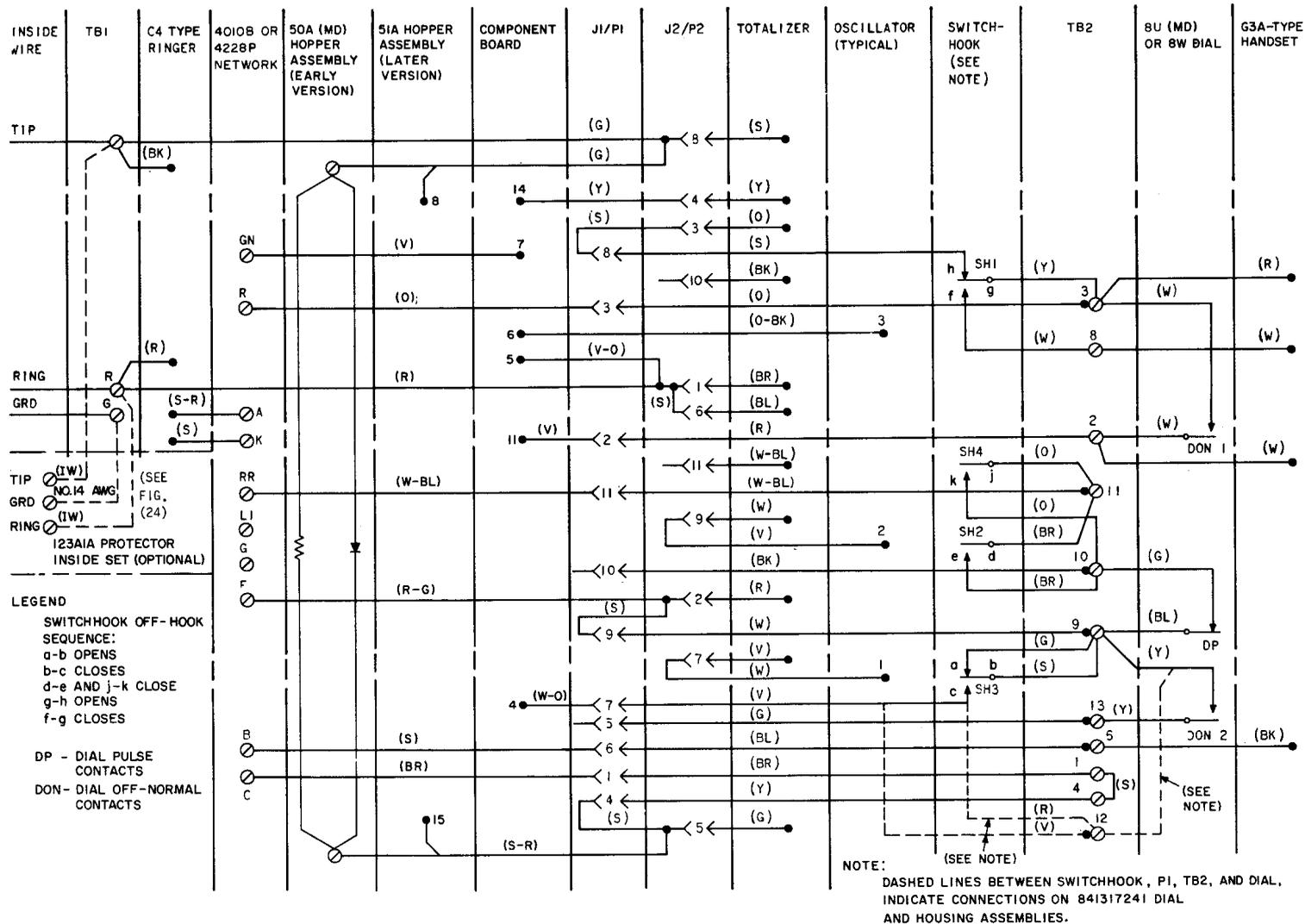


Fig. 60—1E1 Coin Telephone Set—Connections

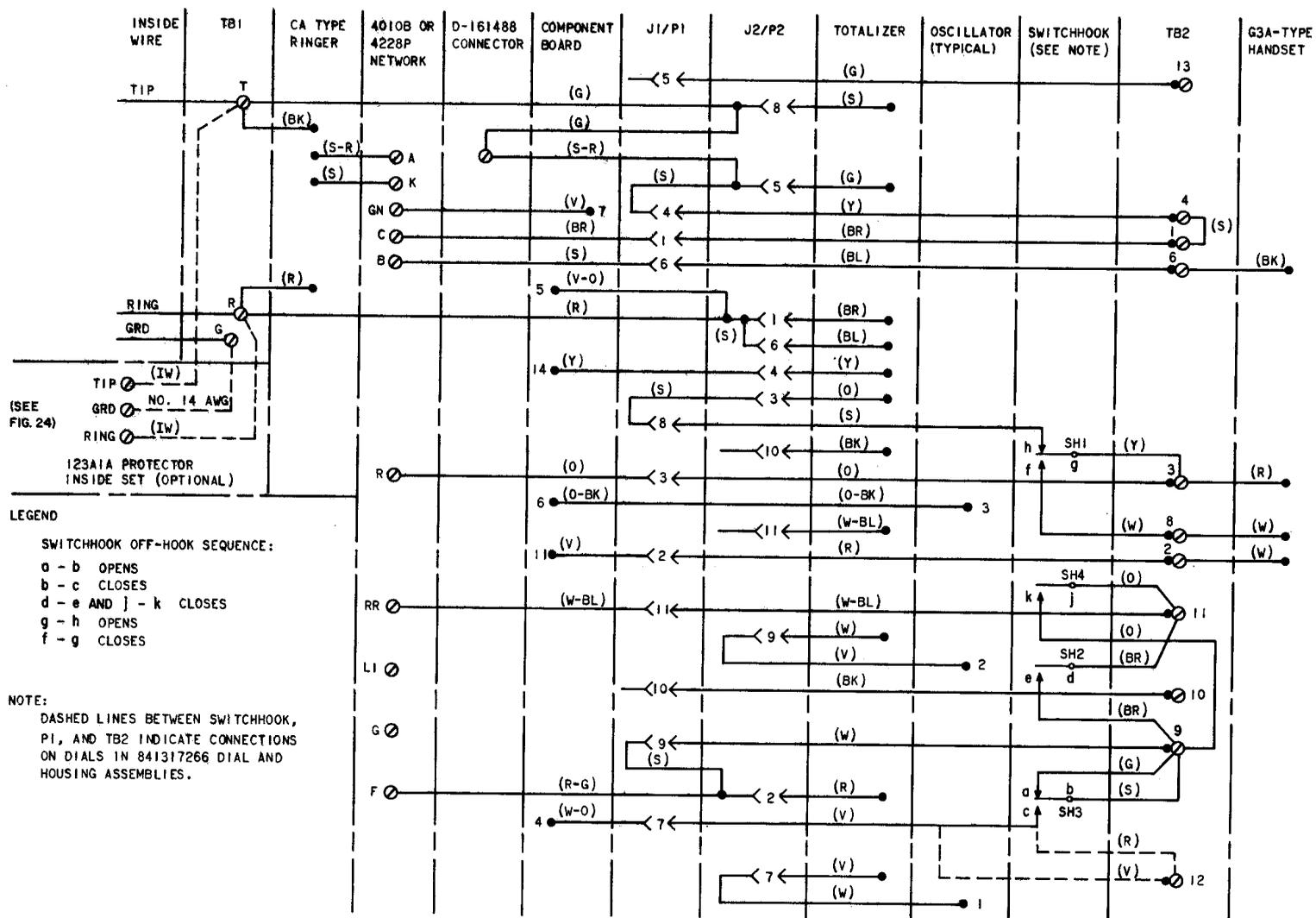


Fig. 61—1E3 Coin Telephone Set—Connections