

1C-, 1D-, 1E-, 2C-, AND 2D-TYPE COIN TELEPHONE SETS IDENTIFICATION, INSTALLATION, AND MAINTENANCE

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1. GENERAL

1.01 This document contains information on the 1- and 2-type coin telephone sets. The 1-type coin telephone set is shown in Fig. 1 and the 2-type coin telephone set is shown in Fig. 2. The coin telephone set codes are shown in Table A. The detailed description of the set can be found in Document 506-100-120.

1.02 This document is reissued to:

- (a) Delete information on the 1A- and 2A-type coin telephone sets
- (b) Add information concerning the coin hopper vane replacement
- (c) Add information concerning the AF1 mounting arrangement
- (d) Add information concerning the 1D- and 2D-type coin telephone sets
- (e) Add information concerning the G3AM and G3AN handsets

- (f) Add information concerning the 32B coin chassis
- (g) Add information concerning the 70C dial
- (h) Add information concerning the 61C-type coin dial unit
- (i) Add information concerning the 71A4 and 71A5 coin cover units
- (j) Delete information on the 70A1, 71A1, and 71A3 coin cover units
- (k) Indicate certain components are rated DA (discontinued availability).

1.03 The 1C- and 1D-type rotary dial sets can be converted to 1C- and 1D-type touch-tone telephone sets by replacing the coin cover unit. Verify the wiring is correct.

1.04 Coin telephone sets in DTF (dial-tone-first) can be used only with those central office switching systems that have been converted to DTF.

1.05 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.

1.06 Overall dimensions of the 1C-, 1D-, and 1E-type coin telephone sets are as follows:

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

1.07 Overall dimensions of the 2-type set are shown in Fig. 3.

2. IDENTIFICATION

ORDERING GUIDE

2.01 The basic telephone set is ordered as set, coin telephone, 1C1, 1C2, 1D1, 1D2, 1E1, 1E3, 2C1, 2C2, 2D1, or 2D2.

Note: All 1C- and 1D-type sets are shipped from the factory wired for DTF service.

2.02 For ordering components, see Table B and Fig. 1 and 2.

Note: Coin cover units and coin dial units are ordered from the factory wired for DTF service.

2.03 The associated apparatus is shown in Table C. Optional equipment is shown in Table D.

DESIGN FEATURES

2.04 All parts are contained in a high-security steel housing. The coin cover unit and/or door and faceplate assembly has six locking points actuated by a 719A tool and secured by a 29A lock.

2.05 The 1-type set cash compartment door has four locking points actuated by a 719A tool. The 2-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. (United States) nickels, dimes, and quarters only.

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

2.09 The sets have transmission characteristics of general purpose telephone sets.

2.10 Electrical connections of field replaceable coin cover unit, chute totalizer, or chute signal unit are made by plug and jack arrangement.

2.11 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 may be audible in the handset. In switching systems designed for machine detection of customer coin deposits, sets equipped with dual frequency type chassis must be used.

2.12 Each C- and E-type set is equipped with a totalizer as shown in Fig. 4 mounted on the

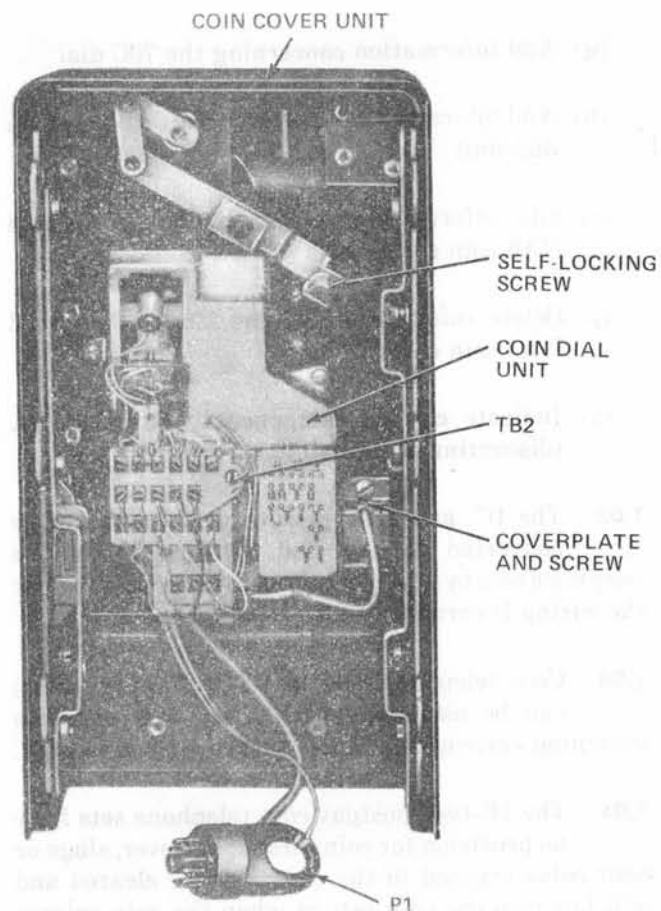
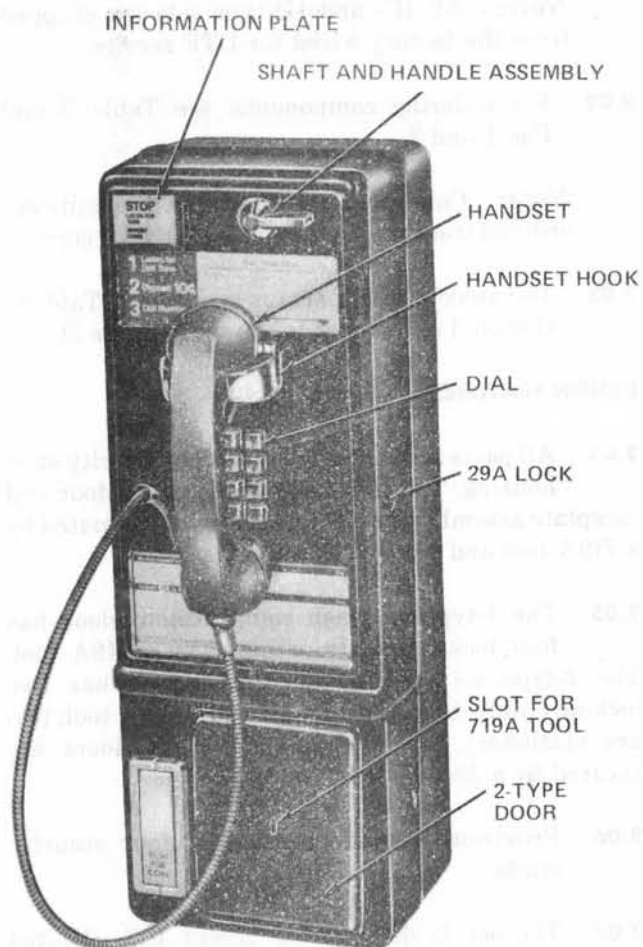


Fig. 1—1D-Type Coin Telephone Set (Sheet 1 of 2)

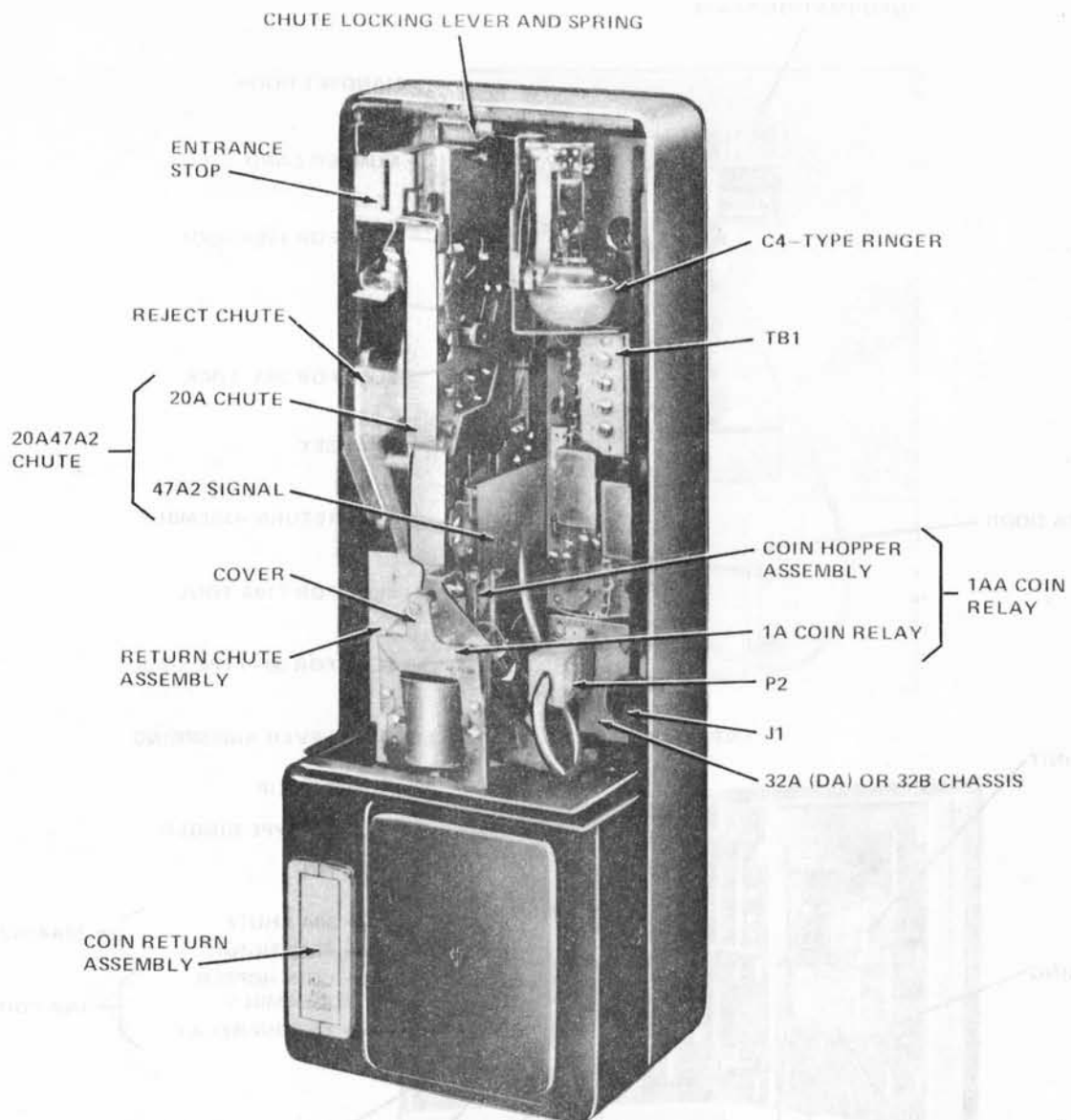


Fig. 1—1D-Type Coin Telephone Set (Sheet 2 of 2)

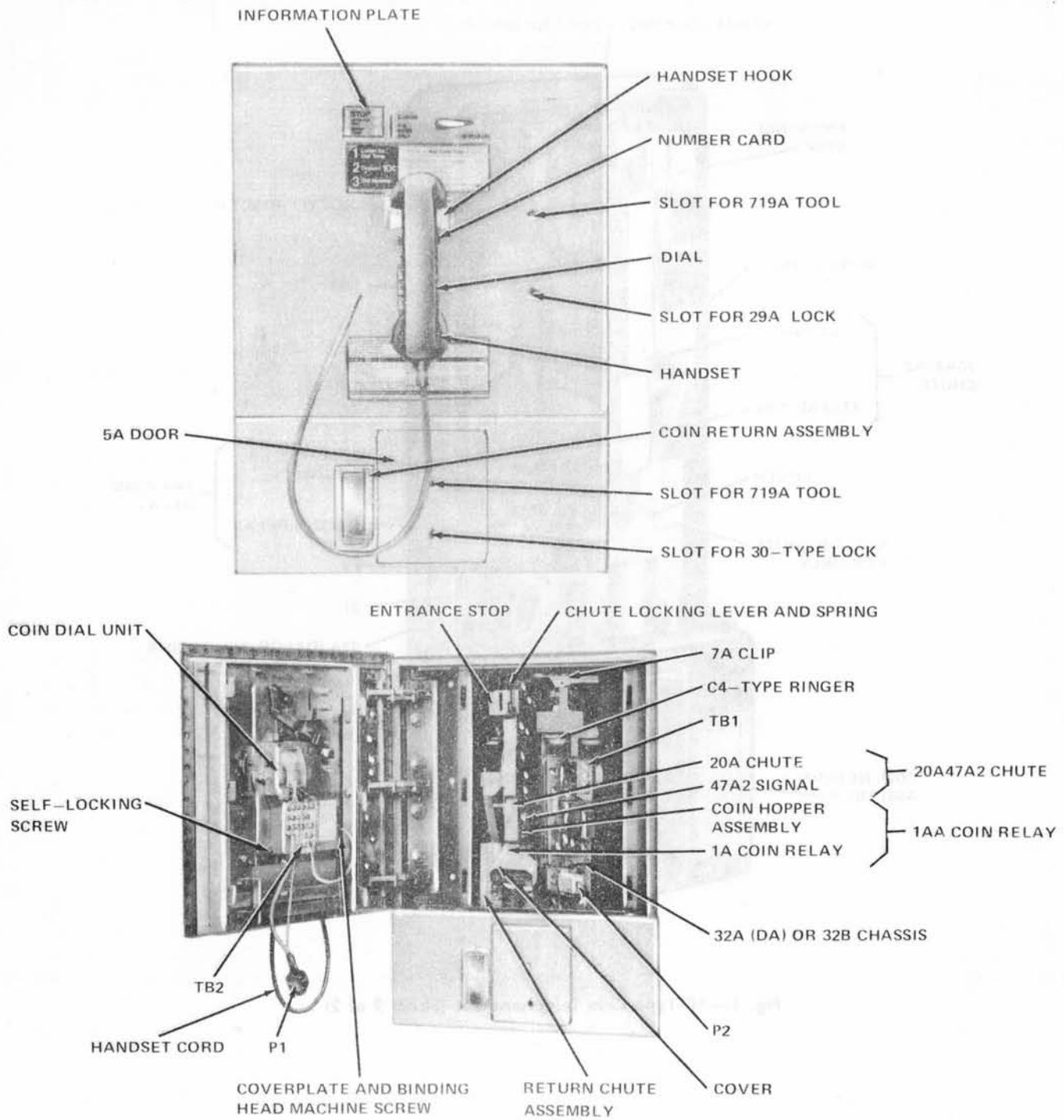


Fig. 2—2D-Type Coin Telephone Set

TABLE A				
CODE SIGNIFICANCE				
CODE	FIGURE	TYPE OF HOUSING	MODE OF OPERATION	DIAL
1C1	1	Box	Coin-First or Dial-Tone-First	Rotary
1C2				Touch-Tone
1D1	1	Box	Dial-Tone-First	Rotary
1D2				Touch-Tone
1E1	1	Box	Postpay	Rotary
1E3				None (Manual)
2C1	2	Panel	Coin-First or Dial-Tone-First	Rotary
2C2				Touch-Tone
2D1	2	Panel	Dial-Tone-First	Rotary
2D2				Touch-Tone

side of the coin chute. The totalizer cam shaft is rotated 10 degrees by each nickel deposited, 20 degrees by each dime deposited, and 50 degrees by each quarter deposited. Each cog (10 degrees) on the gear wheel represents a 5-cent increment. The totalizer in the C- and E-type telephone sets can be set for an initial rate of any amount from 5 cents to \$1.45 in 5-cent increments. A call cannot be made, except DTF, until the correct initial rate has been deposited. All set totalizers are preset at the factory for a 25-cent initial rate.

2.13 The 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 one tooth to the left of the 6 o'clock position.

2.14 The 1D- and 2D-type sets are equipped with a 47A2 signal unit that provides the coin functions electronically. The initial rate is set by sliding the switches on the 32-type chassis to the desired position. The initial rate can be set in 5-cent increments from 5 cents to \$1.60. Initially, the rate is set for 25 cents.

BASIC OPERATING FEATURES

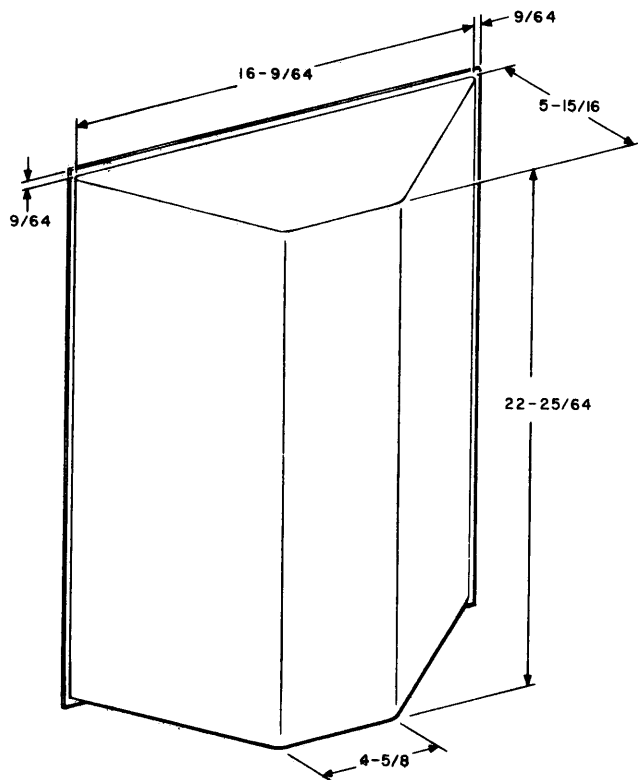
2.15 DTF Service (Prepay System): System operation for DTF is on a loop-start basis with ground present test for initial rate and polarity reversal for subsequent deposits. This system provides dial tone before coin deposit and allows call completion to certain numbers without a coin deposit. Loop-start circuit control is completed between the ring lead and the tip lead at the coin telephone set when the handset is lifted (switchhook released).

2.16 CF (Coin-First) Service (Prepay System):

For CF operation, the coin station line circuit at the central office responds to ground-start control. A start circuit must be completed between the ring lead and the ground lead at the coin telephone set before the dialing and talking circuit is connected and energized.

2.17 DPP (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 is dialed before coin deposit. Upon called party answer and following coin deposit, the central office switches the circuit for conversation.

2.18 MPP (Manual Postpay) Service: The system provides negative battery to the ring



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 2-Type Panel Set Showing Dimensions

side of the line with tip grounded. The operator is alerted when the handset is lifted. Coin deposits are requested by the operator after connection to the called party has been made.

2.19 ACTS (Automated Coin Toll Service): The ACTS feature provides the following to help mechanize the handling of coin toll calls at the No. 1 TSPS (Traffic Service Position System):

- Automatic voice announcement to the customer
- Machine recognition of coin deposit signals
- Checks for acceptable timing, frequency, and amplitude of coin signals generated by the coin telephone set.

2.20 In order for a coin telephone set to be compatible with ACTS, it must be equipped with a dual frequency oscillator mounted on the following chassis:

- C-type sets — 31-type coin chassis
- D-type sets — 32-type coin chassis
- E1 set — 30-type coin chassis.

2.21 The ACTS is compatible with coin telephone sets in the CF, DTF, and DPP mode of operation.

3. INSTALLATION

GENERAL

3.01 The tools, gauges, and cords necessary for the proper installation and maintenance of the coin telephone sets are shown in Table E.

LOCATION

3.02 The 1-type coin telephone set can be installed using the mountings described in Table F. The 2-type coin telephone set can be installed using the facilities described in Table G.

3.03 Verify that the drop wire is properly installed and electrically protected as shown in Fig. 6. Locate protectors (123E1A gas tube or 123A1A [DA] carbon-block), connecting block, etc., where they will be inaccessible to persons using the coin telephone set.

3.04 The following points should be carefully considered at the planned location:

- (a) Verify drop and inside wires are inaccessible for at least a distance of 6 feet from the set.
- (b) Check visibility, accessibility, and possible accident hazards in selecting locations.
- (c) Check mounting surfaces. Consult a supervisor before locating coin telephone set on finishes that would be expensive to repair if the set is removed.
- (d) Check inductive effects. Locate set and associated wiring away from neon fixtures,

transformers, or other interference-causing equipment.

(e) For outdoor installations, be certain the telephone set will not be subject to driving rain, salt spray, or splashed salt water from snow melt-off on sidewalks or roadside mountings.

(f) Ensure that security studs and through-wall fasteners are used where possible. Always install all seven 1/4-20 hardened screws when mounting a 1-type set. A single 1/4-inch flat washer can be used under each screwhead for added security.

INSTALLATION OF 1-TYPE SETS

A. Backboards

3.05 A vertical surface is required to mount a coin telephone set. A tilt greater than 1-1/2 degrees in any direction can cause chute malfunction. A vertical surface is determined by using a spirit level as follows:

(1) Place a spirit level vertically against the mounting surface on which the set is to be installed.

(2) When a vertical reading is obtained, the end of the level opposite the point of contact shall be no further away from the mounting surface than shown in Table H.

3.06 Refer to Table F for the type of backboard, booth, shelf, mounting, or kiosk that can be used with the 1-type sets. The backboards that can be installed are as follows:

(a) The 178A backboard shown in Fig. 8 is constructed of aluminum alloy and designed to allow mounting the 1-type set on a wall. It is available in black (-03) and chocolate brown (-104) and can accept a KS-13350 directory hanger.

(b) The KS-21676, List 2 backboard shown in Fig. 9 is constructed of steel and designed to allow mounting the 1-type set on a horizontal surface. It is available in black (-03) and chocolate brown (-104). The KS-21676, List 3 security plate shown in Fig. 10 can be used when additional security is necessary.

Refer to Table I for the proper fastening device and quantity to be used on each backboard.

3.07 The type of security studs required for the installation of the particular type of backboard, booth, shelf, or kiosk used is shown in Table F. The location of the security studs in the coin telephone set housing is shown in Fig. 11.



Backboards must be mounted securely using the number and type of fasteners specified. Avoid mounting backboards on uneven surface to prevent distortion or fracture when fasteners are securely tightened. To ensure the most secure mounting, the fasteners should be distributed as evenly as possible.

3.08 Backboards located outdoors should be secured with rustproof fasteners such as galvanized screws and bolts. If backboards are to be mounted on a finely finished surface (such as glazed tile or marble that would be expensive to repair), consult your supervisor and obtain specific installation instructions.

B. Fasteners

3.09 Through-wall fasteners are designed to be used for additional security when securing a backboard to a wall in "high-risk" locations such as laundromats, garages, and other places where the phone is not under the scrutiny of a proprietor or cannot be seen easily by the general public.



Before installing a through-wall fastener, inform the proprietor that it will be necessary to drill through the wall. If the proprietor objects, and the set requires the security, refer the matter to your supervisor. DO NOT INSTALL A SET WHERE SECURITY IS IN QUESTION.

3.10 The following two types of through-wall fasteners are available and either can be used depending on local requirements.

Twin-Bolt Fasteners

3.11 The twin-bolt fastener shown in Fig. 12 can accommodate a mounting surface that can

TABLE B							
COMPONENT (1C-, 1D-, 1E-, 2C-, AND 2D-TYPE SETS) (NOTE 1)							
COIN TELEPHONE SET	MODE OF OPERATION	COIN COVER UNIT (NOTE 2)	COIN DIAL UNIT	DIAL	NUMBER PLATE ASSEMBLY	INFORMATION PLATE ASSEMBLY	HANDSET (NOTE 3)
1C1-03 (Black)	Rotary CF	70A1-03 (DA)†	60B1-44 (DA) or 60A1-44 (DA)†	8WA or 8W (DA)	818418527	840156319	G3AM-03, G3AH-52 (DA), G3AK-52 (DA), G13D-03, or G3AN-03
	Rotary DTF	70A2-03	60A2-44 (DA) or 60B2-44			840156327	
1C2-03 (Black)	Touch-Tone CF	71A1-03 (DA)†	61B1-44 (DA) or 61A1-44 (DA)†	70A (DA), 70B (DA), or 70C‡	—	840156319	
	Touch-Tone DTF	71A2-03 (DA)	61B2-44 (DA) or 61A2-44 (DA)				
1D1	Rotary DTF	70A3-03	60A-44 (DA) or 60B3-44	8WA or 8W (DA)	818418527	840156327	
1D2	Touch-Tone DTF	71A3-03 (DA) or 71A5-03	61A-44 (DA), 61B3-44 (DA), or 61C2-44	70A (DA), 70B (DA), or 70C‡	—		
1E1-03 (Black)	Dial Postpay	70A5-03 (DA) or 70A2-03*	60A2-44 (DA) or 60B2-44*	8WA or 8W (DA)	818418527		
1E3-03	Manual Postpay	70A4-03	60A4-44	840994727 Apparatus Black Assembly		840156087	
2C1-67 (Brushed Stainless)	Rotary CF	—	60A1-44 (DA) or 60B1-44 (DA)†	8WA or 8W (DA)	818720526	840156319	
	Rotary DTF		60A2-44 (DA) or 60B2-44			840156327	
2C2-67 (Brushed Stainless)	Touch-Tone CF		61A1-44 (DA) or 61B1-44 (DA)†	70A (DA), 70B (DA), or 70C‡	—	840156319	
	Touch-Tone DTF		61A2-44 (DA), 61B2-44 (DA), or 61C1-44*				
2D1-67 (Brushed Stainless)	Rotary DTF		60A-44 (DA) or 60B3-44	8WA or 8W (DA)	818720526	840156327	
2D2-67 (Brushed Stainless)	Touch-Tone DTF		61A-44 (DA), 61B3-44 (DA), or 61C2-44	70A (DA), 70B (DA), or 70C‡			

Note 1: Components previously rated MD (manufactured discontinued) are now rated DA (discontinued availability).

Note 2: When the units are field converted from one type to another, it is important to ensure that the unit being used is wired properly and the coin cover unit has the proper information plate and instruction cards for the type of service with which it is being used. All rotarydial cover units are equipped with 8WA dials and all touch-tone telephone dial coin cover units are equipped with 70A (DA), 70B (DA), or 70C‡ dials.

Note 3: Various handsets have specific features such as G3AH — field coil; G3AK — moisture resistant and field coil; G13D — amplified; G3AM — field coil and stainless steel rope in armored hose; and G3AN — moisture resistant, field coil, and stainless steel rope in armored hose.

TABLE B (Contd)							
COMPONENT (1C-, 1D-, 1E-, 2C-, AND 2D-TYPE SETS) (NOTE 1)							
HOUSING AND MOUNTING PLATE ASSEMBLY	CHUTE TOTALIZER/SIGNAL UNIT	COIN CHASSIS	COIN RELAY AND HOPPER ASSEMBLY	RETURN CHUTE ASSEMBLY	COIN RETURN ASSEMBLY	COIN RECEPTACLE RAIL	CASH COMPARTMENT DOOR
818512036	20A Chute and 1A Totalizer	31A (DA) or 31A3*	1AA Coin Relay (consists of 1A coin relay and 811557172 coin hopper assembly)			1B	2A-03 or 2B-03 (optional)
		31A2 (DA) or 31A3					
		31A (DA) or 31A3*					
		31A2 (DA) or 31A3					
	20A Chute and 47A (DA) or 47A2 Signal Unit	32A (DA) or 32B					
840656037	20A Chute and 10A Totalizer	30B	50A (DA) or 51A Hopper Assembly	811557305	812165462		
840657035			50B Hopper Assembly				
—	20A Chute and 1A Totalizer	31A (DA) or 31A3*	1AA Coin Relay (consists of 1A coin relay and 811557172 coin hopper assembly)			1D	5A-67
		31A2 (DA) or 31A3					
		31A (DA) or 31A3*					
		31A2 (DA) or 31A3					
	20A Chute and 47A (DA) or 47A2 Signal Unit	32A (DA) or 32B					
<p>* Field converted to CF or dial postpay.</p> <p>† For sets requiring CF coin dial units, existing coin dial units and coin cover units can be field converted to CF operation provided they contain mercury switch SH2.</p> <p>‡ The 31A chassis and 31A2 chassis must be updated with D-181388 Kit of Parts for proper lightning and surge protection with the 7C dial.</p>							

TABLE C						
ASSOCIATED APPARATUS (Order Separately)						
COIN TELEPHONE SET	CASH COMPARTMENT DOOR	COIN RECEPTACLE	COIN RECEPTACLE COVER	CASH COMPARTMENT LOCK	COVER UNIT ASSEMBLY OR DOOR AND FACEPLATE ASSEMBLY LOCK	ALARM SWITCH
1C-, 1D-, and 1E-Type	2A-3* (Black)	1C-Type†	1E	30-Type	29A	1A Switch Kit and 257A Switch
2C- and 2D-Type	5A-67‡ (Stainless)					257A Switch
* The 2B door is optional.						
† The cash compartment door is furnished with all panel phones.						
‡ Sets equipped with false floor in coin vault require a 1B receptacle.						

TABLE D OPTIONAL EQUIPMENT (Order Separately)		
ITEM	USED ON	REMARKS
1A Switch Kit	1-Type Set	Refer to Section 506-101-100
257A Alarm Switch	30-Type Lock	Refer to Section 506-101-100
Magnetic Coin Stop (D-180848 Kit of Parts)	1-Type Set	Paragraphs 3.58 through 3.64
Magnetic Coin Stop F-61042	2-Type Set	
11B Card Holder	1-Type Set Mounted on a 178A Backboard	Paragraphs 3.26 and 3.27
D-180893 Kit of Parts (Polarity Guard)	1C2 and 2C2 Coin Telephone Set DTF Mode Only	Table M and Fig. 36
840362024 Capacitor Board Assembly	Auxiliary Ringer 1- and 2-Type Sets	Paragraph 3.57
7A Clip	2-Type Set Protector Mounting	Paragraph 3.38 and Fig. 32

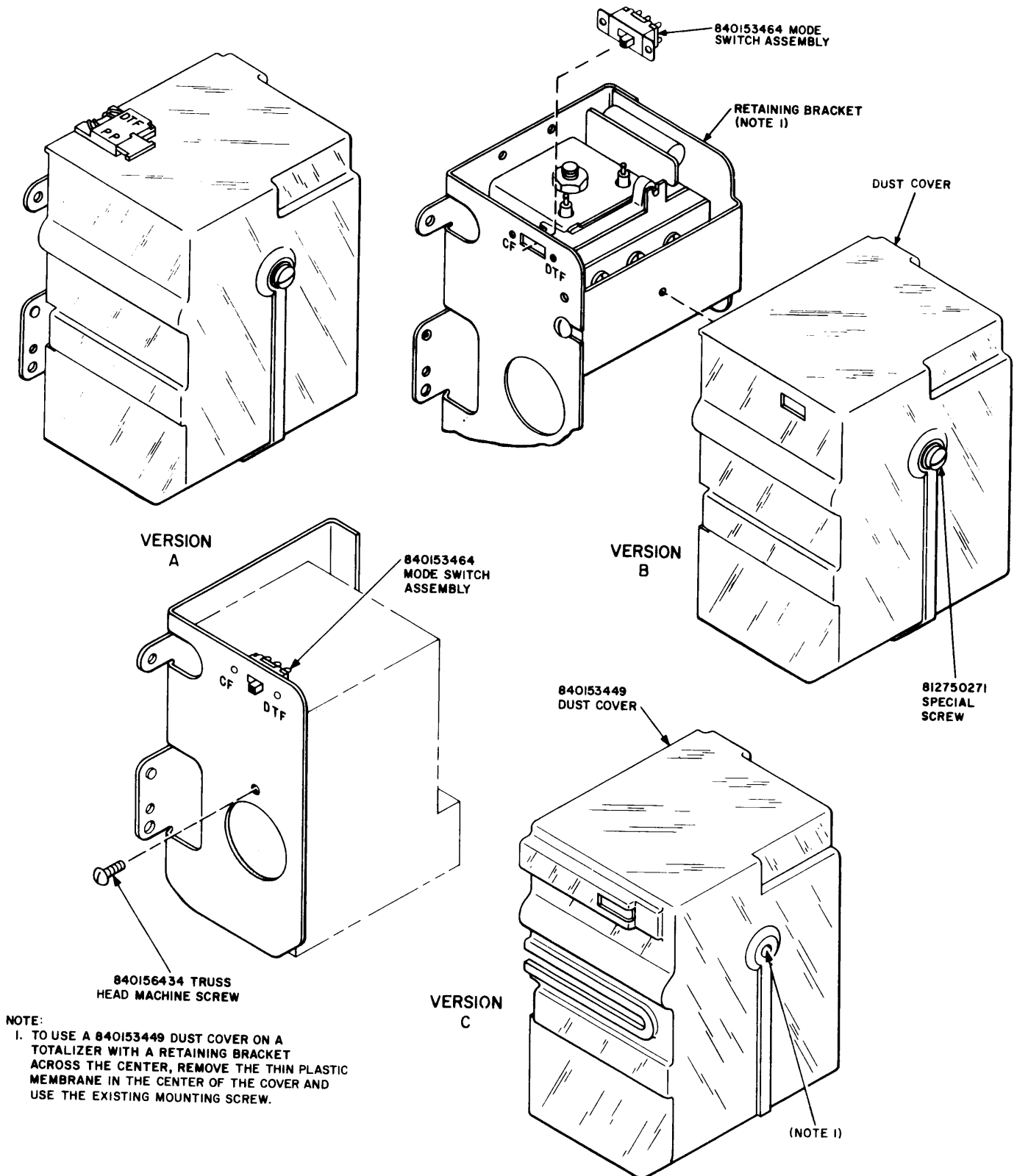


Fig. 4—Partial View of Totalizer

TABLE E
REQUIRED TOOLS, GAUGES, AND CORDS

NAME	PART NUMBER	USE	REMARKS
Allen Wrench	No. 4 (.050)	Securing instruction card; removing and installing fingerwheel.	—
Cord	P11C	Maintenance or testing of coin phones with door and faceplate assembly open.	—
Cover Parking Tool	KS-20950, List 2	To mount cover unit assembly of 1C- and 1E-type coin telephone sets to corner of housing and mounting plate assembly.	Permits troubleshooting without use of P11C cord.
Gauge	146B	Coin relay bias margin test.	—
Gauge	KS-22551, List 1	Adjusting coin slot setscrew on magnetic coin stop for maximum coin diameter.	Material is nonmagnetic stainless steel.
Orange Stick	KS-6320	Removing stuck coins and tripping hopper trigger.	—
Phillips Screwdriver	—	Adjusting coin relay.	—
Releaser	KS-21107, List 1	Removing dial fingerwheel.	Replaces KS-16750, List 4 releaser.
Sash Brush	No. 6	General cleaning.	—
Security Key	29A	Opening 29A lock.	—
Tone Pickup Coupler	KS-21468, List 1	To test field coil adapter in G3-type handset.	—
Tool	139B	Leveling coins.	Read calibrated scale at top of slider.
Tool	216B	Replace information plate assembly, number card, or terminate conductors on 123A1A protector or similar binding post terminals.	Dual purpose wrench: 3/8-inch hexagon socket on one end and 7/16-inch hexagon socket on other end.

TABLE E (Contd)			
REQUIRED TOOLS, GAUGES, AND CORDS			
NAME	PART NUMBER	USE	REMARKS
Tool	265C	Burnishing contacts.	Consists of a chuck having a rubber handle and a magazine. Chuck will hold any No. 226-type tool. Furnished with three No. 266C and six No. 266E tools.
Tool	376A	Viewing contacts.	A magnifying mirror.
Tool	528A	Cleaning out key slots of locks.	Consists of two implements in a leather holder. Each implement consists of a piece of music wire with handle.
Tool	719A (Fig. 5)	Opening of coin cover units, coin cover assemblies, door and faceplate assemblies and cash compartment locks.	—
Tool	787A	To release dimes jammed in coin chute of 1- and 2-type coin telephone sets.	—
Tool	KS-14995, List 3	Trap and vane release test.	—

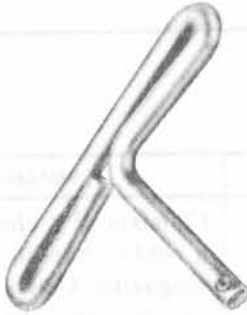


Fig. 5—719A Tool

vary in thickness from 4 inches to 7-5/8 inches. Due to the design of the bolts and the threaded shaft, it is not necessary to cut the bolts to different lengths for varying thickness of walls; however, if thicker walls are encountered, longer bolts should be obtained per local procedures.

3.12 The twin-bolt fastener is installed as follows:

- (1) Install the backboard in the normal manner except reserve the two center mounting holes as shown in Fig. 13.

Note: Where possible, straddle a stud or other wall supporting structure with the fasteners as shown in Fig. 14 so maximum strength is obtained.

- (2) Drill two 3/8-inch diameter holes through the wall or other supporting surface using the backboard as a template.

Note: Extreme care must be exercised to drill the holes perpendicular to the wall; otherwise, it may not be possible to insert the fastener into the holes from the other side of the wall.

- (3) Enlarge the holes to 3/4-inch diameter and to a depth of 4-1/2 inches from the back side of the wall.
- (4) Install the shaft nut assembly by placing it into the wall from the back side. (A small hole is provided in the center of the plate so it can be secured with a nail until the bolts are installed.)

- (5) Install the two slotted hex head bolts through the backboard into the shaft nuts and tighten securely.

Long-Bolt Fastener and Universal Mounting Plate

3.13 The long-bolt fastener shown in Fig. 15 can accommodate a wall surface up to 17 inches thick and can be used with or without the universal mounting plate as shown in Fig. 16. When the universal mounting plate is used with two long bolts, the same effect is obtained as using the twin-bolt fastener. The long-bolt type fastener and universal mounting plate should be obtained per local procedures.

3.14 The long-bolt fastener is installed as follows:

- (1) Install the 178A backboard in the normal manner except reserve the mounting holes shown in Fig. 13 that are to be used for the long-bolt fasteners.

Note: Where possible, install the bolts on each side of a stud or other wall supporting structure using the universal mounting plate so maximum security is obtained.

- (2) Drill a 3/8-inch diameter hole through the wall or other supporting surface using the backboard as a template for each long bolt.

Note: The drill should be carefully lined up while drilling to avoid uneven pressure on the cup head of the bolts when they are installed.

- (3) Install the bolts from the back side of the wall (through the universal mounting plate, if applicable) and secure the backboard on the front side with the hex nuts provided.

Note: If the universal mounting plate is used, it can be attached with a nail until the bolts are secured.

- (4) Apply a plastic duct seal to the cup portion of the bolt heads when an outside wall is involved. After the backboard is secured, remove the excess duct seal from around the bolt heads.
- (5) Cut off the excess length of the bolt flush with the hex nut using a hacksaw with the blade turned 90 degrees.

TABLE F
MOUNTING OF 1-TYPE SET (NOTE)

BACKBOARD, BOOTH, SHELF, MOUNTING, OR KIOSK	BACKBOARD REQUIRED	SECURITY STUDS	
		834080608 (SHORT SHOULDER, SHORT THREAD)	834080616 (LONG SHOULDER, SHORT THREAD)
178A-3, -51, or -104 Backboard*	Use on a vertical surface	4	—
10- and 11-Type Booths	D-179939 or D-179940 Kit of Parts	4	—
KS-14611 Booth	Furnished	4	—
KS-16797 Booth	B-190387	—	4
KS-19206 Booth	KS-19206, List 6 Installation Kit	4	—
KS-19267 Shelf	Furnished	4	—
KS-19340 Booth	KS-19340, List 53	4	—
KS-19425 Booth	Furnished	—	4
KS-19426 Mounting	KS-19426, List 7 Installation Kit	—	4
KS-19580 Booth	Furnished	4	—
KS-19945 Shelf	Existing or 178A	—	4
KS-20194, List 5 Shelf	178A-3 (furnished unless otherwise specified)	4	—
KS-20255 KIOSK	Furnished	—	4
KS-20842 Mounting	Furnished	4	—
KS-21716 Booth	Furnished	4	—
KS-21428 Phonecart	Furnished	4	—
KS-21676, List 2 Backboard	—	4	—
KS-21571, List 1, List 2, List 5, and List 6 Shelves	Furnished	—	4
KS-21977 Mounting	Furnished	4	—

Note: Seven 1/4-20 by 5/8-inch hardened roundhead machine screws 812367902 are furnished with each coin telephone set for mounting to the backboard.

* The top edge of the 178A backboard should be approximately 55-1/4 inches from the floor for a universal coin slot height of 54 inches.

TABLE G				
MOUNTING OF 2-TYPE SET (NOTE 1)				
BOOTH, SHELF, OR MOUNTING	BACKBOARD REQUIRED	SECURITY STUDS		COVER REQUIRED (NOTE 2)
		834080608 (SHORT SHOULDER, SHORT THREAD)	834080616 (LONG SHOULDER, SHORT THREAD)	
KS-19206 Booth	KS-19206, List 7 Installation Kit	4	—	127B Fig. 7
KS-19340 Booth	KS-19340, List 54 Backboard	4	—	127B Fig. 7
KS-19426 Mounting	Furnished	—	4	KS-19426, List 34 Top Assembly
KS-19442 Booth	KS-19340, List 54 Backboard	4	—	127A Fig. 7
KS-20194 Shelf	Furnished	4	—	None
KS-20630 Booth	Furnished	None Required*		
KS-21571, List 3, List 4, List 7, and List 8 Shelves	Furnished	—	4	None
<p>Note 1: Thirteen 1/4-20 by 5/8-inch hardened roundhead machine screws 812367902 are furnished with each coin telephone set for mounting to the backboard.</p> <p>Note 2: Three No. 8-32 by 3/16 roundhead machine screws are furnished with the cover for installation.</p> <p>* Use thirteen 1/4-20 by 3/8 roundhead machine screws in a KS-20630 booth in place of the 1/4-20 by 5/8 furnished screws.</p>				

(6) Score the bolt threads at the hex nut to prevent the nut from backing loose using a cold chisel or center punch.

C. Mounting the Housing

3.15 Prior to mounting the telephone set housing to the backboard, the coin cover unit, chute totalizer or chute signal unit, and coin chassis must be removed as follows:

(a) To remove the coin cover unit:

(1) Unlock the coin cover unit lock.

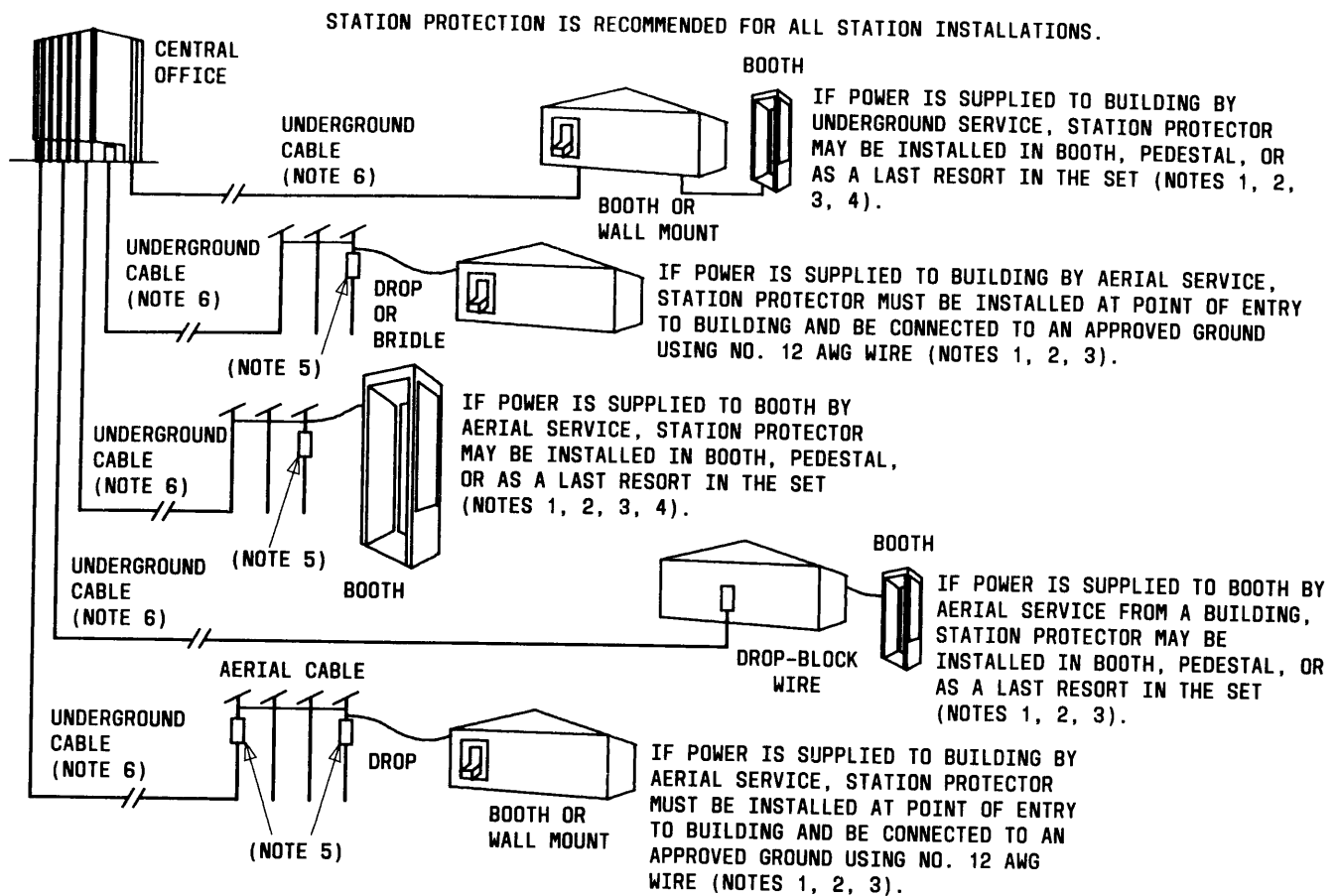
(2) Release the locking mechanism with a 719A tool by turning the tool 1/8 turn counterclockwise.

(3) Pull the cover off about 3 inches to gain access to P1.

(4) Disconnect P1 by carefully pulling straight out as the cover is removed.

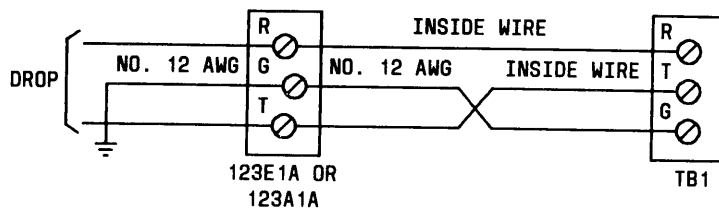
(b) To remove the chute totalizer or chute signal unit:

(1) Disconnect P2.



NOTES :

1. The housings of all outside stations must be grounded. If the set is not mounted in a grounded enclosure, run a No. 12 AWG wire from the station to the nearest approved ground.
2. Carbon blocks that break down prematurely can cause failures of coin collect or refund. Carbon blocks should be replaced by gas tube protectors.
3. When the protector is mounted in an enclosure, such as a booth or shelf, bond the enclosure and protector ground together with no less than a No. 12 AWG wire.
4. When the protector is mounted inside the set, connect the wiring as follows:



5. Cross-connect box.
6. The underground cable can be buried cable or wire.

Fig. 6—Special Protection Requirements

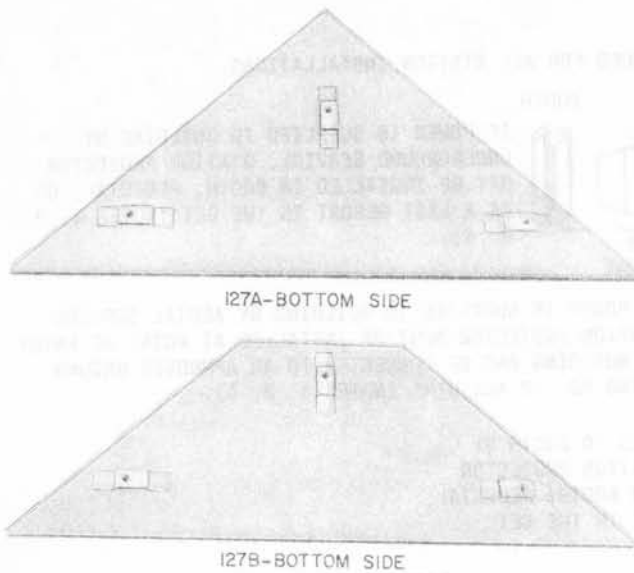


Fig. 7—127A and 127B Covers for Panel Sets

TABLE H	
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

- (2) Release the chute locking lever.
- (3) Lift the spring out of the groove in the chute.
- (4) Tilt the top of the chute forward and lift out.

(c) To remove the coin chassis:

Note: The 32B coin chassis shown in Fig. 17 is used in the 1D-type telephone set. The 31A3

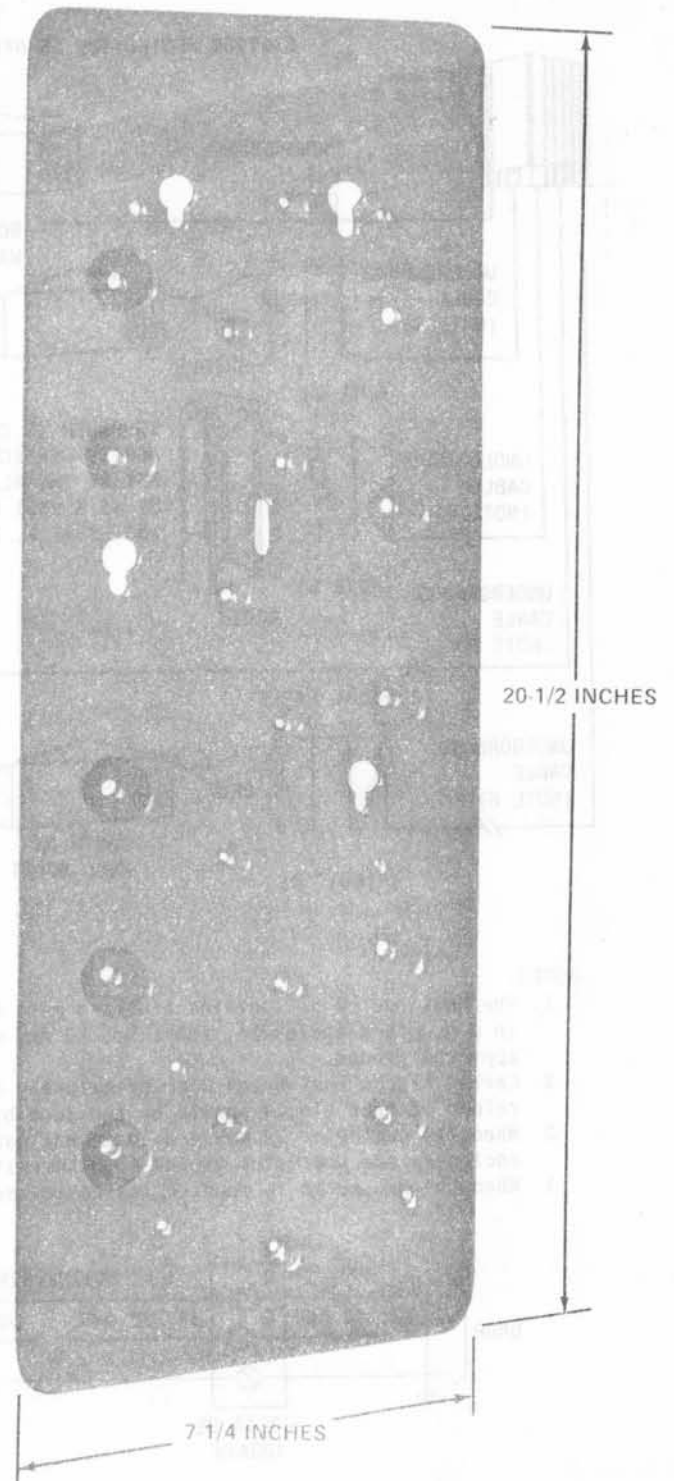


Fig. 8—178A Backboard

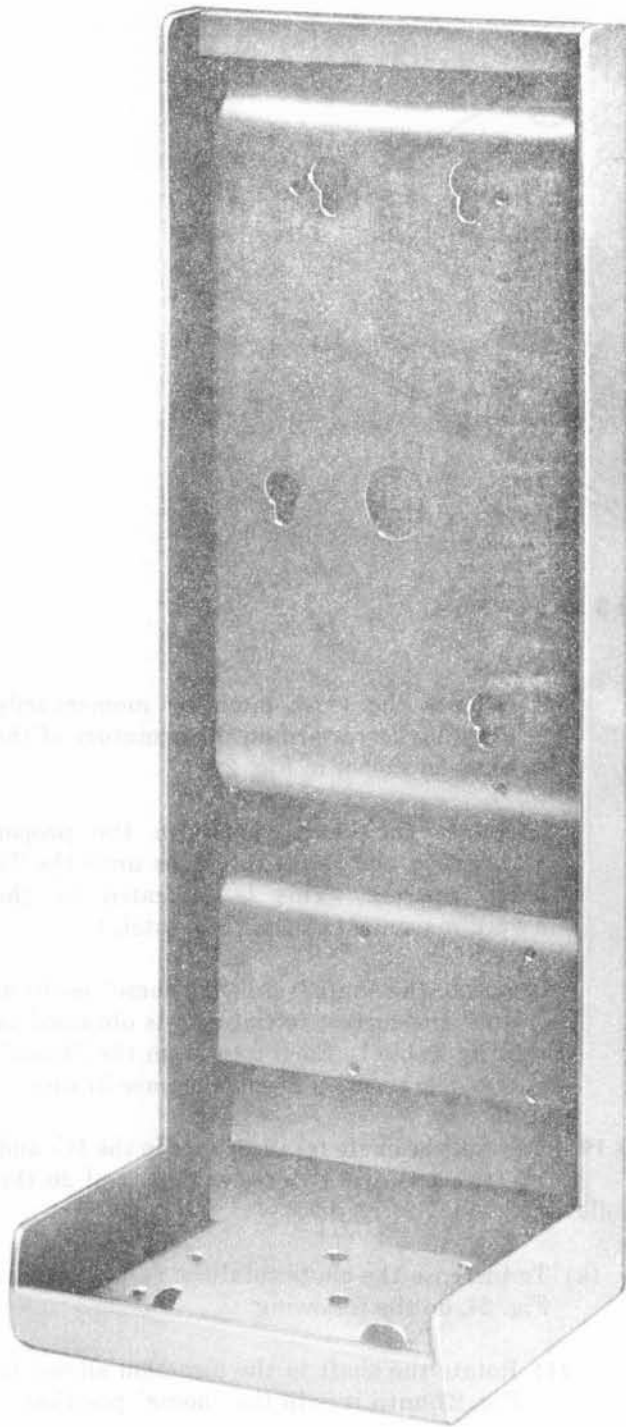


Fig. 9—KS-21676, List 2 Backboard

coin chassis shown in Fig. 18 is used in the 1C-type telephone set. The 30B coin chassis shown in Fig. 19 is used in the 1E-type telephone set.

(1) Disconnect the (BK) and (V) leads on the coin relay and remove them through the eyelet on the side of the hopper on the sets equipped with a 31- or 32-type chassis. On the sets equipped with a 30-type chassis, disconnect the (SR) and (G) leads from the coin hopper and remove the leads through the eyelet on the side of the hopper.

(2) Loosen the captive chassis mounting screws.

(3) Pull the chassis out at the bottom and slide down to remove.

3.16 Attach the coin telephone set housing to the mounting surface as follows:

(1) Insert four security studs into the back of the housing.

(2) Insert drop wire (or inside wire) and the No. 12 AWG protector ground wire (if required) into the wire entrance hole.

(3) Position the housing on the mounting surface by guiding the security studs into the proper holes.

(4) Secure the housing to the mounting surface using the seven mounting screws (furnished with the set) and 1/4-inch ID (inside diameter) flat washers (obtained locally).

3.17 *Caution: When the protector is to be mounted inside the telephone set, bond the protector ground to the signal ground (terminal G on the coin chassis) with the No. 12 AWG wire. For installations where the drop wire comes directly into the set, the protector is installed as shown in Fig. 20 using two 802056077 (No. 8-32 by 1/2-inch) roundhead machine screws obtained locally.*

D. Setting Initial Rate on Totalizer

3.18 Verify or set the initial rate as follows:

(a) The 1D-type coin sets are equipped with either a 32A (DA) or a 32B chassis. The initial rate on a 1D-type set equipped with a 32A (DA) chassis is set by connecting the plug-ended leads on the chassis into the appropriate positive or negative

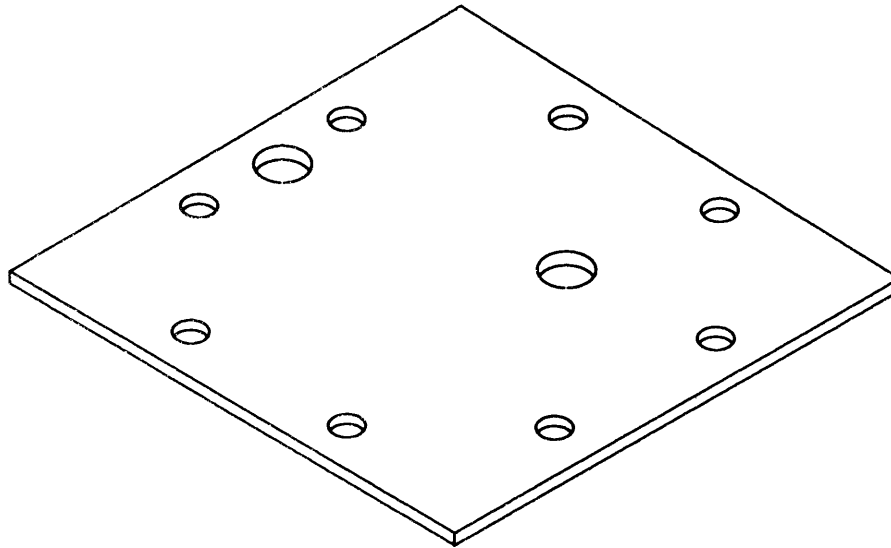


Fig. 10—KS-21676, List 3 Security Plate

fields as shown in Fig. 21 and Tables J and K. The initial rate on a 1D-type set equipped with a 32B chassis is set by sliding the initial rate switches shown in Fig. 22 to the desired position. The initial rate on either a 32A (DA) or a 32B chassis can be set in 5-cent increments from 5 cents to \$1.60. (Initially, the rate is set for 25 cents.)

(b) **Warning:** *In 1C- and 1E-type coin telephone sets, use extreme care when checking the initial rate or resetting the chute totalizer. Avoid damaging pawl and spring pileups. Do not attempt to turn the chute totalizer cam shaft in the direction opposite to that shown in Fig. 23.* To determine the chute totalizer initial rate setting, do the following:

- (1) Remove the chute totalizer from the set.
- (2) Loosen the dust cover retaining screw and remove the transparent dust cover on the chute totalizer.
- (3) Rotate the shaft in the direction, shown in Fig. 23, until the detent roller on the detent wheel is positioned between the two black marks. This occurs at the same time that T2 rests in the depression in the shaft. (This is called the "home" position.)

(4) Release the reset latch by momentarily pressing downward on the armature of the RE relay as shown in Fig. 23.

(5) Rotate the shaft slowly in the proper direction and count the steps until the T1 springs operate. (This is indicated by the forward movement of the reset latch.)

(6) Rotate the shaft from the "home" position until the correct initial rate is obtained as shown in Table L. Each step from the "home" position represents a 5-cent increase in rate.

3.19 To reset the chute totalizer rate in the 1C- and 1E-type sets, use two paper clips and do the following:

(a) To increase the chute totalizer rate shown in Fig. 24, do the following:

- (1) Rotate the shaft in the direction shown in Fig. 23 until it is in the "home" position.
- (2) Rotate the shaft about ten steps further until a tab on the T1 cam is accessible as shown in Fig. 24 and 25.
- (3) **Warning:** *Do not push the end of the paper clip too far through the shaft hole or it will damage the insulation of the*

TABLE I
FASTENERS USED IN MOUNTING BACKBOARDS

BACKBOARD	MOUNTING SURFACES						HOLE SIZE REQUIRED	FASTENERS	
	SOFTWOOD	HARDWOOD	MASONRY (CONCRETE OR BRICK) (NOTE 1)	PLASTER-BOARD AND PLASTER ON LATH (NOTE 2)	PLASTER ON CINDER BLOCK, HOLLOW TILE, OR METAL STUDS			SIZE AND TYPE	QUANTITY (NOTE 3)
KS-21676, List 2*	•	—	—	—	—		1/8 or No. 30	1-3/4 inch No. 14 flathead tapping screw	8
	—	•	—	—	—			1-1/4 inch No. 14 flathead tapping screw	
	—	—	•	—	—		1/2	1-1/4 by 1-1/2 flathead machine screw in 1/4 by 1-1/4 inch expansion shield	
178A	•	—	—	—	—		1/8 or No. 30	1-3/4 inch No. 14 flathead tapping screw	7
	—	•	—	—	—			1-1/4 inch No. 14 flathead tapping screw	
	—	—	•	—	—		1/2	1-1/4 by 1-1/2 flathead machine screw in 1/4 by 1-1/4 inch expansion shield	
	—	—	—	•	—		1/8 or No. 30	1-3/4 inch No. 14 flathead tapping screw, secure in stud a minimum of 1 inch	6
	—	—	—	—	•				
	—	—	—	—	—		3/4	1/4 by 4-inch roundhead toggle bolt†	

Note 1: When mounting on plastered masonry, install expansion shield below plastered surface by amount equal to thickness of plaster and use 1/2-inch longer machine screw than specified in table.

Note 2: When mounting on plasterboard, plaster on lath, etc., fasteners must be embedded in wooden studs at least 1 inch. Toggle bolts must penetrate through metal studs.

Note 3: When additional security is required for wall backboards, use through-wall fasteners.

* When additional security is required, use a KS-21676, List 3 security plate and the hardware furnished.

† When using toggle bolts, cut off excess length.

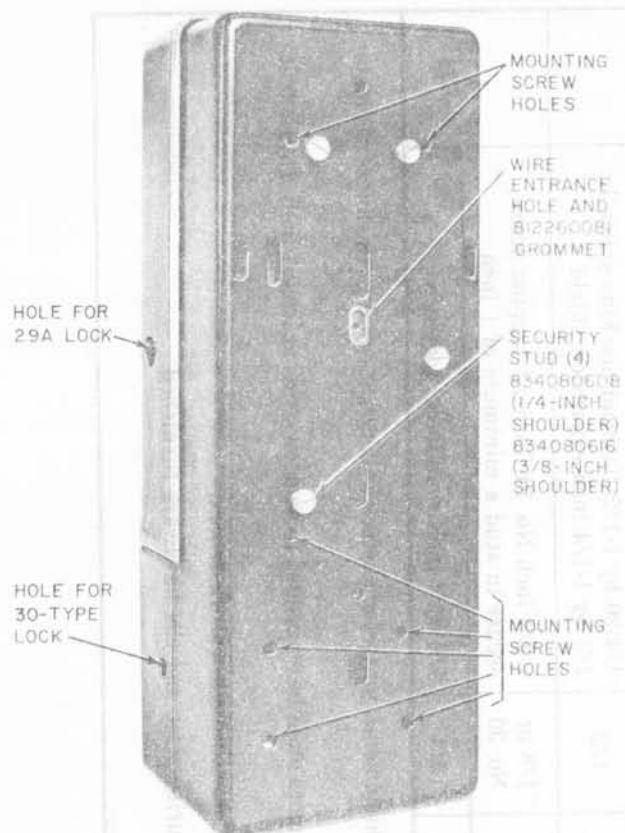


Fig. 11—Location of Mounting Screw Holes and Security Studs in 1-Type Set

coil located beneath the shaft. Insert a paper clip into one of the four holes indicated as hole 2 in the center of the shaft. Hold the paper clip firmly so the shaft cannot move.

- (4) Position a second paper clip in the hole on the T1 cam indicated as hole 1 shown in Fig. 24 and rotate the cam in the direction of the curved arrow as shown.



If hole 1 in the T1 cam has been mutilated or clogged preventing use, place the paper clip against the tab as shown in Fig. 24 and push the tab in the direction of the straight arrow. One step of rotation of the T1 cam in this direction increases the rate by 5 cents.

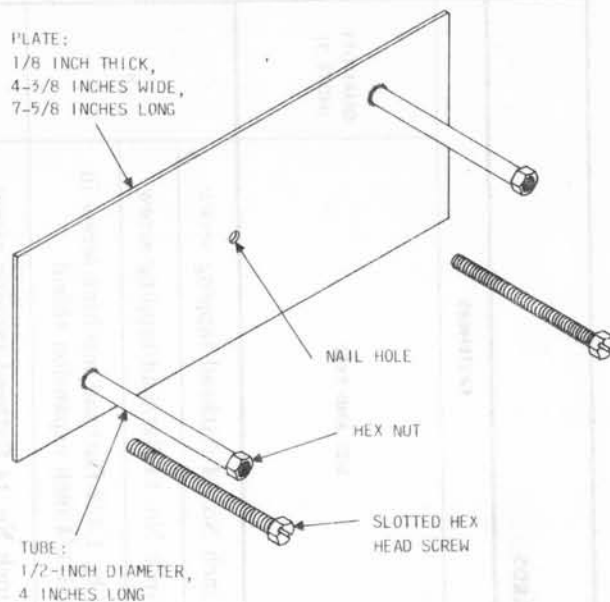


Fig. 12—Twin-Bolt Fastener

- (5) Verify the new initial rate setting.

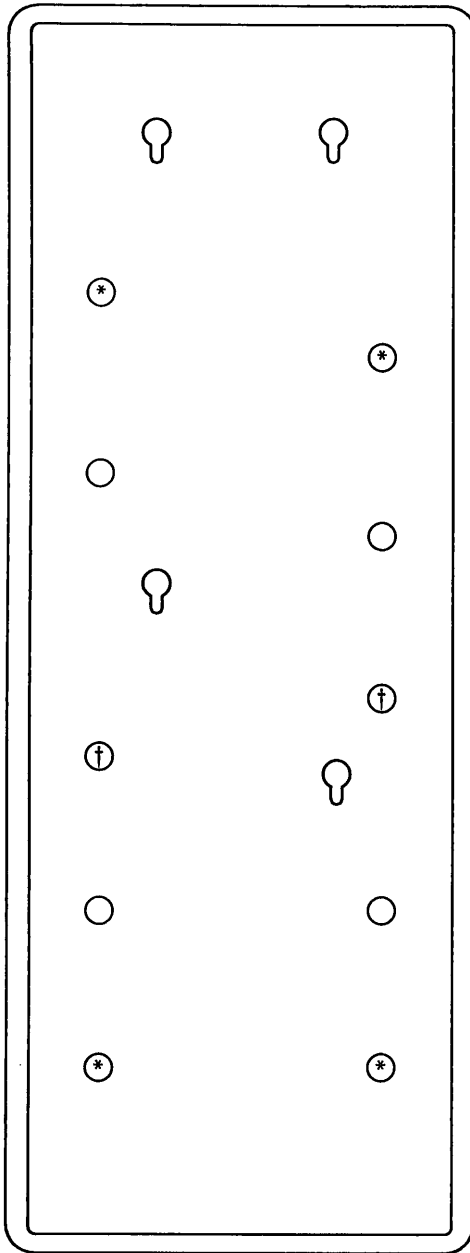
- (b) To decrease the chute totalizer rate shown in Fig. 25, do the following:

- (1) Rotate the shaft in the direction shown in Fig. 23 until it is in the "home" position.

- (2) Rotate the shaft about ten steps further until a tab on the T1 cam is accessible as shown in Fig. 24 and 25.

- (3) **Warning:** Do not push the end of the paper clip too far through the shaft hole or it will damage the insulation of the coil located beneath the shaft. Insert a paper clip into one of the four holes indicated as hole 2 in the center of the shaft. Hold the paper clip firmly so the shaft cannot move.

- (4) Position a second paper clip in the hole on the T1 cam indicated as hole 1 shown in Fig. 25 and rotate the cam in the direction of the curved arrow as shown.



* Use these holes when four through-wall fasteners are required.

† Use these holes when twin-bolt fasteners or two long-bolt fasteners are required.

Fig. 13—178A Backboard Showing Mounting Holes



If hole 1 in the T1 cam has been mutilated or clogged preventing use, place the paper clip against the tab as shown in Fig. 24 and push the tab in

the direction of the straight arrow. One step of rotation of the T1 cam in this direction decreases the rate by 5 cents.

(5) Verify the new initial rate setting.

3.20 To reinstall the coin chassis in the set housing, do the following:

- (1) Slide the chassis under the tab as shown in Fig. 20.
- (2) Seat the chassis tabs in the slots.
- (3) Tighten the chassis mounting screws.

E. Wiring

3.21 To connect the wiring, do the following:

- (1) Thread the (BK) and (Y) leads through the eyelet on the side of the hopper on the 1C- and 1D-type sets.
- (2) Connect the (BK) lead to terminal 3 on the coin relay and connect the (Y) lead to terminal G on the coin relay.
- (3) Thread the (S-R) and (G) leads through the eyelet on the side of the hopper on the 1E1-type sets.
- (4) Connect the (S-R) lead to the left side of the resistor on the 50A hopper or to terminal 15 on the 51A hopper and connect the (G) lead to the right side of the resistor on the 50A hopper or to terminal 8 on the 51A hopper.
- (5) Tie the (S-R) and (G) leads together using a D-161488 connector on the 1E3-type sets. Ensure the connector is insulated.
- (6) Route the inside wiring up from the grommet hole in the backplate and to the right.
- (7) Connect the tip, ring, and ground leads to terminals T, R, and G, respectively, on TB1 on the coin chassis if the protector is *not mounted* in the telephone set.

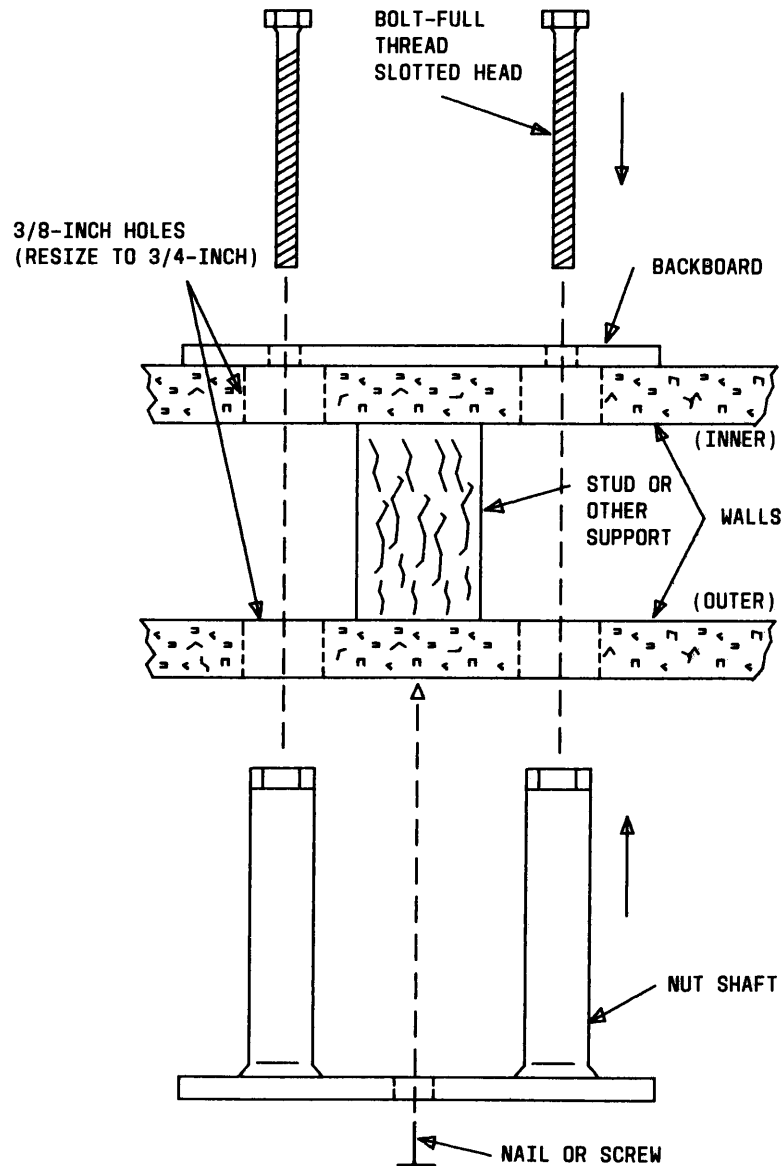


Fig. 14—Twin-Bolt Fastener Installation

- (8) Make the following connections if the protector is **mounted** in the telephone set:
- (a) Connect the tip and ring leads to terminals T and R, respectively, in the protector.
 - (b) Connect the No. 12 AWG ground lead to terminal G in the protector.
 - (c) Connect T and R leads from the protector to terminals T and R on TB1 on the coin chassis.
 - (d) Connect the No. 12 AWG ground strap from terminal G in the protector to terminal PG on TB1 on the coin chassis on the 1D-type sets. On 1C- and 1E-type sets, connect the No. 12 AWG ground strap from terminal G in the protector to terminal G on TB1 on the coin chassis.

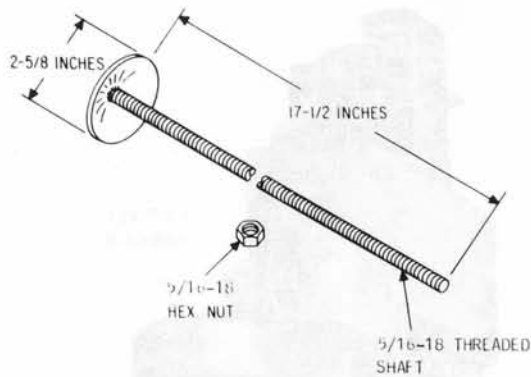


Fig. 15—Long-Bolt Fastener

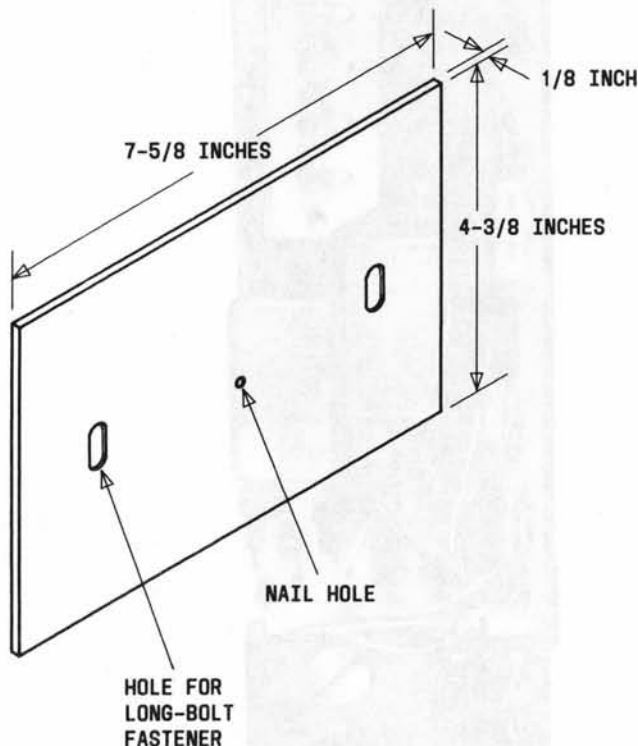


Fig. 16—Universal Mounting Plate

F. Reassembly

- 3.22** Install the dust cover on the coin relay and secure with a retaining screw.
- 3.23** **Caution:** Before installing a chute totalizer in the set, swing the upper plate as-

sembly open and clean off any foreign material adhering to the chute magnets using a typewriter brush or equivalent. To reinstall the chute totalizer in the set, do the following:

- (1) Place the chute totalizer or the chute signal unit on the locating pins at the rear of the hopper assembly and the back of the housing as shown in Fig. 20.

Note 1: Ensure that the reject chute, the return chute, and the coin return assemblies line up properly as shown in Fig. 1.

Note 2: Ensure that the inside wiring is properly dressed behind the chute totalizer cutout.

- (2) Place the spring in the groove on the chute totalizer.
- (3) Lock the spring in place by pushing the chute totalizer locking lever down.
- (4) Connect the chute totalizer plug P2 to J2.

3.24 If appropriate, install the number card on the telephone set.

3.25 Position the coin cover unit adjacent to the housing and connect P1 of the coin cover unit to J1 of the coin chassis. Install the coin cover unit on the housing and secure the locking mechanism using a 719A tool by turning the tool 1/8 turn clockwise.

G. 11B Card Holder

3.26 The 11B card holder shown in Fig. 26 is available as an auxiliary customer card frame that can be installed on the 1-type coin telephone sets when they are mounted on 178 backboards or 269A adapters.

3.27 The 11B card holder is installed without drilling, tapping, or defacing the set in any way. To install the 11B card holder shown in Fig. 27, do the following:

- (1) Remove the coin cover unit and disconnect P1 from J1.
- (2) Position the small tab of the rear bracket in the wire cutout of the 178A backboard or the

INITIAL
RATE
SWITCH

C4-TYPE
RINGER

REAR VIEW

FRONT VIEW

Fig. 17—32B Coin Chassis Used With D-Type Sets

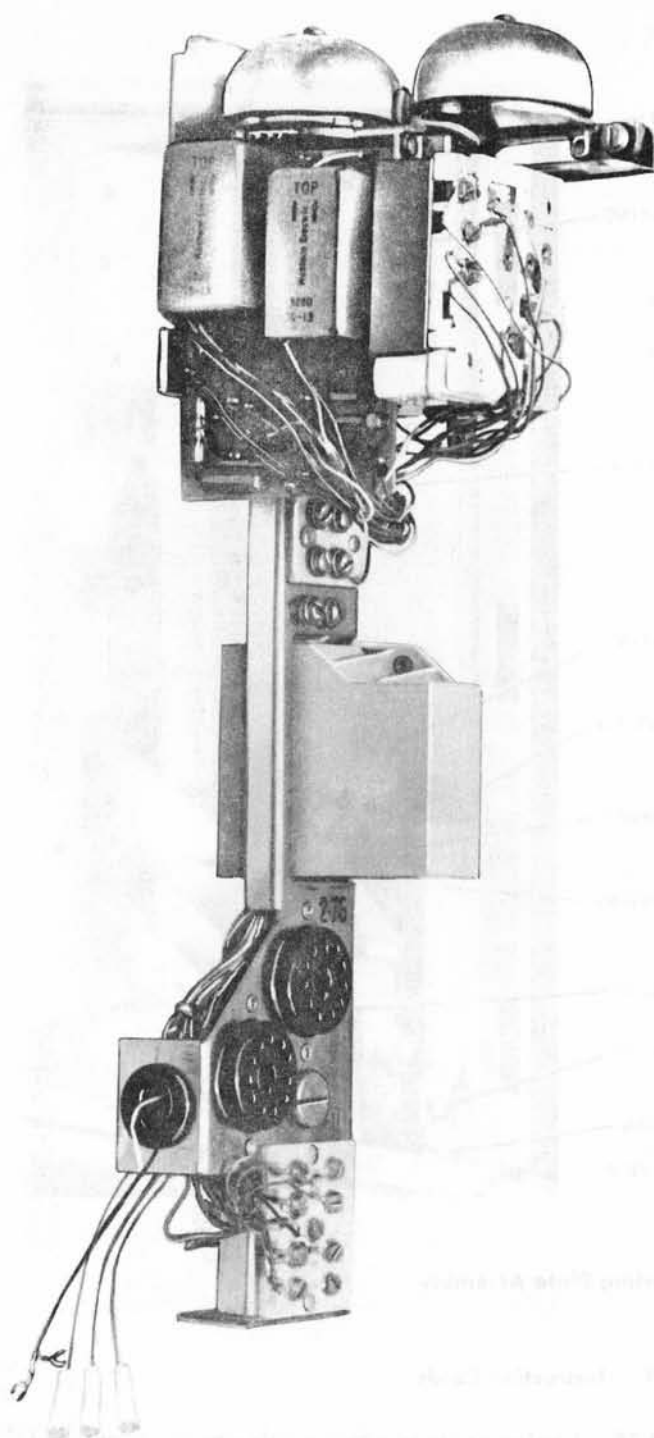


Fig. 18—31A3 Coin Chassis Used With 1C- and 2C-Type Sets

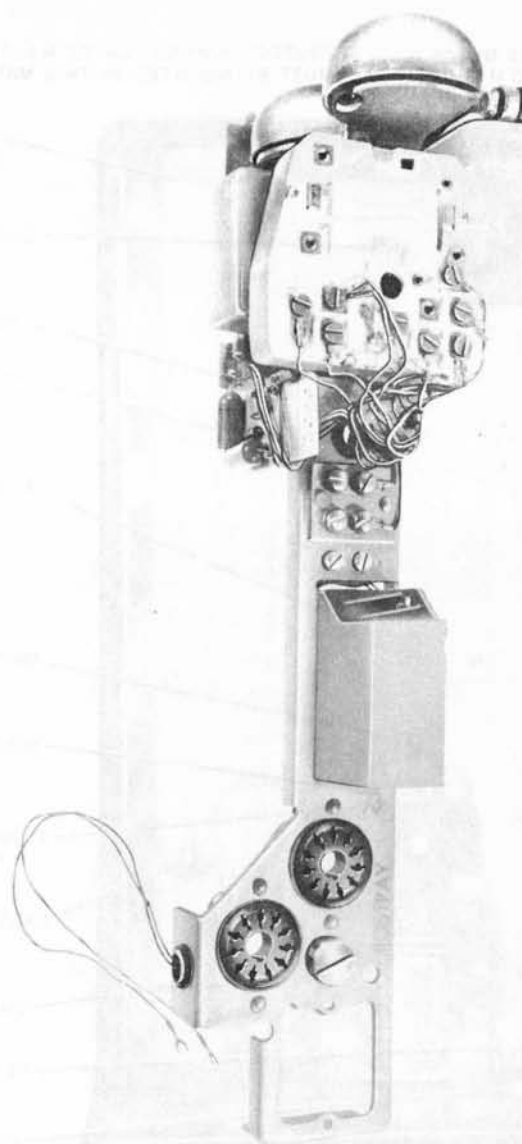


Fig. 19—30B Coin Chassis Used With 1E-Type Sets

269A adapter. Slide the bracket to the left as viewed from the front.

(3) Position the gray plastic frame on the front side of the rear bracket and slide up.

(4) Place the instruction card (obtained locally) and window in the recessed area of the plastic frame.

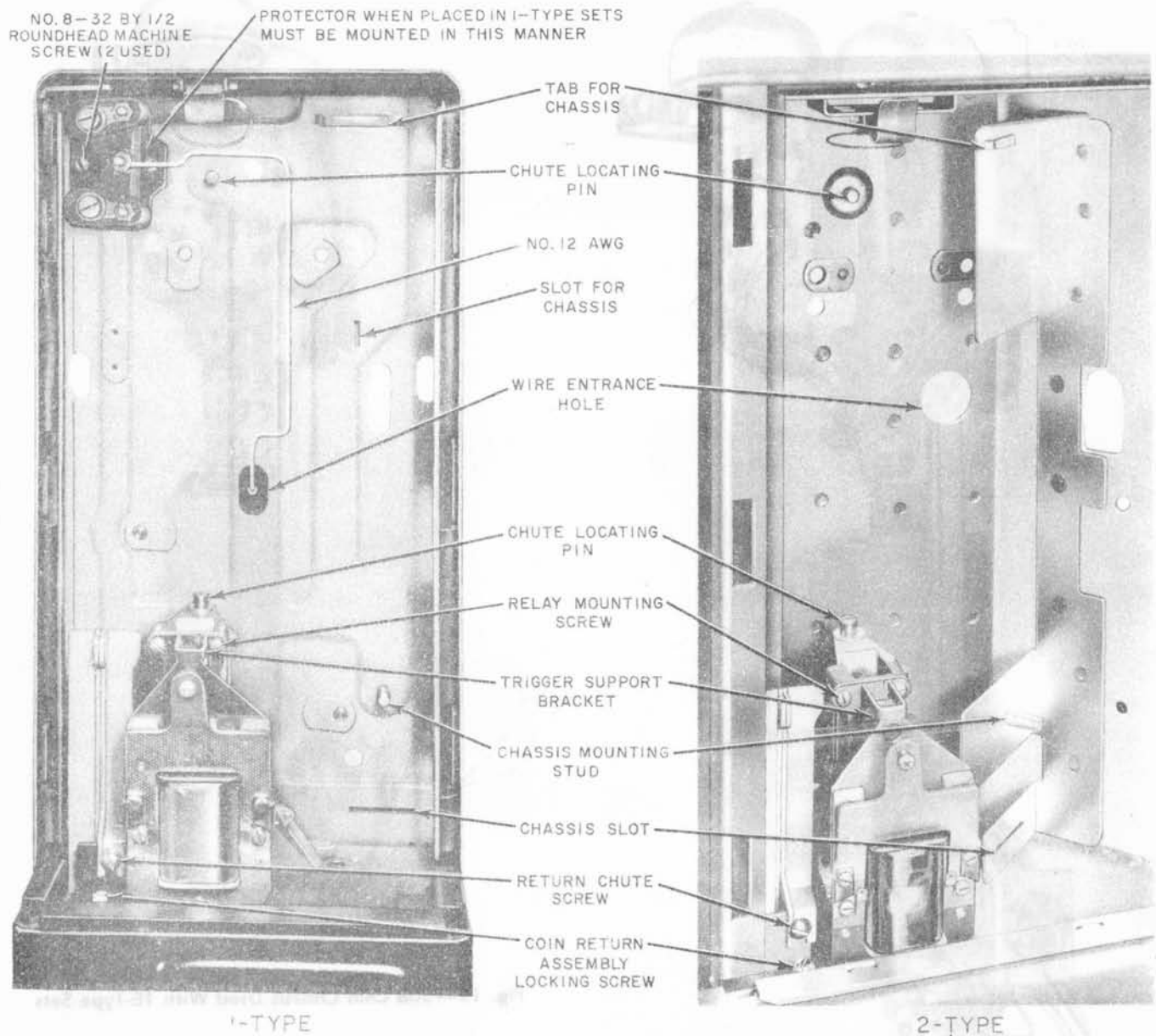


Fig. 20—Housing and Mounting Plate Assembly

- (5) Mount the front bracket over the front edge of the set housing and align the screw holes of the two brackets.
- (6) Secure the card holder with the two security screws furnished using a KS-19192, List 1 tool.
- (7) Connect P1 of the coin cover unit to J1 of the coin chassis and secure the coin cover unit to the housing.

H. Instruction Cards

- 3.28** Customer instruction cards are not furnished and must be obtained locally.
- 3.29** The instruction card is installed as follows:
 - (1) Loosen the card-locking setscrew (if provided) in the faceplate using a No. 4 (.050) Allen wrench by turning it counterclockwise.

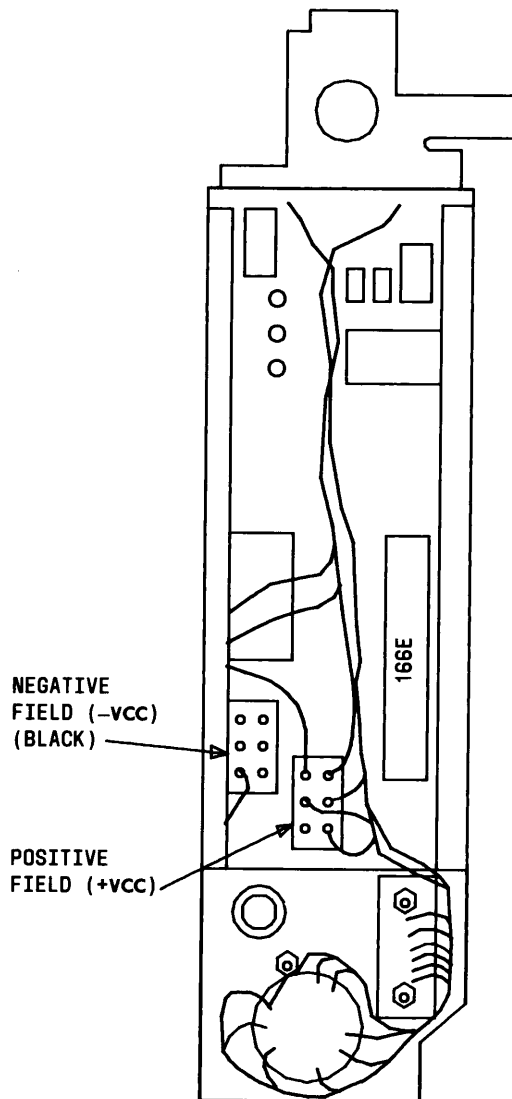


Fig. 21—32A (DA) Coin Chassis

- (2) Push up the instruction card with your fingers as shown in Fig. 28.
- (3) Snap the instruction card in place.
- (4) Ensure that the instruction card is seated properly in the slot.
- (5) Tighten the card-locking setscrew in the faceplate (if provided) by using a No. 4 (.050) Allen wrench and turning it clockwise as shown in Fig. 29.

TABLE J

**INITIAL RATE LEADS
(NOTE)**

LEAD COLOR	INDICATED RATE
(BR)	5 cents
(R)	10 cents
(Y)	20 cents
(S)	40 cents
(W-BL)	80 cents
(W-BR)	1 dollar — 60 cents
Note: The leads are plug-ended.	



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

3.30 When the coin release lever or knob is operated, the entrance stop will move sideways and close the coin slot. Verify that when the coin release lever or knob is fully operated and released there is no binding of parts and the entrance stop momentarily closes the coin unit.

I. Placing Set in Service

3.31 Before placing the 1-type coin telephone set in service, make sure the set operates properly (Part 5, Operation Tests), the information plate agrees with the mode of service, and that the cash box is installed in the set. (If the cash box is not installed in the set, make arrangements per local procedures to have it installed.)

3.32 If the coin set cannot be tested or is not to be placed in service at this time, the out-of-service sticker (Form E-4914) should be placed over the coin slot and the locking tab shown in Fig. 30 on the entrance stop should be bent.

INSTALLATION OF 2-TYPE SETS

A. Backboards

3.33 A vertical surface is required to mount a coin telephone set. A tilt greater than 1-1/2

TABLE K						
EXAMPLES OF INITIAL RATE SETTINGS						
AMOUNT OF INITIAL RATE (CENTS)	PLUG-ENDED LEADS TERMINATED IN (-) NEGATIVE AND (+) POSITIVE FIELDS					
	(BR)	(R)	(Y)	(S)	(W-BL)	(W-BR)
5	-	+	+	+	+	+
10	+	-	+	+	+	+
15	-	-	+	+	+	+
20	+	+	-	+	+	+
25	-	+	-	+	+	+
30	+	-	-	+	+	+
35	-	-	-	+	+	+
40	+	+	+	-	+	+
45	-	+	+	-	+	+
50	+	-	+	-	+	+
*	etc.					
* If higher initial rates are necessary, plug the leads into the negative field to equal the total amount.						

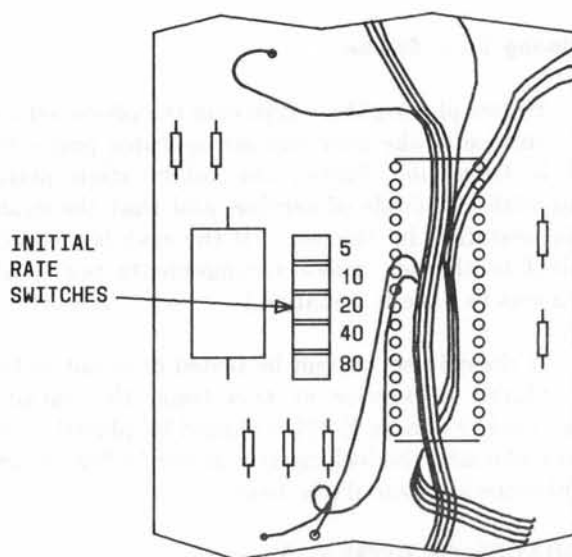


Fig. 22—32B Coin Chassis, Partial View

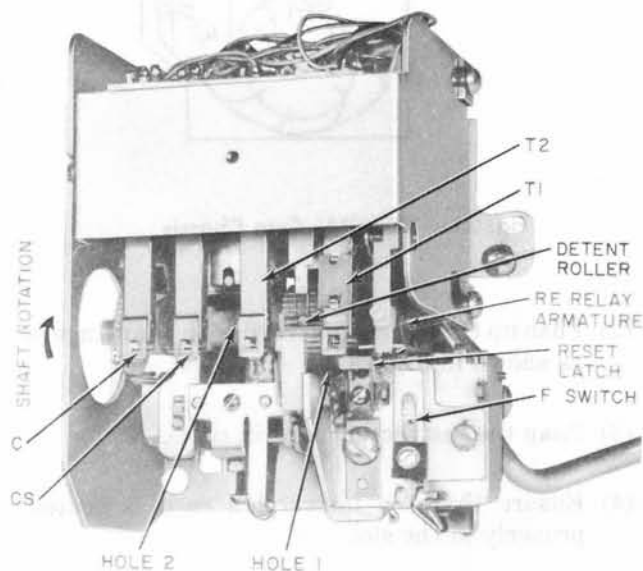


Fig. 23—Checking Chute Totalizer Rate (Typical)

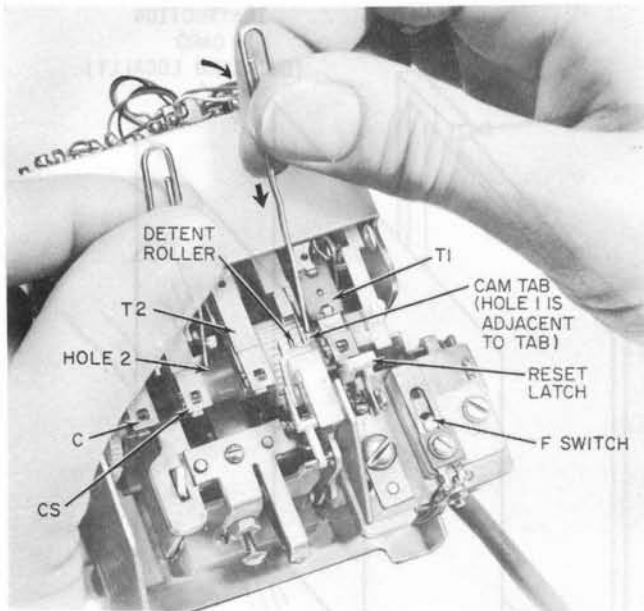


Fig. 24—Increasing Chute Totalizer Rate (Typical)

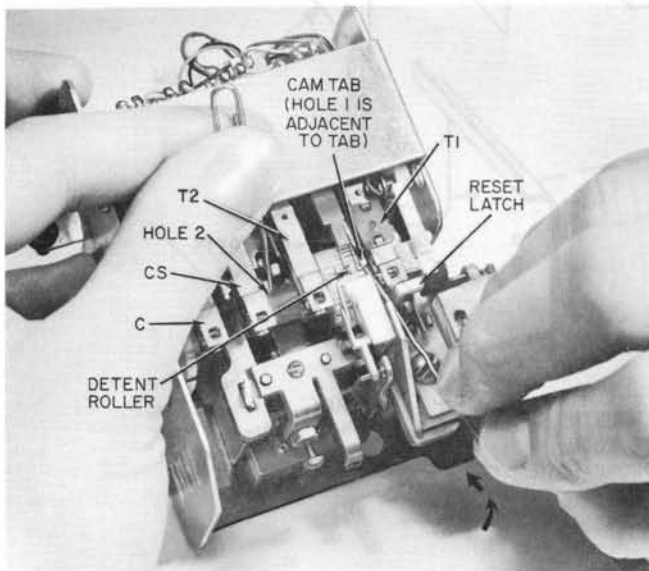


Fig. 25—Decreasing Chute Totalizer Rate (Typical)

degrees in any direction can cause the chute to malfunction. A vertical surface is determined by using a spirit level as follows:

- (1) Place a spirit level vertically against the mounting surface on which the set is to be installed.



Fig. 26—11B Card Holder

- (2) Verify that the end of the level (opposite the point of contact) shall be no further away from the mounting surface than shown in Table H once a vertical reading is obtained.

3.34 Refer to Table G for the type of backboard, booth, shelf, or mounting that can be used with the 2-type sets. The backboards and mountings should be installed and secured per local procedures.

3.35 The type of security studs required for the installation of the particular type of backboard, booth, or shelf is shown in Table G. The location of the security studs in the coin telephone set housing is shown in Fig. 31.

B. Mounting the Housing

3.36 Prior to mounting the telephone set housing to the surface, the door and faceplate assembly must be opened, the chute totalizer or the chute

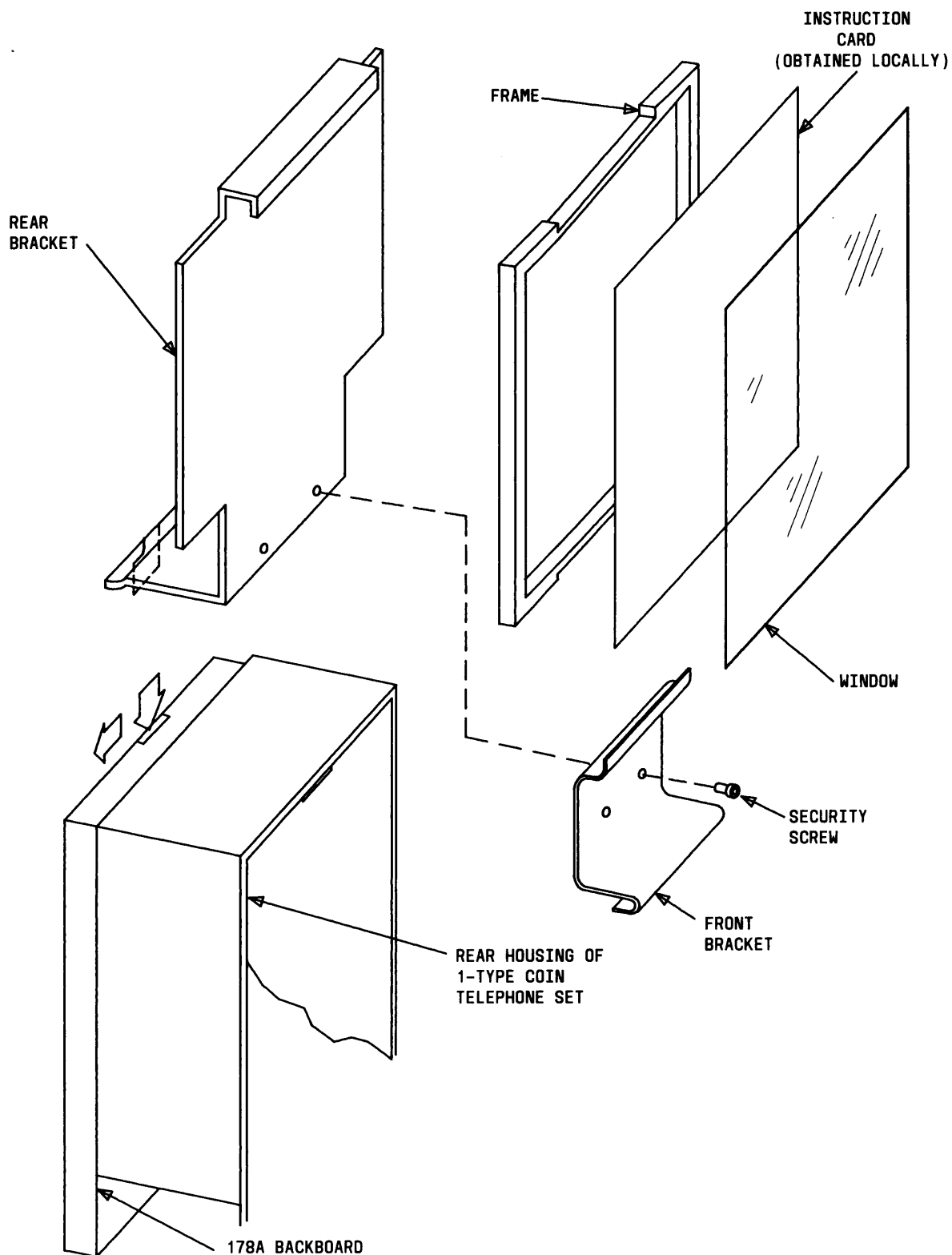


Fig. 27—Installation of 11B Card Holder



Fig. 28—Installing Instruction Cards in 1-Type Set (Typical)

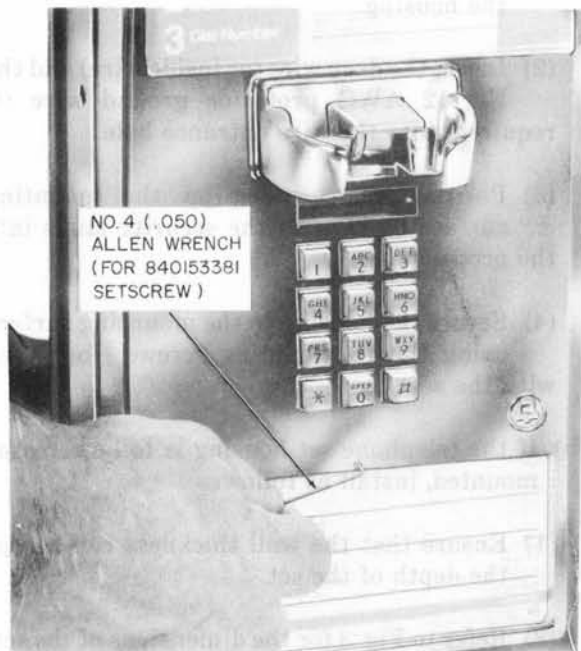


Fig. 29—Securing Instruction Card (Typical)

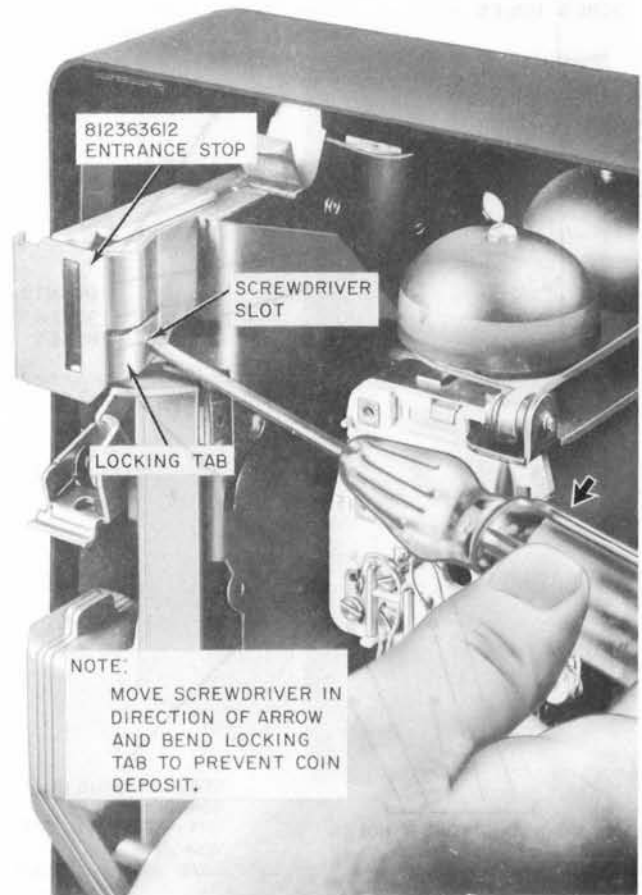


Fig. 30—Operation of Entrance Stop

signal unit removed, and the coin chassis removed as follows:

To open the door and faceplate assembly:

- (1) **DANGER:** Exercise care to keep the set from tipping over when the door is opened.
- (2) Unlock the door and faceplate lock.
- (3) Release the locking mechanism with a 719A tool by turning the tool 1/8 turn counterclockwise.
- (4) Open the door about 3 inches to gain access to P1.

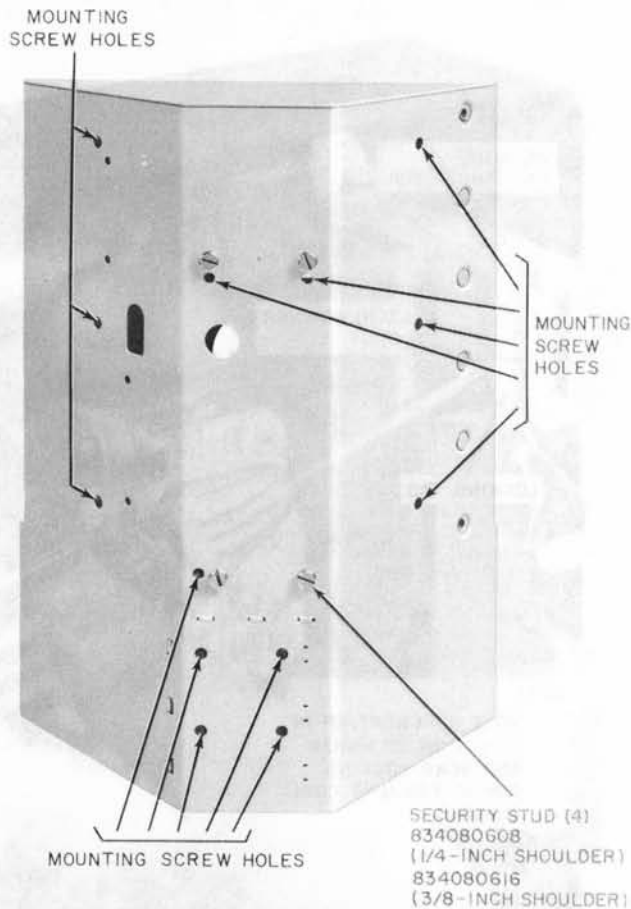


Fig. 31—Location of Mounting Screw Holes and Security Studs in 2-Type Set

- (5) Disconnect P1 by carefully pulling it straight out as the door is opened.

To remove the chute totalizer or the chute signal unit:

- (6) Disconnect P2.
- (7) Release the chute locking lever.
- (8) Lift the spring out of the groove in the chute.
- (9) Tilt the top of the chute forward and lift out.

To remove the coin chassis:

Note: The 32B coin chassis shown in Fig. 17 is used in the 2D-type telephone set. The 31A3

coin chassis shown in Fig. 18 is used in the 2C-type telephone set.

- (10) Disconnect the (BK) and (Y) leads on the coin relay and remove them through the eyelet on the side of the hopper.
- (11) Loosen the captive chassis mounting screws.
- (12) Pull the chassis out at the bottom and slide down to remove.

3.37 The telephone set housing is attached to a mounting surface using one of the following methods:

- (a) If the telephone set housing is to be surface mounted, install as follows:

- (1) Insert four security studs into the back of the housing.
- (2) Insert the drop wire (or inside wire) and the No. 12 AWG protector ground wire (if required) into the wire entrance hole.
- (3) Position the housing on the mounting surface by guiding the security studs into the proper holes.
- (4) Secure the housing to the mounting surface using the 13 mounting screws (furnished with the set).

- (b) If the telephone set housing is to be recessed mounted, install as follows:

- (1) Ensure that the wall thickness can accept the depth of the set.
- (2) Refer to Fig. 3 for the dimensions of the set.
- (3) Cut a hole in the wall with the following dimensions:

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

- Height — 22-25/64 inches
- Width — 16-9/64 inches
- Depth — 6-inches

- The bottom edge of the cutout should be about 34 inches from the floor for a universal coin slot height of 54 inches.
- (4) Insert the drop wire (or inside wire) and the No. 12 AWG protector ground wire (if required) into the wire entrance hole.
 - (5) Secure the housing to the wall supporting structure per local procedures.
 - (6) Ensure that the lip of the faceplate overlaps the wall around the hole.

3.38 Caution: When the protector is to be mounted inside the telephone set, bond the protector ground to the signal ground (terminal G on the coin chassis) with the No. 12 AWG wire. For installations where the drop wire comes directly into the set, the protector is installed as follows:

- (1) Install the protector on a 7A clip as shown in Fig. 32.
- (2) Push the 7A clip with the protector into the set so its spring-loaded flange fastens on the right leg of the chute lock bracket as shown in Fig. 33.
- (3) Dress the leads to avoid interference with the moving parts.

C. Setting Initial Rate on Totalizer

3.39 Verify or set the initial rate on the totalizer as follows:

- The 2D-type coin sets are equipped with either a 32A (DA) or a 32B chassis. The initial rate on a 2D-type set equipped with a 32A (DA) chassis is set by connecting the plug-ended leads on the chassis into the appropriate positive and negative fields as shown in Fig. 21 and Tables J and K. The initial rate on a 2D-type set equipped with a 32B chassis is set by sliding the initial rate switches shown in Fig. 22 to the desired position. The initial rate on either a 32A (DA) or a 32B chassis can be set in 5-cent increments from 5 cents to \$1.60. (Initially, the rate is set for 25 cents.)

- Warning:** In the 2C-type coin telephone sets use extreme care when checking the initial rate or resetting the chute totalizer.

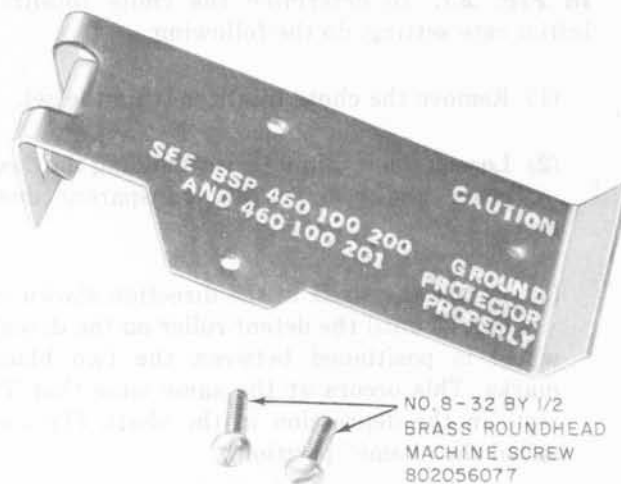


Fig. 32—7A Clip for Mounting 123A1A (DA) or 123E1A Protector and 840362024 Capacitor Board Assembly in Panel Set

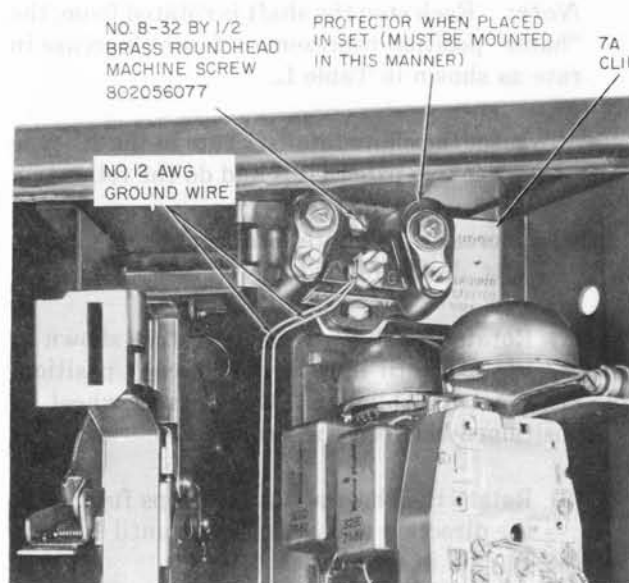


Fig. 33—123A1A (DA) or 123E1A Protector Installed in Panel Set

Avoid damaging pawl and spring pileups. Do not attempt to turn the chute totalizer cam shaft in the direction opposite to that shown

in Fig. 23. To determine the chute totalizer initial rate setting, do the following:

- (1) Remove the chute totalizer from the set.
- (2) Loosen the retaining screw holding the dust cover and remove the transparent dust cover.
- (3) Rotate the shaft in the direction shown in Fig. 23 until the detent roller on the detent wheel is positioned between the two black marks. This occurs at the same time that T2 rests in the depression in the shaft. (This is called the "home" position.)
- (4) Release the reset latch by momentarily pressing downward on the armature of the RE relay as shown in Fig. 23.
- (5) Rotate the shaft slowly in the proper direction and count the steps until the T1 springs operate. (This is indicated by the forward movement of the reset latch.)

Note: Each step the shaft is rotated from, the "home" position represents a 5-cent increase in rate as shown in Table L.

3.40 To reset the chute totalizer rate in the 2C-type sets, use two paper clips and do the following:

- (a) To increase the chute totalizer rate shown in Fig. 24, do the following:

- (1) Rotate the shaft in the direction shown in Fig. 23 until it is in the "home" position. (The detent roller on the detent wheel is positioned between the two black marks.)
- (2) Rotate the shaft about ten steps further in the direction shown in Fig. 24 until a tab on the T1 cam is accessible.
- (3) **Warning: Do not push the end of the paper clip too far through the shaft hole or it will damage the insulation of the coil located beneath the shaft. Insert a paper clip into one of the four holes indicated as hole 2 in the center of the shaft. Hold the paper clip firmly so the shaft cannot move.**

TABLE L	
METHOD FOR DETERMINING INITIAL RATE (NOTE)	
NUMBER 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
Note: The maximum setting in 1C- and 1E-type telephone sets is \$1.45 and the maximum setting in 1D-type telephone sets is \$1.60.	

- (4) Position a second paper clip in the hole on the T1 cam indicated as hole 1 shown in Fig. 24 and rotate the cam in the direction of the curved arrow as shown.



If hole 1 in the T1 cam has been mutilated or clogged preventing use, place the paper clip against the tab as shown in Fig. 24 and push the tab in the direction of the straight arrow. One step of rotation of the T1 cam in this direction of the curved arrow shown in Fig. 24 increases the rate by 5 cents.

- (5) Verify the new initial rate setting.
- (b) To decrease the chute totalizer rate shown in Fig. 25, do the following:
 - (1) Rotate the shaft in the direction shown in Fig. 23 until it is in the "home" position. (The detent roller on the detent wheel is positioned between the two black marks.)

(2) Rotate the shaft about ten steps further in the direction shown in Fig. 25 until a tab on the T1 cam is accessible.

(3) **Warning:** *Do not push the end of the paper clip too far through the shaft hole or it will damage the insulation of the coil located beneath the shaft. Insert a paper clip into one of the four holes indicated as hole 2 in the center of the shaft. Hold the paper clip firmly so the shaft cannot move.*

(4) Position a second paper clip in the hole on the T1 cam indicated as hole 1 shown in Fig. 25 and rotate the cam in the direction of the curved arrow as shown.



If hole 1 in the T1 cam has been mutilated or clogged preventing use, place the paper clip against the tab as shown in Fig. 25 and push the tab in the direction of the straight arrow. One step of rotation of the T1 cam in this direction of the curved arrow shown in Fig. 25 decreases the rate by 5 cents.

(5) Verify the new initial rate setting.

3.41 Reinstall the coin chassis in the set housing as follows:

- (1) Slide the chassis under the tab as shown in Fig. 20.
- (2) Seat the chassis tabs in the slots.
- (3) Tighten the chassis mounting screws.

D. Wiring

3.42 To connect the wiring, do the following:

- (1) Thread the (BK) and (Y) leads through the eyelet on the side of the hopper on the 2C- and 2D-type sets.
- (2) Connect the (BK) lead to terminal 3 on the coin relay and connect the (Y) lead to terminal G on the coin relay.

(3) Route the inside wiring from the grommet hole in the backplate and to the right.

(4) Connect the tip, ring, and ground leads to terminals T, R, and G, respectively, on TB1 on the coin chassis if the protector is **not mounted** in the telephone set.

(5) Make the following connections if the protector is **mounted** in the telephone set:

- (a) Connect the tip and ring leads to terminals T and R, respectively, on the protector.
- (b) Connect the No. 12 AWG ground lead to terminal G on the protector.
- (c) Connect the T and R leads from the protector to terminals T and R, respectively, on TB1 on the coin chassis.
- (d) Connect the No. 12 AWG ground strap from terminal G on the protector to terminal PG on TB1 on the coin chassis on the 2D-type sets.
- (e) Connect the No. 12 AWG ground strap from terminal G on the protector to terminal G on TB1 on the coin chassis on the 2C-type sets.

E. Reassembly

3.43 Install the dust cover on the coin relay and secure with the retaining screw.

3.44 **Caution:** *Before installing a chute totalizer in the set, swing the upper plate assembly open and clean off any foreign material adhering to the chute magnets using a typewriter brush or equivalent.* To install the chute totalizer in the set, do the following:

- (1) Place the chute totalizer on the locating pins at the rear of the hopper assembly and the back of the housing as shown in Fig. 20.

Note 1: Ensure that the reject chute, the return chute, and the coin return assemblies line up properly as shown in Fig. 1.

Note 2: Ensure that the inside wiring is properly dressed behind the chute totalizer cutout.

- (2) Place the spring in the groove on the chute totalizer.
- (3) Lock the spring in place by pushing the chute totalizer locking lever down.
- (4) Connect the chute totalizer or the chute signal unit plug P2 to J2.

3.45 If appropriate, install the number card on the telephone set.

3.46 Connect P1 from the door to J1 of the coin chassis and close the door and faceplate assembly. Secure the door by inserting a 719A tool into the lock and turning the tool 1/8 turn clockwise.

F. Instruction Cards

3.47 Instruction cards are not furnished and must be obtained locally.

3.48 Two different methods for securing instruction cards in the 2-type sets are as follows:

- (a) An 812360410 card spring (DA) is provided in the bottom of each card slot on the early 2-type sets. The spring puts pressure on the bottom of the instruction card to hold it in place.
- (b) On later 2-type sets, a cam, located in the top of each card slot, holds the instruction card in place. The cam is operated using a No. 4 (.050) Allen wrench.

3.49 To install the instruction card in a set that is equipped with a spring, do the following:

- (1) Push down the instruction card with your fingers as shown in Fig. 34.
- (2) Snap the instruction card in place.
- (3) Ensure that the instruction card is properly seated.

3.50 To remove the instruction card from a set that is equipped with a spring, do the following:

- (1) Push down the instruction card with your fingers.



Fig. 34—Installing Instruction Card in 2-Type Set With 812360410 Card Spring

- (2) Pry out the instruction card from the top using a small screwdriver or equivalent.

3.51 To install the instruction card in a set equipped with a cam, do the following:

- (1) Turn the cam until the low side is adjacent to the card opening by using a No. 4 (.050) Allen wrench.
- (2) Push up the instruction card with your fingers as shown in Fig. 35.
- (3) Snap the instruction card in place.
- (4) Ensure that the instruction card is seated properly in the slot.
- (5) Secure the instruction card by turning the cam 180 degrees, either clockwise or counterclockwise.

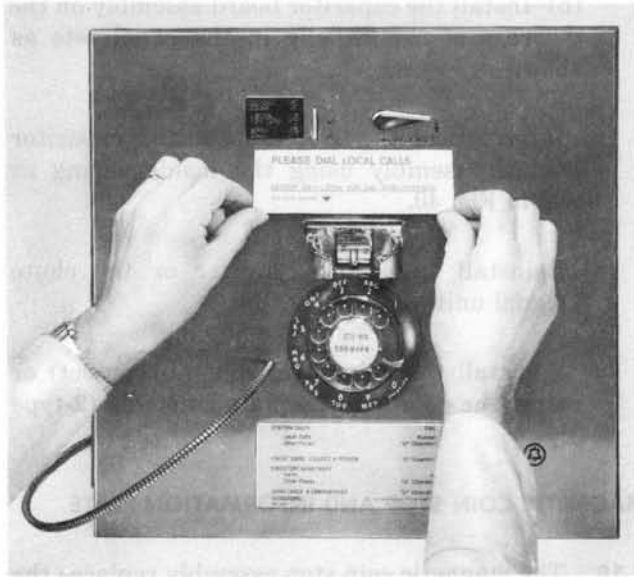


Fig. 35—Installing Instruction Card in 2-Type Set With Cam

3.52 To remove the instruction card from a set equipped with a cam, do the following:

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

G. Placing Set in Service

3.53 Before placing the 2-type coin telephone set in service, make sure the set operates properly (Part 5, Operation Tests), the information plate agrees with the mode of service, and that the cash box is installed in the set. (If the cash box is not installed in the set, make arrangements per local procedures to have it installed.)

3.54 If the coin set cannot be tested or is not to be placed in service at this time, the out-of-service sticker (Form E-4914) should be placed over the coin slot and the locking tab shown in Fig. 30 on the entrance stop should be bent.

POLARITY GUARD (D-180893 Kit of Parts)



When the loop resistance is within 100 ohms of the loop resistance limit or within 400 ohms of the limit when range extension is provided, the D-180893 Kit of Parts should not be used, instead a D-type coin telephone set should be utilized.

3.55 The D-180893 Kit of Parts shown in Fig. 36 can only be used in stations that provide DTF service. The polarity guard provides an enabled touch-tone telephone dial with a C-type set in the absence of a central office enablement procedure.

3.56 To install the polarity guard, do the following:

- (1) Remove the coin cover unit (1-type set) or open the door and faceplate assembly (2-type set).
- (2) Remove and retain the mounting screw located on the bottom left-hand corner of the coin dial unit directly below TB2.
- (3) Insert the mounting screw into the polarity guard bracket.
- (4) Secure the bracket in place by inserting the screw in the same hole it was removed from in Step (2).
- (5) Make connections as shown in Table M.
- (6) Close the coin cover unit (1-type set) or close the door and faceplate assembly (2-type set).

AUXILIARY RINGER

3.57 When 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. The 687A subscriber set is installed as follows:

- (1) Remove the coin cover unit (1-type set) or open the door and faceplate assembly (2-type set).
- (2) Remove the chute totalizer or the chute signal unit.
- (3) Disconnect, insulate, and store the four ringer leads from the ringer in the coin telephone set.

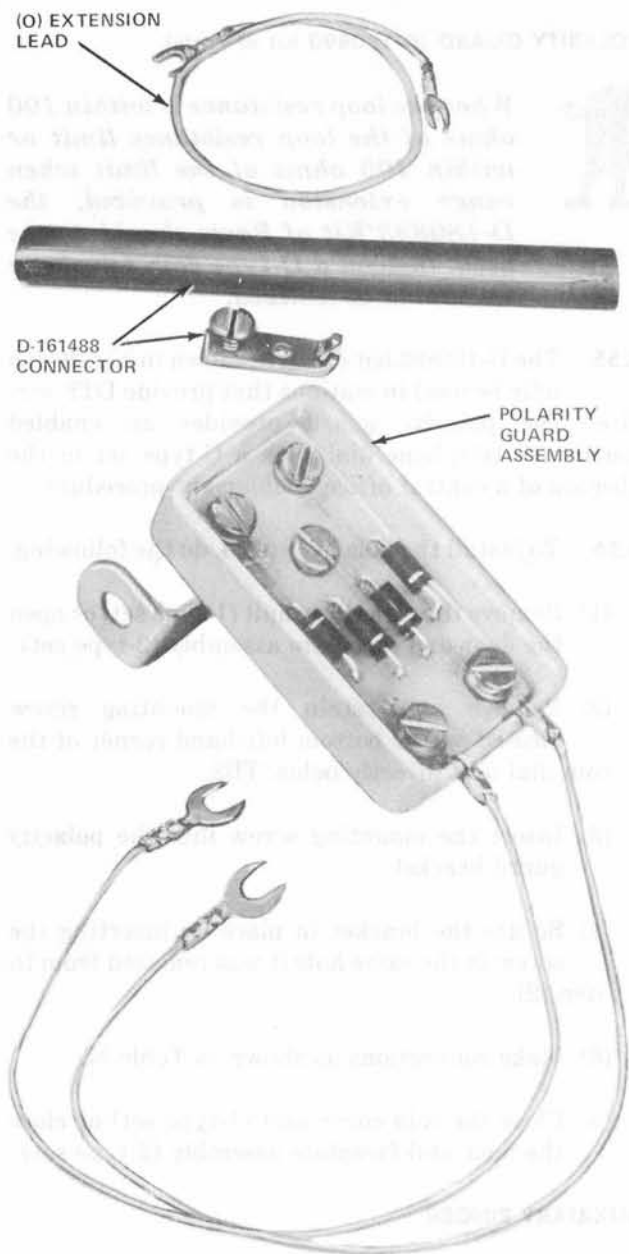


Fig. 36—D-180893 Kit of Parts (Polarity Guard)

(4) Install the 840362024 capacitor board assembly shown in Fig. 37 in one of the following ways:

(a) Install the capacitor board assembly shown in Fig. 38 on the backplate in the 1-type sets.

(b) Install the capacitor board assembly on the rear of the 7A clip in the panel sets as shown in Fig. 39.

(5) Interconnect the 687A subset and capacitor board assembly using the inside wiring as shown in Fig. 40.

(6) Reinstall the chute totalizer or the chute signal unit.

(7) Reinstall the coin cover unit (1-type set) or close the door and faceplate assembly (2-type set).

MAGNETIC COIN STOP AND INFORMATION PLATE

3.58 The magnetic coin stop assembly replaces the ceramic information plate on the coin telephone set and prevents magnetic coins (such as Canadian coins) from being inserted into the coin chute.

3.59 A D-180848 Kit of Parts shown in Fig. 41 is available to install on a 1-type coin telephone set equipped with a 70A- or 71A-type coin cover unit. A F-61042 magnetic coin stop shown in Fig. 41 is available for use on the 2C coin telephone sets.

Note: The F-61042 cannot be installed on a 2C coin telephone set that has been converted from a 2A coin telephone set.

3.60 The kit contains a magnetic coin stop assembly with mounting hardware plus a choice of adhesive backed information plates (CF, DTF, DPP, or MPP service).

3.61 Replace the CF, DTF, DPP, or MPP ceramic information plate assembly with a magnetic coin stop assembly as follows:

Note 1: These kits are not adaptable to earlier sets that have an adhesive backed information plate. It is not recommended for field installation where holes for studded information plates do not exist.

Note 2: Do not install these kits on sets where the entrance stop has been positioned off normal as shown in Fig. 30.

TABLE M						
D-180893 KIT OF PARTS (POLARITY GUARD) CONNECTIONS 1C2 AND 2C2 COIN TELEPHONE SETS, DIAL-TONE-FIRST MODE ONLY (NOTE 1)						
LEAD COLOR		REMOVE FROM		CONNECT TO		
TELEPHONE SET	POLARITY GUARD (NOTE 2)	TB2	NETWORK	TB2	NETWORK	POLARITY GUARD
BR	—	9	—	11	—	—
O*	—	11	—	—	—	1
G	—	4	—	—	—	2
R†	—	—	F	—	RR	—
—	G	—	—	4	—	—
—	O	—	—	11	—	—
<p>Note 1: Can be used with the 819042755, 840157580, 840346977, and 840347173 dial and housing assemblies and the 61A coin dial unit.</p> <p>Note 2: The (G) and (O) leads are connected to terminals 3 and 4, respectively, on the polarity guard.</p> <p>* The (O) lead on the 61A coin dial unit connects directly to terminal 1 of the polarity guard. On the other four dial and housing assemblies, it will be necessary to extend the (O) lead to terminal 1 of the polarity guard using the (O) extension lead and the D-161488 connector furnished with the kit.</p> <p>† Remove only the (R) lead that connects to pin 7 of the component board on the coin chassis.</p>						

- (1) Remove the 70A- or 71A-type coin cover unit from a 1-type set or open the door and faceplate assembly on a 2C set.
- (2) Remove the existing information plate.
- (3) Clean the surface thoroughly from where the information plate was removed and around the coin slot using an approved cleaner.
- (4) Install the magnetic coin stop assembly over the coin slot and secure it with the two No. 6-32 by 3/4 roundhead machine screws, the two No. 6 lockwashers, and the two No. 6 flat washers furnished with the kit as shown in Fig. 42.
- (5) Clean the front surface of the stop assembly with a dry cloth.
- (6) Observe the information plate removed in Step (2) and select one from the kit containing the same information.
- (7) Peel off the protective covering from the rear and press the information plate in place as shown in Fig. 42. Apply firm pressure to ensure complete adhesion.
- (8) Order the information plate assemblies (25 plates per package) separately as follows:
 - 841943467 — DTF
 - 841943483 — CF
 - 841943509 — DPP or MPP.

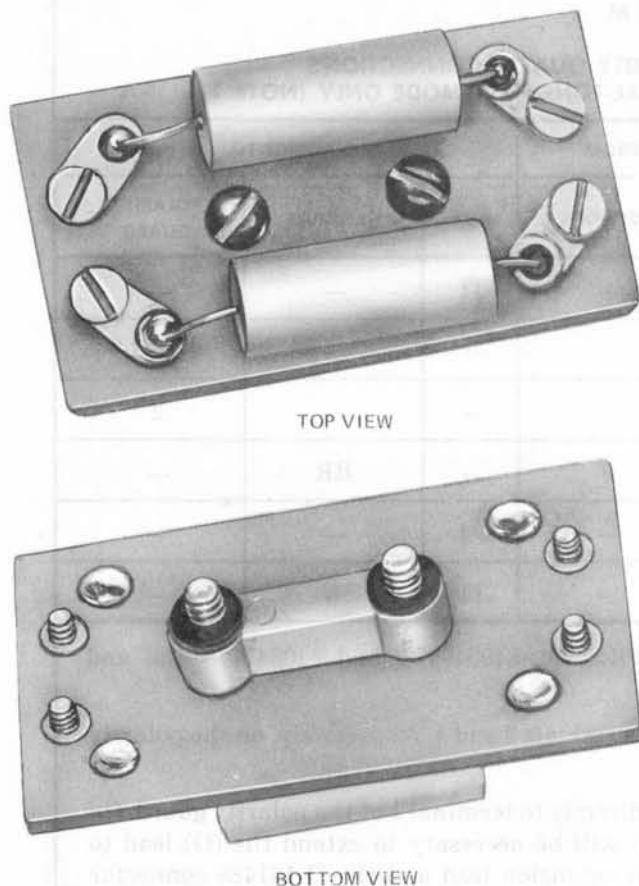


Fig. 37—840362024 Capacitor Board Assembly

3.62 Checks and adjustments on the magnetic coin stop should be done as follows:

- (1) Verify the coin cover unit of a 1-type set is on a flat level surface or hang it on a KS-20950, List 2 parking tool. On a 2-type set, make certain the door and faceplate assembly is open.

Note: A No. 4-40 setscrew shown in Fig. 43 is provided under the coin slot to prevent a U.S. dime from being caught between the magnetic coin stop assembly and faceplate.

- (a) If a KS-22551 gauge shown in Fig. 44 is available, do the following:
 - (1) Insert the KS-22551 gauge shown in Fig. 44 into the coin slot until it fits flush against the front of the magnetic coin stop assembly as

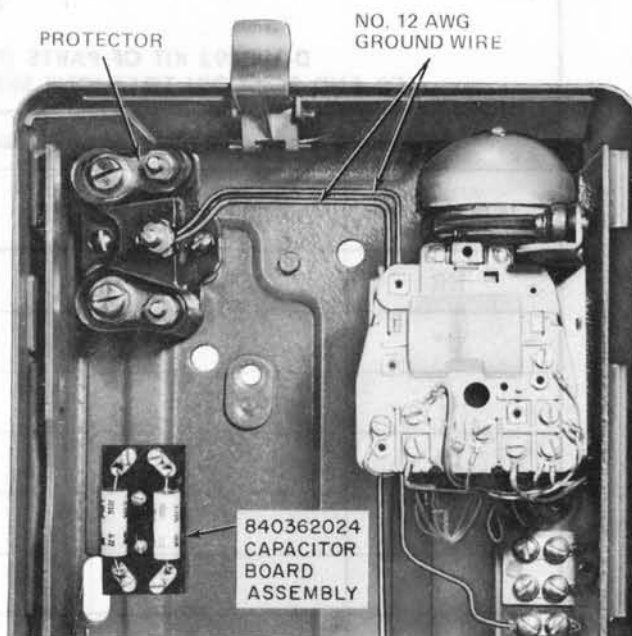


Fig. 38—Capacitor Board Assembly Mounted in 1-Type Set

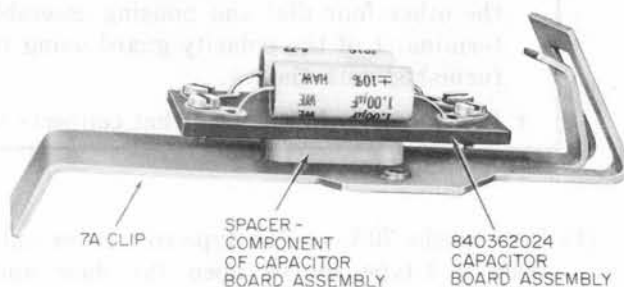
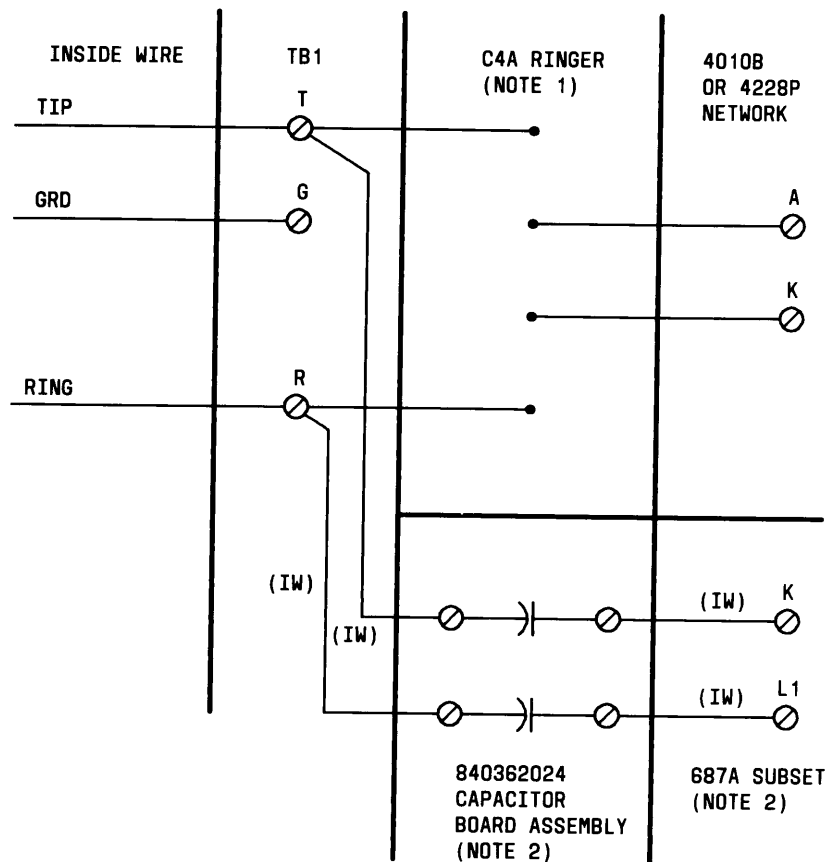


Fig. 39—Capacitor Board Assembly Mounted on 7A Clip

shown in Fig. 45. This requires turning the setscrew counterclockwise.

- (2) Turn the setscrew clockwise until it makes contact with the KS-22551 gauge.
- (3) Remove the KS-22551 gauge.

Note: It may be necessary to turn the setscrew counterclockwise slightly, just enough to free the gauge.

**NOTES:**

1. Connect the capacitor board and the 687A subset as shown using the inside wire. Do not put the capacitor of an auxiliary ringer in series with the capacitor board.
2. Disconnect, insulate, and store the four ringer leads.

Fig. 40—Optional Ringer Connections

(b) If a KS-22551 gauge is not available, do the following:

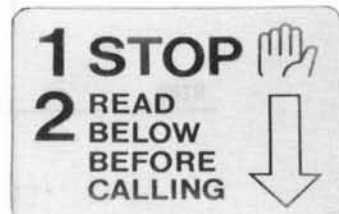
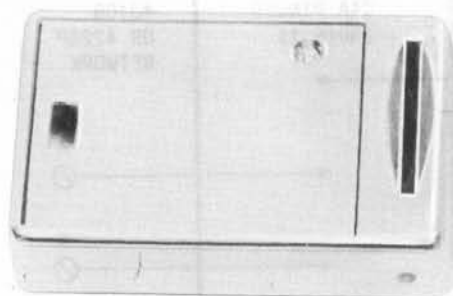
- (1) Turn the setscrew clockwise with a No. 4 (.050) Allen wrench until a U.S. quarter will not pass freely through the slot.
- (2) Turn the setscrew counterclockwise until the quarter barely passes through the slot.
- (3) Turn the setscrew an additional half turn counterclockwise to allow clearance for the largest possible quarter.

(4) Insert a dime, nickel, and quarter into the slot. All coins should pass freely through the magnetic coin stop and faceplate.

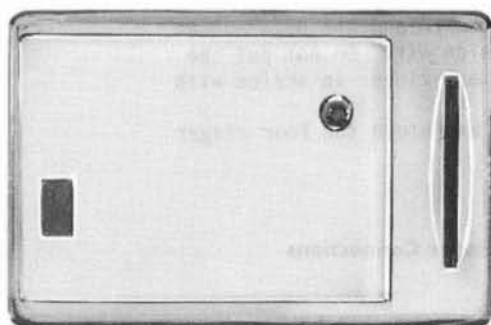
3.63 Checks and adjustments for Canadian coins should be done as follows:

- (1) Insert a Canadian coin into the coin slot.

Note: If a Canadian coin is not available, insert a suitable screwdriver or equivalent into the slot being careful not to push on the shutter when it activates.



A. D-180848 KIT OF PARTS (FOR USE ON 1-TYPE SET)



B. F-61042 KIT OF PARTS (FOR USE ON 2-TYPE SET)

Fig. 41 — Magnetic Coin Stop

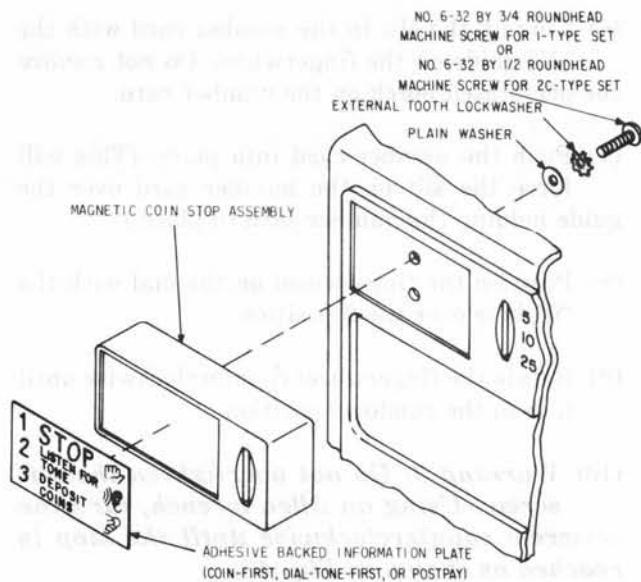


Fig. 42—Installation of Magnetic Coin Stop

- (2) Verify that the shutter on the rear of the magnetic coin stop fully activates.
- (3) Verify that the shutter returns to its normal position after the removal of the coin or the screwdriver to allow the passage of U.S. coins.

3.64 Reinstall the coin cover unit (1-type set) or close the door and faceplate assembly (2-type set).

COIN RECEPTACLE (Cash Box)

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

- (1) Remove the cash compartment door.
- (2) Remove the 1B-type coin receptacle.
- (3) Remove the false floor from the bottom of the cash compartment as follows:
 - (a) Break spot welding at the front tab.
 - (b) Pry out with a large screwdriver or equivalent.

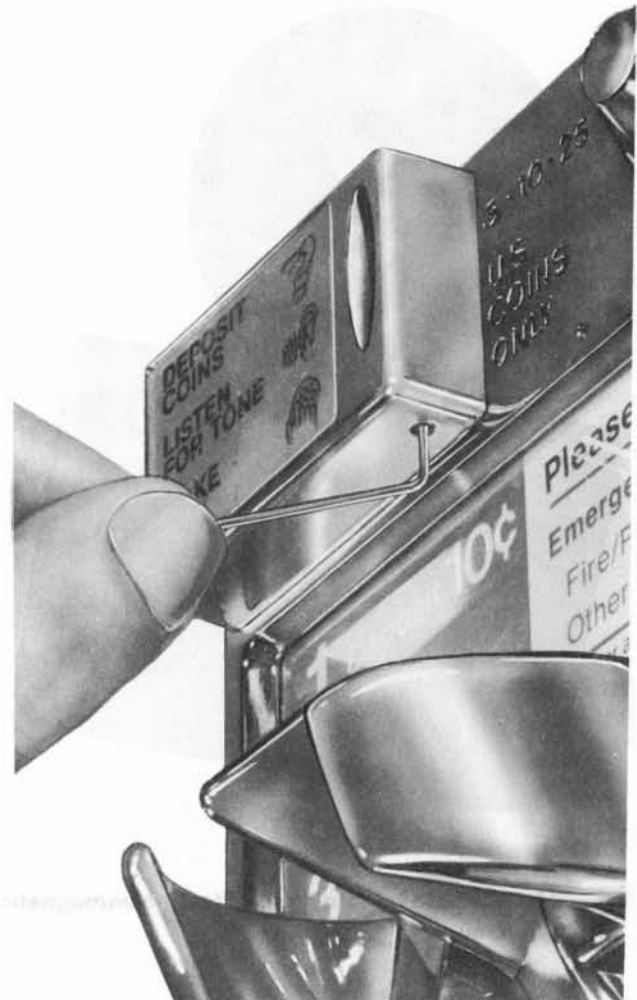


Fig. 43—Setscrew Adjustment

- (4) Install the 1C-type coin receptacle.
- (5) Reinstall the cash compartment door.

NUMBER CARD AND FINGERWHEEL (Rotary Telephone Sets)

3.66 To install the number card for the 8U (DA), the 8W (DA), or the 8WA dial, do the following:

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

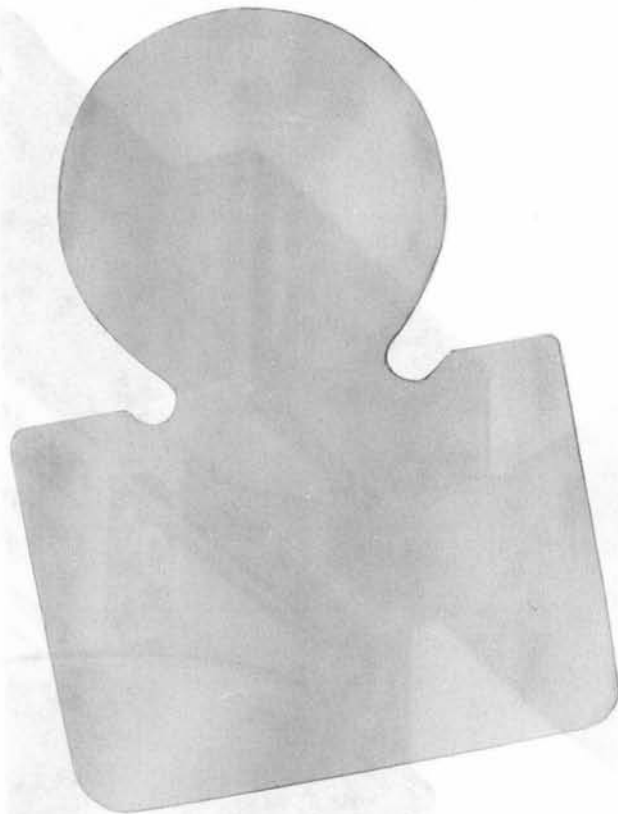


Fig. 44—KS-22551 (Stainless Steel Nonmagnetic) Gauge

(1) **Warning 1:** When turning the setscrew on the 8WA, the dial must be in the fully rundown (idle) position to prevent losing the setscrew.

(2) **Warning 2:** Do not turn the setscrew clockwise beyond the stopping point since this can damage the setscrew or Allen wrench.

(3) Use a No. 4 (.050) Allen wrench and turn the setscrew clockwise (minimum of three turns) with the dial in the rundown position until it clears the fingerwheel and reaches the stopping point as shown in Fig. 46.

(4) Remove the Allen wrench.

(5) Turn the fingerwheel in a clockwise direction until the "0" hole is in the 9 position and lift off the fingerwheel.

(6) Line up the slit in the number card with the "V" guide on the fingerwheel. Do not remove the perforated notch on the number card.

(7) Push the number card into place. (This will force the slit on the number card over the guide holding the number card in place.)

(8) Position the fingerwheel on the dial with the "0" hole over the 9 position.

(9) Rotate the fingerwheel counterclockwise until it is in the rundown position.

(10) **Warning 3:** Do not overtighten the setscrew. Using an Allen wrench, turn the setscrew counterclockwise until the stop is reached as shown in Fig. 46.

NUMBER CARD (Touch-Tone Telephone Set)

Note: A card holder bracket, window, and two nuts (or push-on fasteners) shown in Fig. 47 are packaged separately and shipped from the factory in the cash compartment. The number card is furnished locally.

3.67 To install the number card in the touch-tone telephone set, do the following:

(1) Remove the coin cover unit (1-type set) or open the door and faceplate assembly (2-type set).

(2) Remove the four mounting screws securing the coin dial unit and pull the coin dial unit off the housing.

(3) Insert the number card in the window as shown in Fig. 48.

(4) Insert the window in the faceplate from the rear as shown in Fig. 48.

(5) Secure the window and number card using the card holder bracket and two nuts (or push-on fasteners) as shown in Fig. 49.

Note: Push-on fasteners are used on the 1-type sets and hex nuts are used on the 2-type sets. To install the push-on fasteners, position the fasteners with the clearance side over the mounting post and down against the card holder bracket. Slide the fasteners onto the post



Fig. 45—KS-22551 Gauge Being Used to Adjust No. 4-40 Setscrew

with the tips of long-nose pliers; one tip braced against the post and the other tip on the edge of the fasteners. To remove the fasteners, use the reverse procedure.

- (6) Reinstall the coin dial unit and secure with the four mounting screws removed in Step (2).

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



The window, bracket, and nuts (or push-on fasteners) are available in the D-180567 kit for a 1-type set and the D-180655 kit for a 2-type set for maintenance purposes.

- (7) Reinstall the coin cover unit (1-type set) or close the door and faceplate assembly (2-type set).

MANUAL EXTENSION STATION

3.68 A manual extension station can be used with a 1C-type, 1E3, and a 2C-type set 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 1E1 set.

4. MAINTENANCE

GENERAL

- 4.01** Maintenance on the 1- and 2-type coin telephone sets is limited to general cleaning,

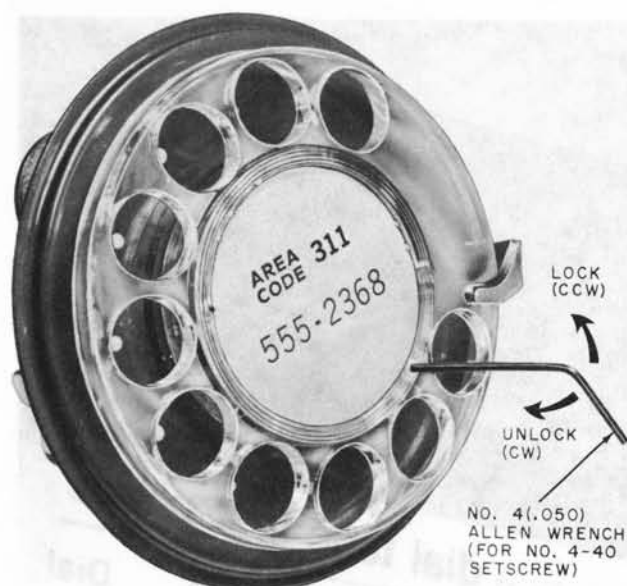


Fig. 46—Installing Fingerwheel on 8WA Dial

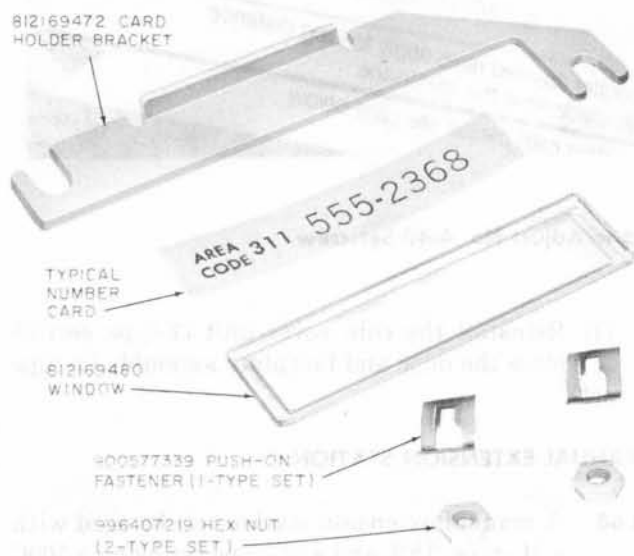


Fig. 47—Number Card and Associated Hardware for Touch-Tone Telephone Set

clearing reported trouble, and replacing apparatus diagnosed as being defective by the Operation Tests (Part 5). Once the trouble is cleared, the coin telephone set should be tested for proper operation per Operation Tests (Part 5).

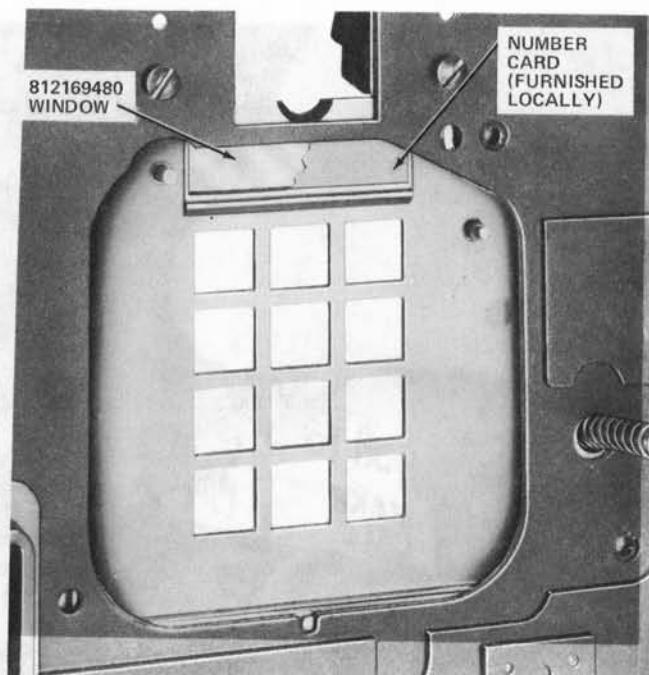


Fig. 48—Window and Number Card Installed in Touch-Tone Telephone Set

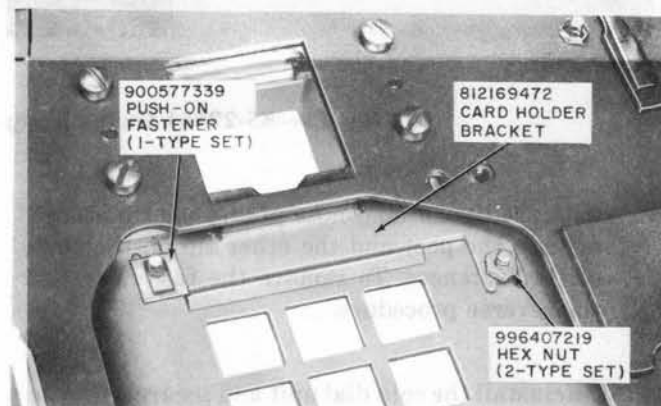


Fig. 49—Card Holder Bracket Installed in Touch-Tone Telephone Set



On trouble reports of coins collected or returned in error, try to obtain the area code and telephone number of the called party to facilitate tracing trouble in the central office.

TROUBLE CLEARING

A. Foreign Material or Stuck Coin in Chute

4.02 When trouble reports indicate foreign objects or stuck coins in the coin chute, do the following:

- (a) Operate the coin release lever in attempt to clear coins from the chute.
- (b) If trouble does not clear, do the following:
 - (1) Remove the coin cover unit (1-type) or open the door and faceplate assembly (2-type).
 - (2) Remove the chute totalizer or the chute signal unit.
 - (3) Swing the upper plate assembly open as shown in Fig. 50.
 - (4) Use an orange stick where possible to remove any foreign objects or stuck coins. Do not use a screwdriver.
 - (5) Do not loosen the chute assembly screw.
 - (6) **Caution:** Exercise extreme care when closing the upper plate assembly. If the quarter divider is not positioned properly, it can become damaged when the upper plate assembly is closed against it. Clean off any foreign material adhering to the chute magnets using a suitable typewriter brush or equivalent.
 - (7) Replace the 20A coin chute if the dime is caught at the exit of the lower portion of the chute (manufactured prior to May 1978) and if the chute does not have shims to increase the dime exit opening as shown in Fig. 51.

4.03 If trouble cannot be cleared using an orange stick, use a 787A tool as shown in Fig. 52 as follows:

- (1) Remove the totalizer or the 47A signal unit from the chute.
- (2) Swing the upper plate assembly open as shown in Fig. 52.

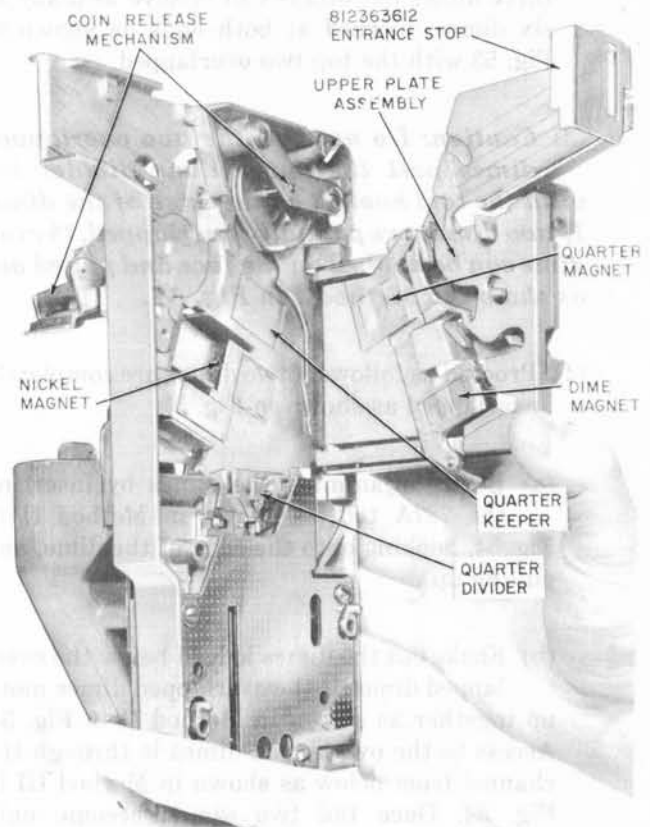


Fig. 50—Chute

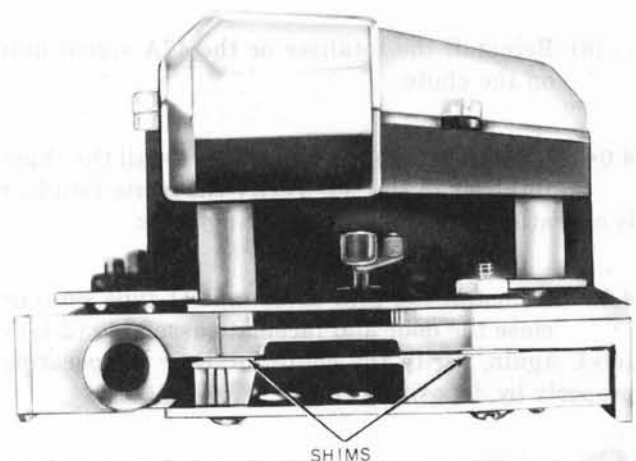


Fig. 51—20A Coin Chute (Manufactured Prior to May 1978) With Dime Opening Shimmed

Note: Several conditions can be encountered with dime jams. Most jams involve only two or three dimes but others can involve as many as six dimes, blocked at both ends as shown in Fig. 53 with the top two overlapped.

(3) **Caution:** Do not pull the two overlapped dimes past the lower dime divider leg with the tool hooked on the edge of the dime. If two dimes are partially overlapped, the top dime can be hooked on the face and pulled out as shown in Method I in Fig. 54.

(4) Proceed as follows if two dimes are completely overlapped as shown in Fig. 53:

(a) Begin unjamming the dimes by inserting the 787A tool as shown in Method II in Fig. 54, hooking onto the edge of the dime, and pulling up.

(b) Shake out the dimes lodged below the overlapped dimes if the overlapped dimes move up together as shown in Method II in Fig. 54. Access to the overlapped dimes is through the channel from below as shown in Method III in Fig. 54. Once the two dimes become only partially overlapped (Method III), utilize Method I to finish extracting them.

(5) Replace the chute if the trouble cannot be cleared.

(6) Reinstall the totalizer or the 47A signal unit on the chute.

4.04 Once the trouble is cleared, reinstall the chute totalizer in the set. Verify the chute totalizer is operating properly by depositing coins.

4.05 Reinstall the coin cover unit (1-type sets) or close the door and faceplate assembly (2-type sets). Again, verify the chute totalizer is operating properly by depositing coins.



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

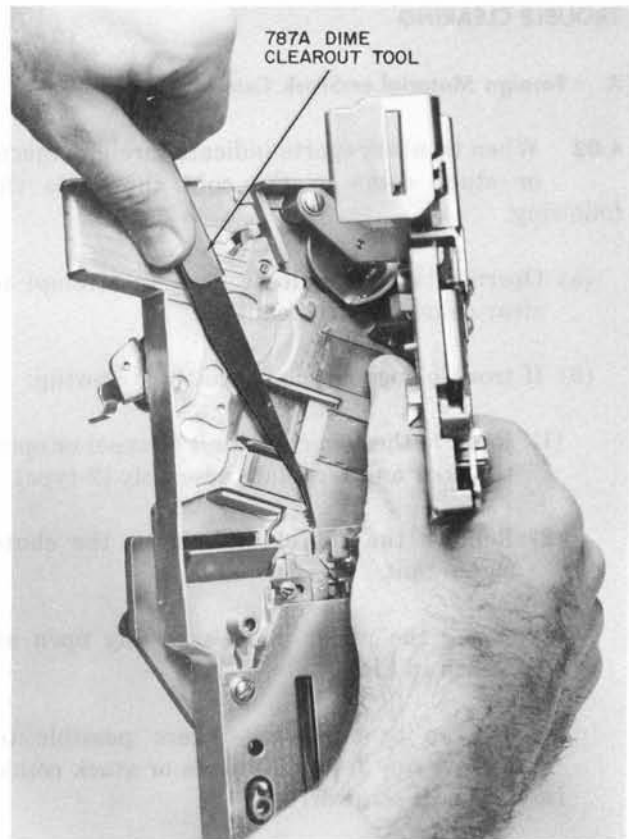


Fig. 52—Using a 787A Dime Clearout Tool in Chute

B. Electrical Troubles

4.06 If electrical troubles are indicated in the 1-type set, refer to Parts — Operation Test (Tables O through S). If electrical troubles are indicated in the 2-type set, refer to Parts — Operation Test (Tables O and P).

4.07 For problems involving radio frequency interference, refer to Section 500-150-100.

C. Defective Apparatus

4.08 If defective apparatus is indicated either by a trouble report or by the Operation Tests (Part 5), refer to the Component Replacement and replace the defective component. Should a known good component not correct the trouble, the original component should be reinstalled. Once the trouble is

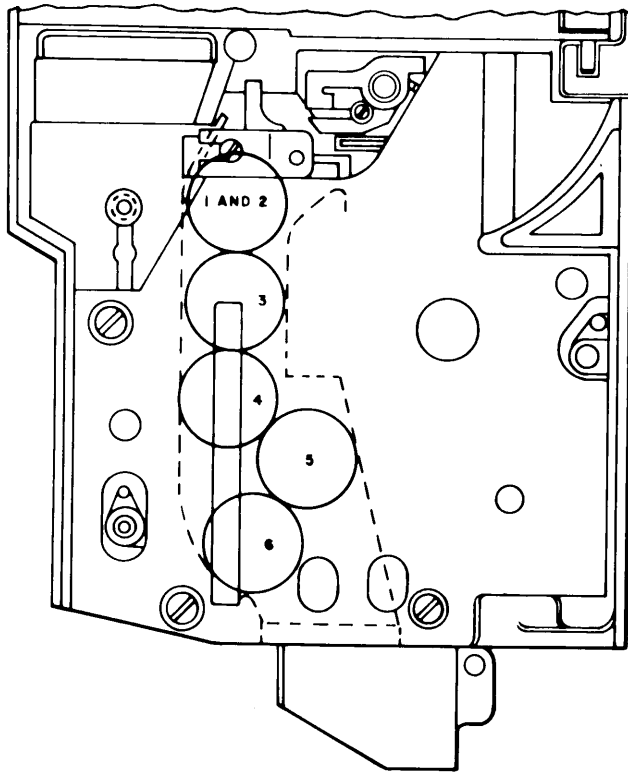


Fig. 53—Lower Portion of Coin Chute With Six Dimes Jammed

cleared, the coin telephone set should be tested for proper operation per Operation Tests (Part 5).

D. Modification of Coin Cover Unit Chute Guide (Limit Stop)

4.09 If there is a clearance problem between the chute totalizer and the coin cover unit (on the 1-type set), bend the horizontal guide flange located adjacent to the coin slot inside the cover as shown in Fig. 55.

COMPONENT REPLACEMENT

A. Coin Cover Unit (1-Type Set)

4.10 To remove the coin cover unit, do the following:

- (1) Unlock the coin cover unit lock.

- (2) Release the locking mechanism with a 719A tool by turning the tool 1/8 turn counterclockwise.

- (3) Pull the cover off about 3 inches to gain access to P1.

- (4) Disconnect P1 by carefully pulling it straight out as the cover is removed.

4.11 To install the coin cover unit, do the following:

- (1) Position the cover next to the set and connect P1.

- (2) Position the cover carefully onto the set.

- (3) Lock the cover into place using a 719A tool. With the tool in the locking mechanism, turn the tool 1/8 turn clockwise.

- (4) Lock the coin cover unit lock.

B. Door and Faceplate Assembly (2-Type Set)

4.12 DANGER: *If the set is not mounted, exercise care to keep the set from tipping over when the door is opened.* To open the door and faceplate assembly, do the following:

- (1) Unlock the door and faceplate assembly lock.

- (2) Release the locking mechanism with a 719A tool by turning the tool 1/8 turn counterclockwise.

- (3) Open the door about 3 inches to gain access to P1.

- (4) Disconnect P1 by carefully pulling it straight out as the door is opened.

4.13 To close the door and faceplate assembly, do the following:

- (1) Connect P1 to J1 with the cover open about 3 inches.

- (2) Lock the cover into place using a 719A tool. With the tool in the locking mechanism, turn the tool 1/8 turn clockwise.

- (3) Lock the door and faceplate lock.

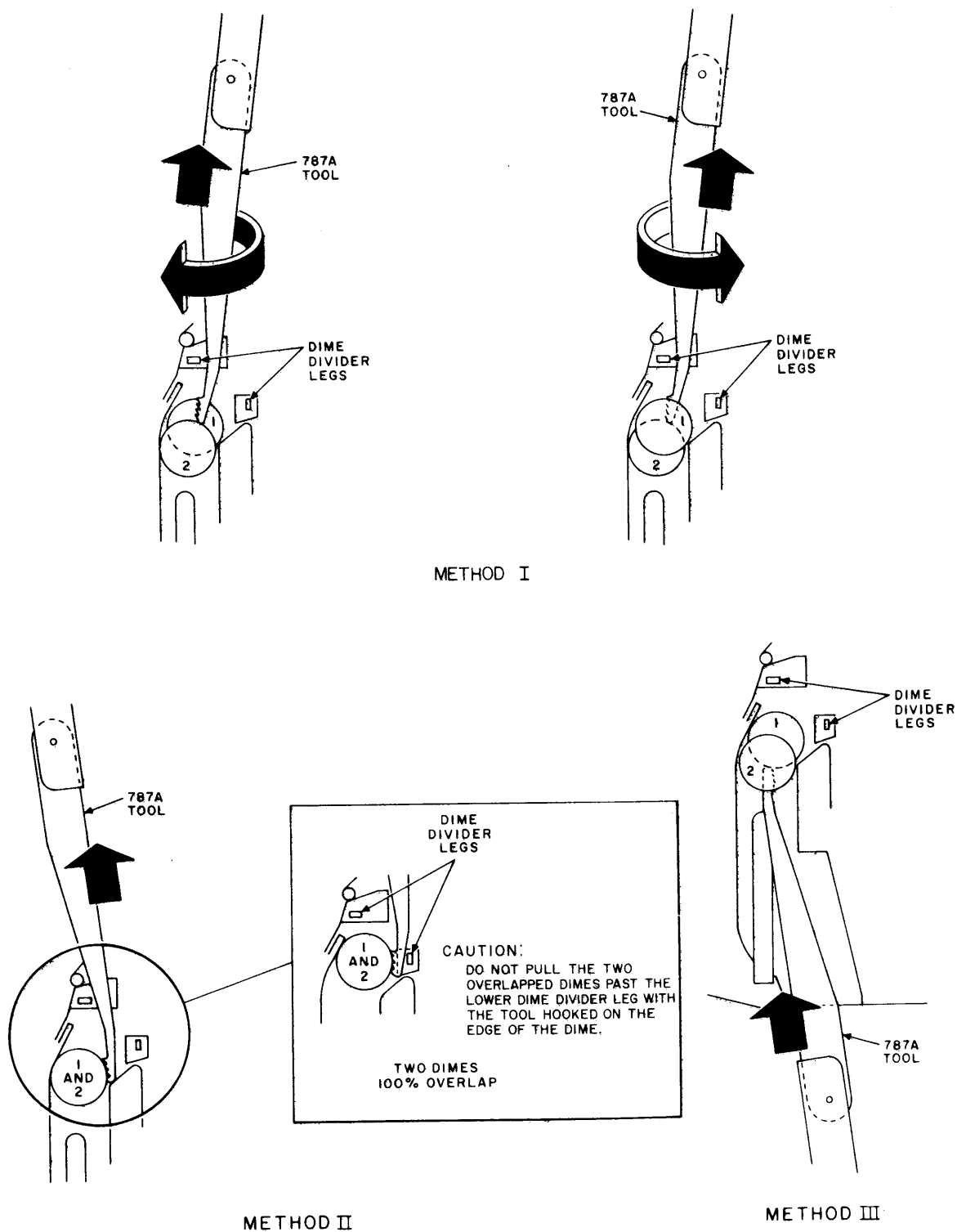


Fig. 54—Method of Removing Jammed Dimes From Chute

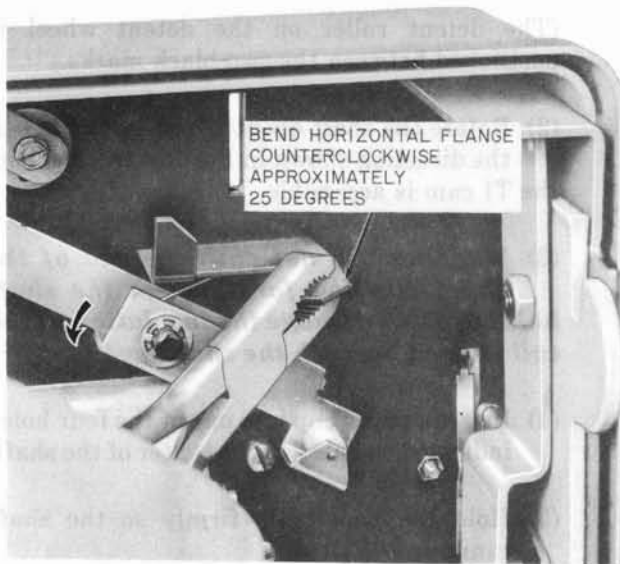


Fig. 55—Bending Chute Guide (Limit Stop)

C. Chute Totalizer

4.14 To remove the chute totalizer from the set, do the following:

- (1) Remove the coin cover unit (1-type set) or open the door and faceplate assembly (2-type set).
- (2) Disconnect P2.
- (3) Release the chute locking lever.
- (4) Lift the spring out of the groove in the chute.
- (5) Tilt the top of the chute forward and lift out.

4.15 To remove the totalizer from the chute, do the following:



Do not damage the totalizer arms when removing or replacing the totalizer on the chute or when returning the damaged totalizers to the service center. Do not turn the screws that are sealed with GLYPTAL* sealer. When returning the totalizers or chutes to the service center, reuse the packing

* Trademark of General Electric.

material from which the new item was removed.

- (1) Unscrew the three captive-type mounting screws from the chute.
- (2) Remove the totalizer carefully from the chute.

4.16 To install a totalizer on the chute, do the following:

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

4.17 Once a chute totalizer in the 1C-, 1E-, and 2E-type sets has been replaced, the initial rate should be checked as follows:

(1) **Warning:** Use extreme care when checking the initial rate or resetting the totalizer. Avoid damaging pawl and spring pileups. Do not attempt to turn the totalizer cam shaft in the direction opposite to that shown in Fig. 23.

(2) Loosen the retaining screw and remove the transparent dust cover.

(3) Rotate the shaft in the direction shown in Fig. 23 until the detent roller on the detent wheel is positioned between the two black marks. This occurs at the same time that T2 rests in the depression in the shaft. (This position is called the "home" position.)

(4) Release the reset latch by momentarily pressing downward on the armature of the RE relay as shown in Fig. 23.

(5) Rotate the shaft slowly in the direction shown in Fig. 23 and count the steps until T1 springs operate (indicated by forward movement of the

reset latch). Each step rotated from the "home" position represents a 5-cent increase in the rate as shown in Table L.

4.18 Reset the totalizer rate in the 1C-, 1E-, and 2E-type sets using two paper clips as follows:

(a) Increase the totalizer rate shown in Fig. 24 as follows:

(1) Rotate the shaft in the direction shown in Fig. 23 until it is in the "home" position. (The detent roller on the detent wheel is positioned between the two black marks.)

(2) Rotate the shaft about ten steps further in the direction shown in Fig. 24 until a tab on the T1 cam is accessible.

(3) **Warning: Do not push the end of the paper clip too far through the shaft hole or it will damage the insulation of the coil located beneath the shaft.**

(4) Insert a paper clip into one of the four holes indicated as hole 2 in the center of the shaft.

(5) Hold the paper clip firmly so the shaft cannot move.

(6) Position a second paper clip into the hole on the T1 cam indicated as hole 1 shown in Fig. 24 and rotate the cam in the direction of the curved arrow as shown.



If hole 1 in the T1 cam has been mutilated or clogged preventing use, place the paper clip against the tab as shown in Fig. 24 and push the tab in the direction of the straight arrow. One step of rotation of the T1 cam in this direction of the curved arrow shown in Fig. 24 increases the rate by 5 cents.

(7) Verify the new initial rate setting.

(b) Decrease the totalizer rate shown in Fig. 25 as follows:

(1) Rotate the shaft in the direction shown in Fig. 23 until it is in the "home" position.

(The detent roller on the detent wheel is positioned between the two black marks.)

(2) Rotate the shaft about ten steps further in the direction shown in Fig. 25 until a tab on the T1 cam is accessible.

(3) **Warning: Do not push the end of the paper clip too far through the shaft hole or it will damage the insulation of the coil located beneath the shaft.**

(4) Insert a paper clip into one of the four holes indicated as hole 2 in the center of the shaft.

(5) Hold the paper clip firmly so the shaft cannot move.

(6) Position a second paper clip into the hole on the T1 cam indicated as hole 1 shown in Fig. 25 and rotate the cam in the direction of the curved arrow as shown.



If hole 1 in the T1 cam has been mutilated or clogged preventing use, place the paper clip against the tab as shown in Fig. 25 and push the tab in the direction of the straight arrow. One step of rotation of the T1 cam in this direction of the curved arrow shown in Fig. 25 decreases the rate by 5 cents.

(7) Verify the new initial rate setting.

4.19 The D-type sets can be equipped with either a 32A (DA) or a 32B chassis. The initial rate on a D-type set, equipped with a 32A (DA) chassis, is set by connecting the plug-ended leads on the chassis into the appropriate positive and negative fields as shown in Fig. 21 and Tables J and K. The initial rate on a D-type set equipped with a 32B chassis is set by sliding the initial rate switches shown in Fig. 22 to the desired position. The initial rate on either the 32A (DA) or the 32B chassis can be set in 5-cent increments from 5 cents to \$1.60. (Initially, the rate is set for 25 cents.)

4.20 Caution: Before installing the chute in the set, swing the upper plate assembly open and clean off any foreign material adhering to the chute magnets. (Use a typewriter brush or

equivalent.) To install the chute totalizer in the set, do the following:

- (1) Place the chute totalizer on the locating pins at the rear of the hopper assembly and the back of the housing as shown in Fig. 20.

Note 1: Ensure that the reject chute, the return chute, and the coin return assemblies line up properly as shown in Fig. 1.

Note 2: Ensure that the inside wiring is properly dressed behind the chute totalizer cutoff.

- (2) Place the spring in the groove on the chute.
- (3) Lock the spring into place by pushing the chute totalizer locking lever down.
- (4) Connect the chute totalizer plug P2 to J2.
- (5) Test the chute totalizer per local procedures.
- (6) Reinstall the coin cover unit (1-type set) or close the door and faceplate assembly (2-type set).

D. Chute Signal Unit

4.21 To remove the chute signal unit from the set, do the following:

- (1) Remove the coin cover unit (1-type set) or open the door and faceplate assembly (2-type set).
- (2) Disconnect P2.
- (3) Release the chute locking lever.
- (4) Lift the spring out of the groove in the chute.
- (5) Tilt the top of the chute forward and lift out.

4.22 To remove the signal unit from the chute, do the following:

- (1) Unscrew the two captive-type mounting screws from the chute.
- (2) Remove the signal unit from the chute.

4.23 To install the signal unit on the chute, do the following:

- (1) Position the signal unit on the chute.
- (2) Secure the signal unit on the chute using the two captive-type mounting screws.

4.24 Caution: Before installing the chute in the set, swing the upper plate assembly open and clean off any foreign material adhering to the chute magnets. (Use a typewriter brush or equivalent.) To install the chute with the signal unit in the set, do the following:

- (1) Place the chute with the signal unit attached on the locating pins at the rear of the hopper assembly and the back of the housing.

Note 1: Ensure that the reject chute, the return chute, and the coin return assemblies line up properly.

Note 2: Ensure that the inside wiring is properly dressed behind the chute.

- (2) Place the spring in the groove on the chute.
- (3) Lock the spring into place by pushing the chute locking lever down.
- (4) Connect plug P2 to J2.
- (5) Test the chute and the signal unit per local procedures.
- (6) Reinstall the coin cover unit (1-type set) or close the door and faceplate assembly (2-type set).

E. Coin Chassis

4.25 To remove the coin chassis, do the following:

- (1) Remove the coin cover unit (1-type set) or open the door and faceplate assembly (2-type set).
- (2) Remove the chute totalizer or the chute signal unit.
- (3) Disconnect the tip, the ring, and the ground connections. If the protector is mounted in the set, disconnect the No. 12 AWG ground strap.

(4) Disconnect the wiring as follows:

- (a) Disconnect the (BK) and (Y) leads from the coin relay and carefully pull the leads through the eyelet on the side of the hopper on the 1C-, 1D-, 2C-, and 2D-type sets.
- (b) Disconnect the (S-R) and (G) leads from the coin hopper and carefully pull the leads through the eyelet on the side of the hopper on the 1E1 sets.

(5) Loosen the captive chassis mounting screw.

(6) Pull the chassis out at the bottom and slide down to remove.

4.26 To install the coin chassis, do the following:

- (1) Slide the chassis under the tab.
- (2) Seat the chassis tabs in the slots.
- (3) Tighten the chassis mounting screw.
- (4) Thread the (BK) and (Y) leads through the eyelet on the side of the hopper on the 1C-, 1D-, 2C-, and 2D-type sets.
- (5) Connect the (BK) lead to terminal 3 on the coin relay and connect the (Y) lead to terminal G on the coin relay.
- (6) Thread the (S-R) and (G) leads through the eyelet on the side of the hopper on the 1E1 set.
- (7) Connect the (S-R) lead to the left side of the resistor on the 50A hopper or to terminal 15 on the 51A hopper and connect the (G) lead to the right side of the resistor on the 50A hopper or to terminal 8 on the 51A hopper.
- (8) Tie the (S-R) and (G) leads together using a D-161488 connector on the 1E3 set. Ensure the connector is insulated.
- (9) Route the inside wiring up from the grommet hole in the backplate and to the right.
- (10) Connect the tip, ring, and ground leads to terminals T, R, and G, respectively, on TB1 if the protector is not mounted in the telephone set.

(11) Make connections as follows if the protector is mounted in the telephone set:

- (a) Connect the tip and ring leads to terminals T and R, respectively, on the protector.
- (b) Connect the No. 12 AWG ground lead to terminal G on the protector.
- (c) Connect the T and R leads from the protector to terminals T and R on TB1 on the coin chassis.
- (d) Connect the No. 12 AWG ground strap from terminal G on the protector to terminal PG on TB1 on the coin chassis on the 1D-type sets.
- (e) Connect the No. 12 AWG ground strap from terminal G on the protector to terminal G on TB1 on the coin chassis on the 1C- and 1E-type sets.

(12) Reinstall the chute totalizer or the chute signal unit.

(13) Reinstall the coin cover unit (1-type set) or close the door and faceplate assembly (2-type set).

F. Return Chute Assembly

Note: The latest return chute assemblies are made of plastic and require special removal techniques.

4.27 To remove a metal return chute assembly, do the following:

- (1) Remove the coin cover unit (1-type set) or open the door and faceplate assembly (2-type set).
- (2) Remove the chute totalizer.
- (3) Loosen the return chute screw as shown in Fig. 20.
- (4) Lift the return chute assembly up and off.

4.28 To install a metal return chute assembly, do the following:

- (1) Position the return chute assembly behind the return chute screw as shown in Fig. 20.

- (2) Tighten the return chute assembly screw as shown in Fig. 20.
- (3) Install the chute totalizer or the chute signal unit.
- (4) Reinstall the coin cover unit (1-type set) or close the door and faceplate assembly (2-type set).

4.29 To remove a plastic return chute assembly, do the following:

- (1) Remove the coin cover unit (1-type set) or open the door and faceplate assembly (2-type set).
- (2) Remove the chute totalizer or the chute signal unit.
- (3) Loosen the return chute screw as shown in Fig. 20.
- (4) Raise the return chute assembly enough to clear the roundhead return chute screw.
- (5) Run the screw fully in while holding the chute assembly. (This will clear the chute slot and permit the removal of the return chute assembly without chute damage.)
- (6) Lift the return chute assembly up and off.

4.30 To install the plastic return chute assembly, do the following:

Note: Do not use excessive force when torquing down the screw on the plastic return chute. Use only sufficient torque to hold the return chute assembly in place.

- (1) Verify the return chute screw is turned fully clockwise (screwed in).
- (2) Position the return chute assembly in location.
- (3) Loosen the return chute screw enough to position the return chute assembly behind the screw.
- (4) Carefully tighten the return chute screw in place.

- (5) Reinstall the chute totalizer or the chute signal unit.
- (6) Reinstall the coin cover unit (1-type set) or close the door and faceplate assembly (2-type set).

G. Coin Return Assembly

4.31 To remove the coin return assembly, do the following:

- (1) Remove the coin cover unit (1-type set) or open the door and faceplate assembly (2-type set).
- (2) Remove the chute totalizer.
- (3) Remove the return chute assembly.
- (4) Remove the coin return assembly locking screw as shown in Fig. 20.
- (5) Insert a finger in the coin return and tilt the top forward.
- (6) Lift the coin return and pull the coin return assembly out and up.

4.32 To install the coin return assembly, do the following:

- (1) Tilt the top of the coin return assembly toward the set.
- (2) Push the coin return assembly into the set.
- (3) Push in and down on the bottom of the coin return assembly until it is flush with the front of the housing.
- (4) Install the coin return assembly locking screw and tighten only enough to hold the return assembly in place. (Further tightening can bend the screw.)
- (5) Reinstall the return chute assembly.
- (6) Reinstall the chute totalizer.
- (7) Reinstall the coin cover unit (1-type set) or close the door and faceplate assembly (2-type set).

H. 1A Coin Relay

4.33 To remove the 1A coin relay without removing the hopper assembly, do the following:

- (1) Remove the coin cover unit (1-type set) or open the door and faceplate assembly (2-type set).
- (2) Remove the chute totalizer.
- (3) Disconnect the (BK) and (Y) leads.
- (4) Remove the two relay mounting screws on the top front of the coin relay as shown in Fig. 20.
- (5) Remove the two slotted hex head screws on the sides of the coin relay.
- (6) **Warning: Do not damage the hopper trigger. Check that the hopper trigger shown in Fig. 56 is in the horizontal (up) position and pull off the coin relay.**



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

4.34 To install the 1A coin relay shown in Fig. 56, do the following:

- (1) Move the coin vane to the left (collect) position.
- (2) Move the hopper trigger in the nonoperated (horizontal) position.
- (3) Move the relay into position until the trigger enters the T-shaped slot in the hopper and trap lever tab enters the opening in the selector card.
- (4) Press down slightly on the ear of the left side of the selector card and manually move the armature forward to its operated position. Hold the armature in this position.

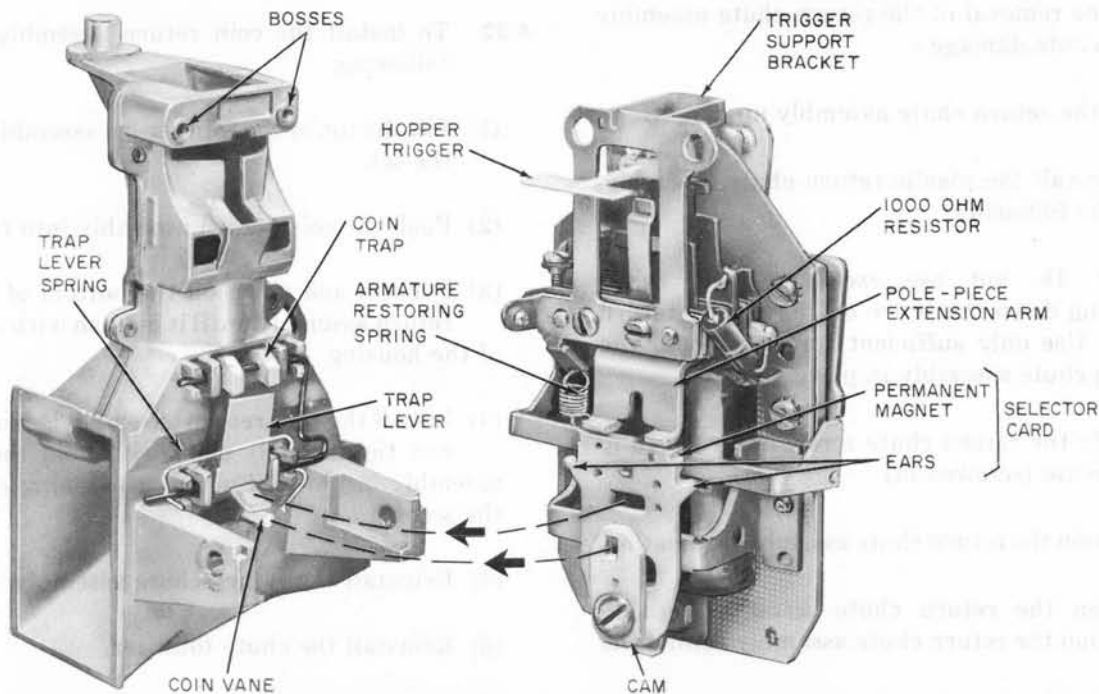


Fig. 56—Coin Hopper and Rear View of Coin Relay

- (5) Move the coin relay forward until the square stem on the vane enters the hole in the cam and the mounting screw holes line up.

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

- (6) Place and tighten evenly the two mounting screws on the top of the coin relay and the two slotted hex head mounting screws in each side of the relay.

Note: Ensure that the top screws are tightened first so the bosses shown in Fig. 56 can be properly seated.

- (7) Make sure the trigger, armature, trap, and vane operate without binding. Refer to the trap and vane release test in Table P.
- (8) Reconnect the (Y) lead to terminal G and the (BK) lead to terminal 3.
- (9) Reinstall the chute totalizer or the chute signal unit.
- (10) Reinstall the coin cover unit (1-type set) or close the door and faceplate assembly (2-type set).

I. Coin Hopper

4.35 To remove the coin hopper from the set, do the following:

- (1) Remove the coin cover unit (1-type set) or open the door and faceplate assembly (2-type set).
- (2) Remove the chute totalizer.
- (3) Remove the coin relay on the 1C- and 2C-type sets.
- (4) Disconnect the (G) and (S-R) leads from the hopper on the 1E1 sets.
- (5) Remove the vault door and coin receptacle.
- (6) Remove the two 811058098 hex socket head cap screws from the inside vault.

- (7) Lift the hopper out of the set.

4.36 Warning: Observe polarity of the diode on the 50A hopper. Do not torque the terminal screws excessively to avoid changing the direction of the spring pileup. To install the coin hopper, do the following:

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

- (1) Position the coin hopper in the set.
- (2) Insert and tighten two 811058098 hex socket head cap screws to the coin hopper from inside the vault.
- (3) Install the vault door and coin receptacle.
- (4) Connect the (G) and (S-R) leads in the 1E1 sets to terminals 8 and 15, respectively, in the coin hopper.
- (5) Reinstall the coin relay on the 1C- and 2C-type sets.
- (6) Reinstall the chute totalizer.
- (7) Reinstall the coin cover unit (1-type set) or open the door and faceplate assembly (2-type set).

J. Coin Trap and Associated Parts

4.37 To check the coin trap spring tension, do the following:

- (1) Remove the coin cover unit (1-type set) or open the door and faceplate assembly (2-type set).
- (2) Remove the chute totalizer.
- (3) Remove the return chute.
- (4) Remove the coin relay.
- (5) Operate the coin relay armature manually to its fully closed position by pushing down on the selector card ear as shown in Fig. 56.
- (6) Allow the relay to slowly return to its nonoperate position.

(7) Insert a KS-14995, List 3 tool into the hopper as shown in Fig. 57. Apply firm downward pressure (about 1/2 pound) with the tool on the coin trap in the hopper throat; but **do not force** down enough to bend or break the parts. 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 armature of the coin relay moves by this action, a new 840157333 wire spring shown in Fig. 58 should be installed. However, if the armature of the coin relay still moves with the preceding test after spring replacement, the trap lever must be replaced.

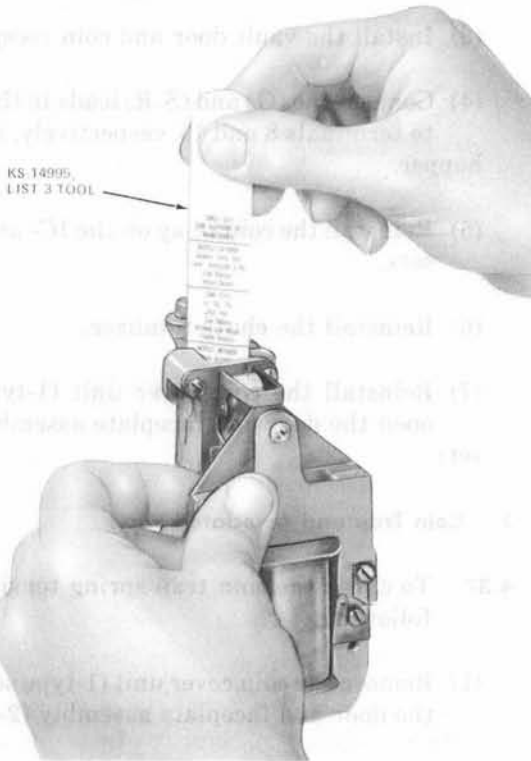


Fig. 57—Trap and Vane Release Test

4.38 To replace the 840157333 trap lever spring shown in Fig. 57, do the following:



The 840157333 trap lever springs can become deformed or twisted when several are intermixed together. This situation can be corrected by grasping each leg of a loose spring and

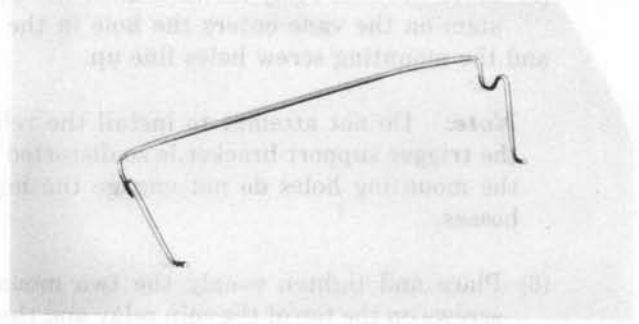
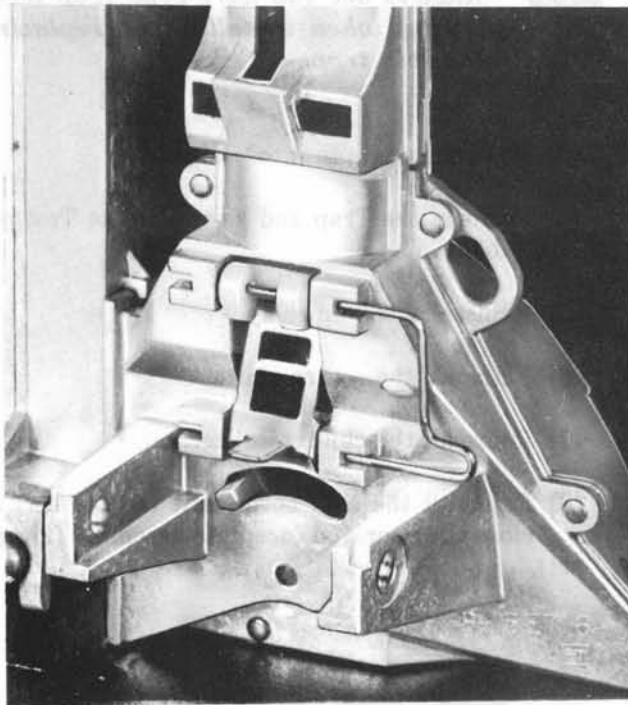


Fig. 58—840157333 Trap Lever Spring

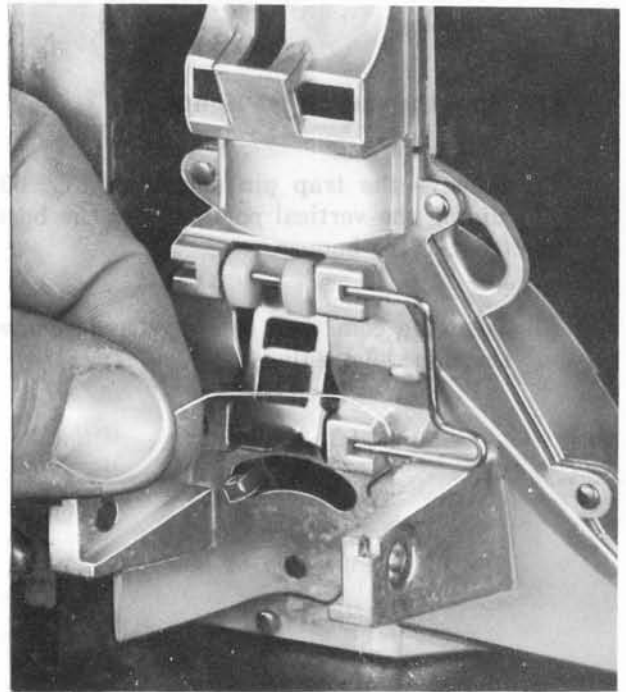
countertwisting them until both legs are aligned properly as illustrated in Fig. 58.

Note: The phosphor bronze spring should be removed before the new wire-type spring is installed.

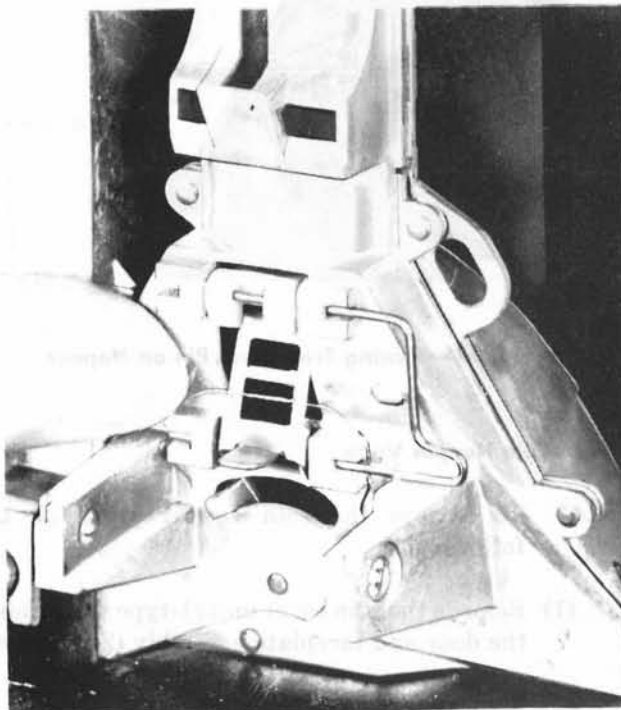
- (1) Move the trap pin to the right so the left end of the pin is flush with the hopper guide as shown in Fig. 59, Step 1.
- (2) Slide the right notched leg of the spring under the trap pin by holding the notched left leg of the new spring at an angle away from the hopper as shown in Fig. 59, Step 2.
- (3) Swing the loose end of the spring across the face of the trap lever and position the notch of the left leg in alignment with the end of the trap pin as shown in Fig. 59, Step 3.
- (4) Push the trap pin to the left, over and through the left leg notch of the new spring, until the trap pin detents as shown in Fig. 59, Step 4.
- (5) Reinstall the coin relay.
- (6) Reinstall the return chute.
- (7) Reinstall the chute totalizer.
- (8) Reinstall the coin cover unit (1-type set) or close the door and faceplate assembly (2-type set).



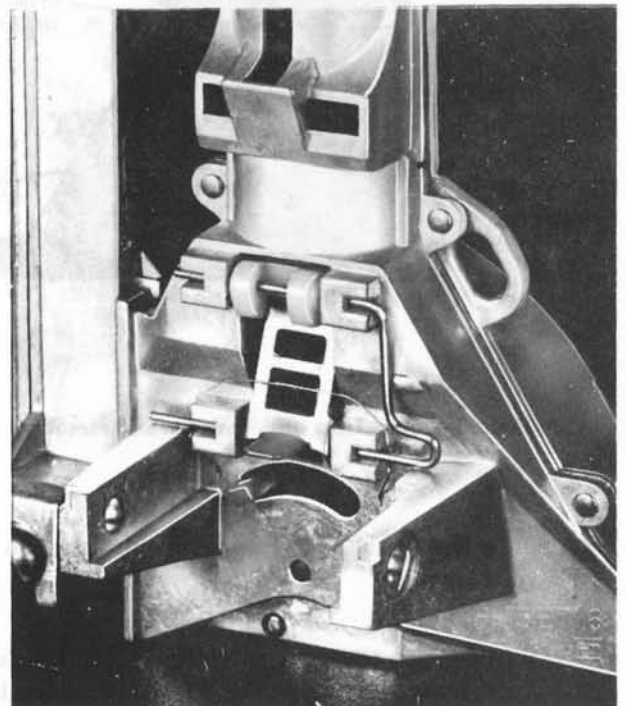
STEP 1



STEP 2



STEP 3



STEP 4

Fig. 59—Installing 840157333 Trap Lever Spring (Typical)

4.39 To remove the trap lever and coin trap, do the following:

- (1) Move the vane to the right.
- (2) Remove the trap pin shown in Fig. 60 by sliding the vertical portion over the boss on the front of the hopper.
- (3) Turn the coin trap sideways and remove it through the opening.

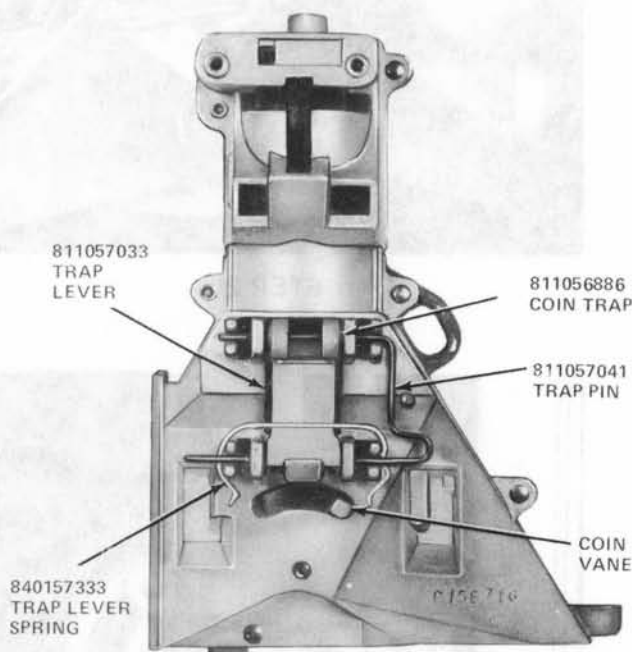


Fig. 60—Coin Trap and Trap Lever Assembly

4.40 To install the trap lever and coin trap, do the following:

- (1) Insert the trap pin partially into the hole in the hopper shown in Fig. 61 and place the trap lever on the trap pin.
- (2) Insert the coin trap in the hopper and engage the pin in the trap as shown in Fig. 62.



Always use the wire-type trap lever spring when installing or replacing the coin trap.

- (3) Push the trap pin into position.
- (4) Perform the Trap and Vane Release Test per Table P.
- (5) Reinstall the coin relay.
- (6) Reinstall the return chute.
- (7) Reinstall the chute totalizer.
- (8) Reinstall the coin cover unit (1-type set) or close the door and faceplate assembly (2-type set).

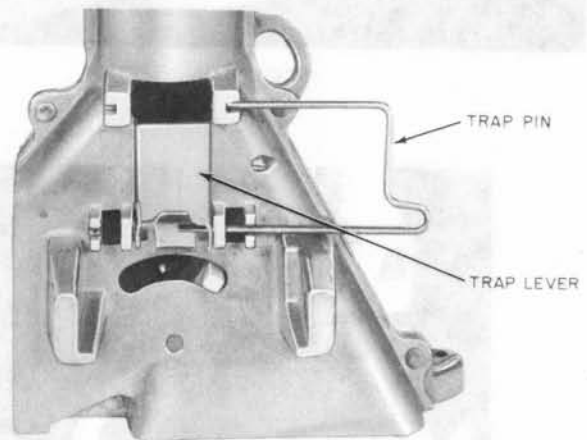


Fig. 61—Placing Trap Lever Pin on Hopper

K. Coin Hopper Vane

4.41 To remove the coin hopper vane, do the following:

- (1) Remove the coin cover unit (1-type set) or open the door and faceplate assembly (2-type set).
- (2) Remove the chute totalizer.
- (3) Remove the return chute.
- (4) Remove the coin relay.

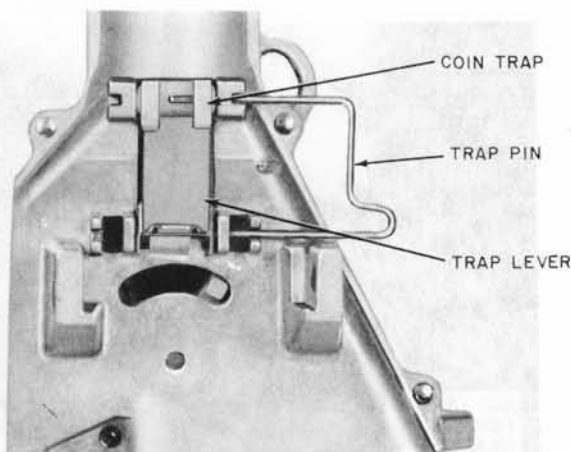


Fig. 62—Placing Coin Trap in Hopper

(5) Remove the coin trap and the associated parts.

(6) **DANGER 1:** *Stuff a cloth or equivalent in the return chute opening to prevent particles from falling into the coin return.*

(7) **DANGER 2:** *Exercise caution when using a screwdriver and long nose pliers to remove the old coin vane in order to avoid personal injury.*

(8) Break out the old coin hopper vane with long nose pliers and a screwdriver.

4.42 To install the coin hopper vane, do the following:

(1) Break the handle off of the new coin hopper vane carefully. (The handle serves as a new hinge pin as shown in Fig. 63.)

(2) Position the new coin hopper vane in the hopper shown in Fig. 64 and grasp it with long nose pliers as shown in Fig. 65.

(3) Insert the pin shown in Fig. 65 through the hopper housing and the vane until the indentations on the pin snap in place in the vane as shown in Fig. 66. Ensure that the vane moves freely.

(4) Reinstall the coin trap and the associated parts.

(5) Reinstall the coin relay.

(6) Reinstall the return chute.

(7) Reinstall the chute totalizer.

(8) Reinstall the coin cover unit (1-type set) or close the door and faceplate assembly (2-type set).

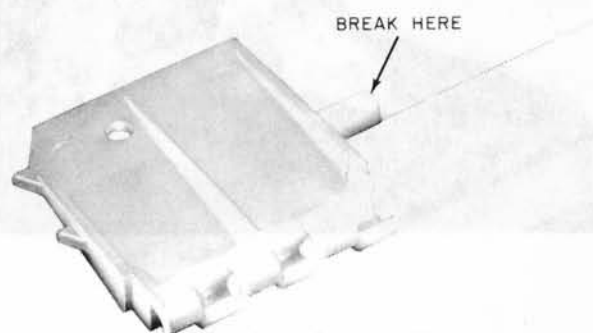


Fig. 63—840360572 Replaceable Coin Vane

L. Ringer

4.43 To remove the C4A ringer from the set, do the following:

(1) Remove the coin cover unit (1-type set) or open the door and faceplate assembly (2-type set).

(2) Remove the chute totalizer or the coin signal unit.

(3) Disconnect the (BK) and (Y) leads on the coin relay and remove the leads through the eyelet on the side of the hopper.

(4) Remove the coin chassis.

(5) Disconnect the four ringer leads (two from TB1 and two from the network).

(6) Remove the two ringer mounting screws and lift off the ringer.

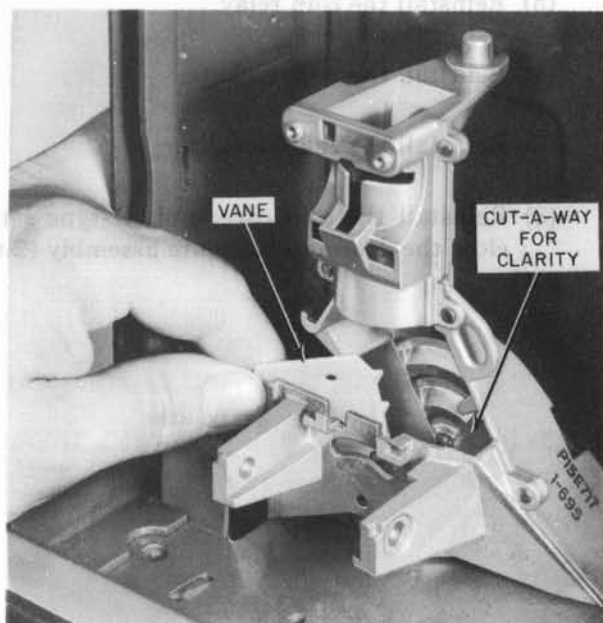


Fig. 64—Inserting Vane

4.44 To install the C4A ringer, do the following:

- (1) Mount the ringer making sure the locating pin on the bottom of the ringer is in the grommet on the chassis assembly.
- (2) Install the two ringer mounting screws.
- (3) Connect the four ringer leads per Table N.
- (4) Reinstall the coin chassis.
- (5) Feed the (BK) and (Y) leads through the eyelet on the side of the hopper.
- (6) Connect the (BK) and (Y) leads, respectively, to terminals 3 and G on the coin relay.
- (7) Reinstall the chute totalizer.
- (8) Reinstall the coin cover unit (1-type set) or close the door and faceplate assembly (2-type set).

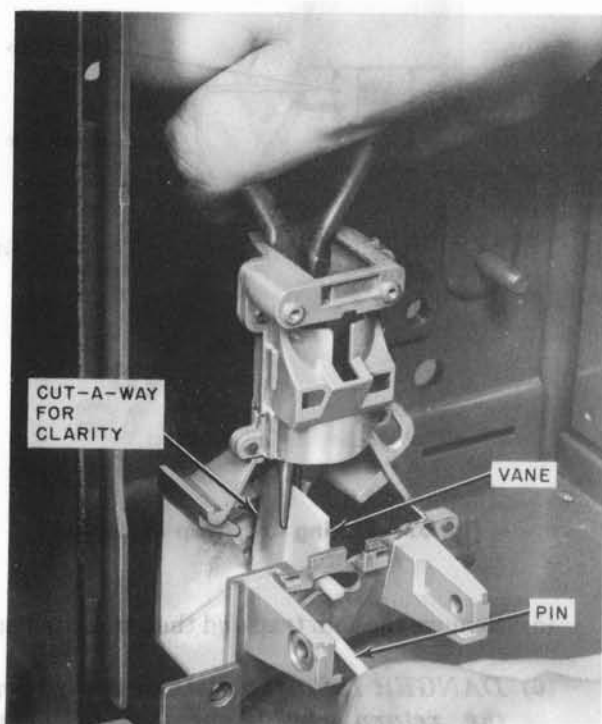


Fig. 65—Installing Pin in Vane

M. Handset

Note: A G13D amplified handset can be used. If a G13D handset should require replacement, it should only be replaced with another G13D amplified handset.

4.45 The G3AD- and G3AF-type handsets, previously used on single slot coin telephone sets are replaced, respectively, with G3AM- and G3AN-type coded handsets. The G3AM- and G3AN-type coded handsets have the following features:

- (a) Are equipped with an LB-type receiver and special field coil adapter in the handset that provides a uniform magnetic field of use to hard of hearing customers having inductive pickup type hearing aids.
- (b) Are identified by the blue rubber grommet around the armored cord at the transmitter end of the handle.

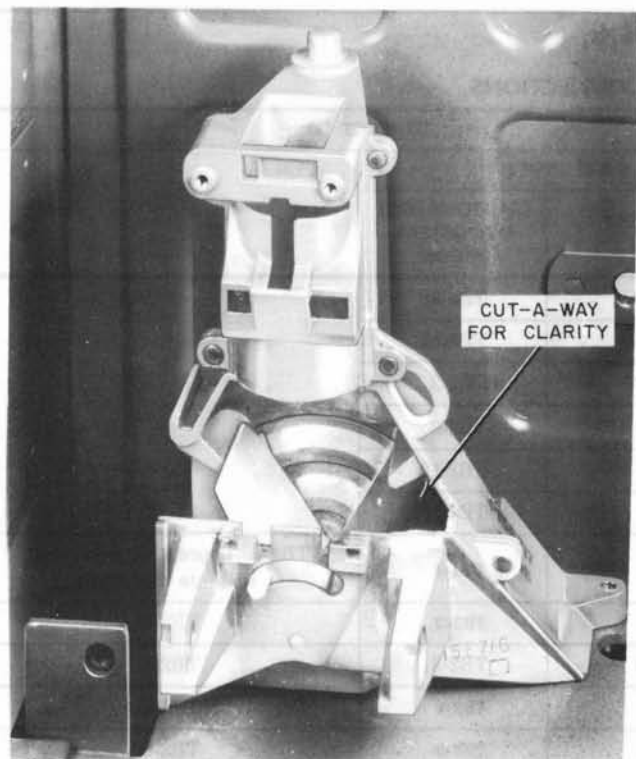


Fig. 66—Vane Installed

- (c) Have transmitter and receiver caps bonded to the telephone set handle.
- (d) Are equipped with a 3/32-inch diameter stainless steel wire rope through the armored hose assembly.
- (e) Are available in black (-03) and brown (-104) only.

4.46 The handset is tested by checking the field coil adapter. To test the field coil adapter, do the following:

- (1) Place a KS-21468, List 1 tone pickup coupler shown in Fig. 67 around the receiver cap of the handset.
- (2) Connect a 1011- or 1013-type hand 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 a tone is not heard, the field coil adapter is defective and the handset should be replaced.

4.47 The handset, if defective, is removed as follows:

- (1) Remove the coin cover unit (1-type set) or open the door and faceplate assembly (2-type set).
- (2) Disconnect the handset leads from the terminal board (TB2) on the rear of the coin dial unit.
- (3) Remove the 801816786 binding head machine screw and the 811554443 coverplate as shown in Fig. 1 and 2 that secure the handset cord to the coin dial unit.
- (4) Loosen the stay-hook screw and remove the handset cord.

4.48 The handset is installed as follows:



Replace the handset equipped with black or gray grommets with handsets containing blue grommets.

- (1) Install the handset cord and tighten the stay-hook screw.
- (2) Secure the handset cord to the coin dial unit with the 801816786 binding head machine screw and 811554443 coverplate as shown in Fig. 1 and 2.
- (3) Connect the handset leads to the terminal board TB2 on the rear of the coin dial unit per Table N.
- (4) Reinstall the coin cover unit (1-type set) or close the door and faceplate assembly (2-type set).

TABLE N
COMPONENT CONNECTIONS

COMPONENT	WIRE COLOR	CONNECT TO		
		C-SET (NOTE)		D-SET
		COIN-FIRST MODE	DIAL-TONE-FIRST OR POSTPAY 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	TB2-12	
	Y	TB2-9	TB2-13	
Touch-Tone Dial (70C)†‡	G	TB2-4	TB2-4	TB2-16 if present; otherwise, insulate and store
	W	TB2-2	TB2-2	TB2-4
	R	TB2-3	TB2-3	TB2-3
	R-G	TB2-5	TB2-5	TB2-2
	BL-R	TB2-3	TB2-3	TB2-6
	O-BK	TB2-11	TB2-11	TB2-11
	O-R	TB2-10	TB2-15 if present; otherwise, insulate and store	TB2-15 if present; otherwise, insulate and store
	W-BL	TB2-8	TB2-8	TB2-8
	O-W	Insulate and store	TB2-12	TB2-13
	V	Insulate and store	TB2-13	TB2-10
	BR	TB2-15 if present; otherwise, insulate and store	TB2-7	TB2-7
	BR	TB2-16 if present; otherwise, insulate and store	TB2-10	TB2-7
	G-W	TB2-7	TB2-16 if present; otherwise, insulate and store	TB2-1
See note and footnotes at end of table.				

TABLE N (Contd)					
COMPONENT CONNECTIONS					
COMPONENT	WIRE COLOR		CONNECT TO		
			C-SET (NOTE)		D-SET
			COIN-FIRST MODE	DIAL-TONE-FIRST OR POSTPAY MODE	
Touch-Tone Dial (70A [DA] or 70B)	G		TB2-4	TB2-4	TB2-1
	W		TB2-2	TB2-2	TB2-4
	R		TB2-5	TB2-5	TB2-3
	R-G		TB2-6	TB2-6	TB2-2
	BK		TB2-1	TB2-1	TB2-1
	O-BK		TB2-11	TB2-11	TB2-6
	O-R		TB2-10	TB2-10	TB2-5
	W-BL		TB2-7	TB2-7	TB2-7
	O-W		TB2-1	TB2-12	TB2-10
	V		TB2-10	TB2-13	TB2-13
Handset (Rotary Set)	G3-Type	G13-Type	—	—	—
	W	G	TB2-2	TB2-2	
	R	R	TB2-3	TB2-3	
	BK	BK	TB2-6	TB2-6	
	W	Y	TB2-8	TB2-8	
Handset (Touch-Tone Set With 70A [DA] or 70B Dial)	W or G	G	TB2-7	TB2-7	TB2-7
	R	R	TB2-3	TB2-3	TB2-3
	BK	BK	TB2-5	TB2-5	TB2-6
	W or Y	Y	TB2-8	TB2-8	TB2-8
Handset (Touch-Tone Set With 70C Dial)	W or G	G	TB2-2	TB2-2	TB2-4
	R	R	TB2-6	TB2-6	TB2-3
	BK	BK	TB2-5	TB2-5	TB2-6
	W or Y	Y	TB2-8	TB2-8	TB2-8
Ringer	BK		TB1-T	TB1-T	—
	R		TB1-R	TB1-R	
	S-R		Terminal A on Network		
	S		Terminal K on Network		
See note and footnotes at end of table.					

TABLE N (Contd)				
COMPONENT CONNECTIONS				
COMPONENT	WIRE COLOR	CONNECT TO		
		C-SET (NOTE)		D-SET
		COIN-FIRST MODE	DIAL-TONE-FIRST OR POSTPAY MODE	
Coin Chassis	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		
	BK	TB3-7	TB3-4	
	W-BR	Insulate and store	TB3-9	
	V-O		TB3-6	
	R-G		TB3-8	
	R-W (if present)	TB3-4	TB3-5	
Switchhook (Rotary Set)	R§	TB2-12	TB2-12	—
	G	TB2-13	TB2-9	
	S	TB2-9	TB2-9	
	O	TB2-10	TB2-10	
	O	TB2-11	TB2-11	
	W	TB2-8	TB2-8	
	Y	TB2-3	TB2-3	
Switchhook Mercury Switch (Rotary Set)	BR	TB2-11	TB2-11	—
	BR	TB2-10	TB2-10	
Switchhook (Touch-Tone Set With 70A [DA] or 70B Dial)	R§	TB2-12	TB2-12	TB2-12
	G	TB2-13	TB2-9	TB2-12
	S	TB2-9	TB2-9	TB2-12
	O	TB2-9	TB2-9	TB2-9
	O	TB2-11	TB2-11	TB2-11
	W	TB2-8	TB2-8	TB2-8
	Y	TB2-3	TB2-3	TB2-3
	S-W	TB2-14	TB2-14	TB2-14
See note and footnotes at end of table.				

TABLE N (Contd)
COMPONENT CONNECTIONS

COMPONENT	WIRE COLOR	CONNECT TO		
		C-SET (NOTE)		D-SET
		COIN-FIRST MODE	DIAL-TONE-FIRST OR POSTPAY MODE	
Switchhook (Touch-Tone Set With 70C Dial)	R	TB2-12	TB2-12	TB2-12
	G	TB2-13	TB2-11	TB2-12
	S	TB2-9	TB2-9	TB2-12
	O	TB2-9	TB2-7	TB2-9
	O	TB2-11	TB2-10	TB2-11
	W	TB2-8	TB2-8	TB2-8
	Y	TB2-3	TB2-3	TB2-3
	S-W	TB2-14	TB2-14	TB2-14
Switchhook Mercury Switch (Touch-Tone Set With 70A [DA] or 70B Dial)	BR	TB2-11	TB2-11	TB2-11
	BR	TB2-9	TB2-9	TB2-9
Switchhook Mercury Switch (Touch-Tone Set With 70C Dial)	BR	TB2-11	TB2-15 if present; otherwise, insulate and store	TB2-11
	BR	TB2-9	TB2-15 if present; otherwise, insulate and store	TB2-9

Note: The bold areas indicate differences between the coin-first and dial-tone-first modes.

* The 8WA dial has two (BL) wires instead of a (G) and (BL).

† When using a 70C dial in the C-type-set in the CF mode, the black selector cord cannot be used.

‡ When using a 70C dial in the C-type set in the DTF mode, a 61C1 coin dial unit must be used unless the older coin dial unit has been updated with a black switchhook sling from the D-181388 Kit of Parts.

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

- 840346977 } Touch-Tone Telephone Dial
- 840347173 }
- 840155402 }
- 841317241 } Rotary Dial
- 841317258 }

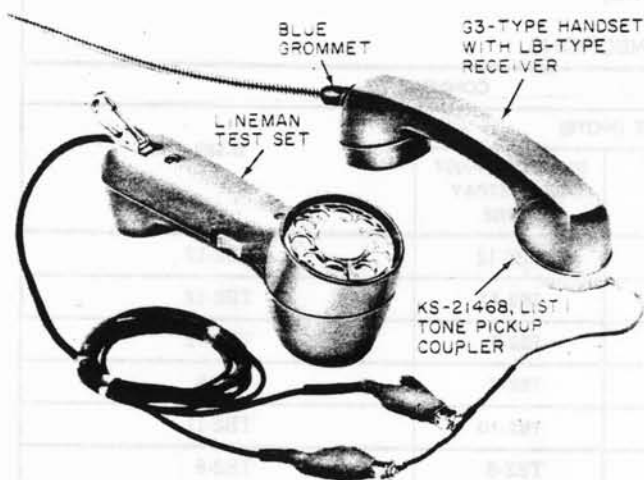


Fig. 67—KS-21468, List 1 Tone Pickup Coupler

N. Coin Dial Unit



The 70A (DA), 70B (DA), and 70C touch-tone telephone dials cannot be physically interchanged without changing the complete coin dial unit.

4.49 To remove the coin dial unit, do the following:

- (1) Remove the coin cover unit (1-type set) or open the door and faceplate assembly (2-type set).
- (2) Remove the handset and cord.
- (3) Remove the four 840157390 self-locking screws as shown in Fig. 1 and 2 and remove the coin dial unit and the handset grounding strap (if present) from the cover.

4.50 To install the coin dial unit, do the following:

Note: Ensure that the four self-locking screws are tight to prevent the coin dial unit from becoming loose due to vibration.

- (1) Install the coin dial unit in the cover and secure with the four 840157390 self-locking screws.

Note: To ensure good grounding of the armored handset cable on the newer plastic coin

dial units, a handset grounding strap (845455252) should be connected between the armored cord retainer screw and the nearest coin dial unit mounting screw above the cord entrance. A No. 18 AWG wire or larger wire can be substituted for the 845455252 strap.

- (2) Install the handset and cord.

- (3) Reinstall the coin cover unit (1-type set) or close the door and faceplate assembly (2-type set).

O. Dial

4.51 To remove the dial, do the following:

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

- (1) Remove the coin cover unit (1-type set) or open the door and faceplate assembly (2-type set).
- (2) Disconnect the dial leads from TB2.
- (3) Loosen the two mounting screws located on the sides of the dial. Access to the mounting screws is through the access holes in the housing.
- (4) Lift off the dial.

4.52 To install the dial, do the following:

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

- (1) Mount the dial on the housing.
- (2) Secure the dial on the housing by tightening the two mounting screws located on the sides of the dial. (Access the mounting screws through the access holes in the housing.) Make sure the dial is properly seated on the four locating pins.
- (3) Connect the dial leads to TB2 per Table N.

Note: To ensure good grounding of the armored handset cable on the newer plastic coin dial units, a handset grounding strap (845455252) should be connected between the armored cord retainer screw and the nearest coin dial unit mounting screw above the cord

entrance. A No. 18 AWG wire or larger wire can be substituted for the 845455252 strap.

- (4) Reinstall the coin cover unit (1-type set) or close the door and faceplate assembly (2-type set).

P. Fingerwheel

4.53 To remove the fingerwheel, do the following:

Note: The fingerwheel (840151872) is secured to the dial with a No. 4-40 setscrew (840158331).

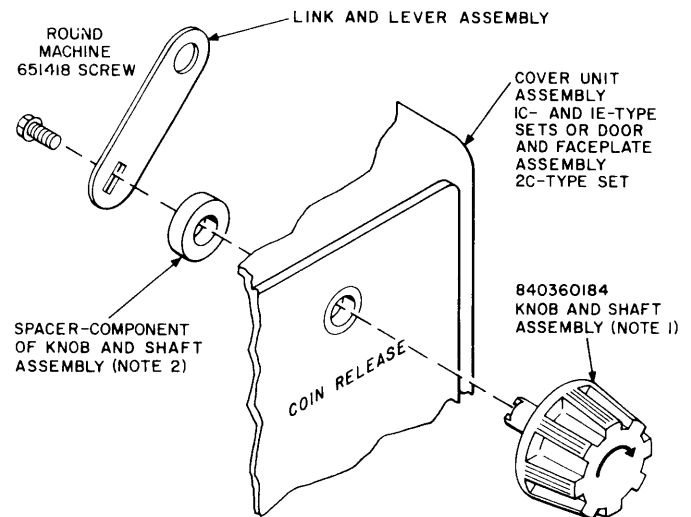
- (1) **Warning 1:** When turning the setscrew on an 8WA dial, make sure the dial is in the fully rundown position to prevent losing the setscrew.
- (2) **Warning 2:** Do not turn the setscrew beyond the stopping point as this can damage the setscrew or wrench.
- (3) Turn the setscrew in a clockwise direction by using a No. 4 (.050) Allen wrench until it clears the fingerwheel as shown in Fig. 46.
- (4) Turn the fingerwheel in a clockwise direction until the "0" hole is in the 9 position.
- (5) Lift off the fingerwheel.

4.54 To install the fingerwheel, do the following:

- (1) Verify the setscrew on the dial is turned clockwise all the way in by using a No. 4 (.050) Allen wrench.
- (2) Place the fingerwheel on the dial with the "0" hole over the 9 position.
- (3) Rotate the fingerwheel counterclockwise until it is in its normal position (fully rundown).
- (4) **Warning:** Do not overtighten the setscrew beyond the stopping point as this can damage the setscrew or wrench. Using an Allen wrench, turn the setscrew in a counterclockwise direction until the stop is reached as shown in Fig. 46.

Q. 840360184 Knob and Shaft Assembly

4.55 The knob and shaft assembly shown in Fig. 68 is used to replace the lever-type coin release handle and shaft assembly. The knob and shaft assembly is used in areas where vandalism causes damage to the internal linkage and other chute actuating components.



NOTES:

1. INSTALL THE KNOB WITH THE ARROW IN THIS POSITION.
2. USE THIS SPACER ON THE 2C-TYPE SET ONLY.

Fig. 68—Installation of 840360184 Knob and Shaft Assembly

4.56 To replace the lever-type coin release with the knob-type coin release, do the following:

- (1) Remove the coin cover unit (1-type set) or open the door and faceplate assembly (2-type set).
- (2) Remove and retain the screw that secures the link and lever assembly to the coin release lever shaft as shown in Fig. 68.
- (3) Remove the lever and shaft assembly.
- (4) Insert the knob and shaft assembly and orient the arrow on the knob as shown.

- (5) Install the steel spacer on the end of the knob and shaft assembly on the 2A-type sets as shown in Fig. 68.

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

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

- (7) Reinstall the coin cover unit (1-type set) or close the door and faceplate assembly.

R. 840358725 Handle and Shaft Assembly

4.57 To replace the handle and shaft assembly as shown in Fig. 1 on a 1-type set, do the following:

- (1) Remove the coin cover unit.
- (2) Remove and retain the screw that secures the link and lever assembly to the coin release lever shaft as shown in Fig. 68.
- (3) Remove the lever and shaft assembly.
- (4) Insert the handle and shaft assembly through the faceplate. Orient the handle and shaft assembly as shown in Fig. 1.
- (5) Place the link and lever assembly over the rear of the shaft and secure with the screw retained in Step (2).

S. Number Card (Rotary Telephone Set)

4.58 To replace the number card on an 8U (DA), 8W (DA), or 8WA dial, do the following:

Note: The fingerwheel (840151872) is secured to the dial with a No. 4-40 setscrew (840158331).

- (1) Remove the fingerwheel from the dial.
- (2) Remove the old number card.
- (3) Line up the slit in the new number card with the "V" guide on the fingerwheel. Do not remove the perforated notch on the number card.

- (4) Push the new number card into place. (This will force the slot on the number card over the guide holding the number card in place.)

- (5) Reinstall the fingerwheel on the dial.

T. Number Card and Window (Touch-Tone Telephone Set)



The window, bracket, and nuts (or push-on fasteners) are available in the D-180567 kit for a 1-type set and the D-180655 kit for a 2-type set for maintenance purposes.

4.59 To replace the number card on a touch-tone telephone set, do the following:

- (1) Remove the coin cover unit (1-type set) or open the door and faceplate assembly (2-type set).
- (2) Remove the coin dial unit.
- (3) Remove the fasteners that are securing the window and number card.

Note: Push-on fasteners are used on the 1-type coin sets and hex nuts are used on the 2-type coin sets.

- (4) Remove the old number card from the window.
- (5) Insert the new number card in the window as shown in Fig. 47.
- (6) Secure the window and new number card using fasteners removed in Step (3) as shown in Fig. 48.

- (7) Reinstall the coin dial unit.

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

- (8) Reinstall the coin cover unit (1-type set) or close the door and faceplate assembly (2-type set).

U. Instruction Card (1-Type Set)

4.60 The customer instruction card is not furnished and must be obtained locally. To

remove the instruction card from the housing, do the following:

- (1) Loosen the card-locking setscrew (if provided) in the faceplate using a No. 4 (.050) Allen wrench by turning it counterclockwise.
- (2) Push up the instruction card with your fingers as shown in Fig. 28.
- (3) Pry the bottom of the instruction card out with a small screwdriver or equivalent.

4.61 To install the instruction card in the housing, do the following:

- (1) Verify the card-locking setscrew (if provided) in the faceplate is loose using a No. 4 (.050) Allen wrench and turning the setscrew counterclockwise.
- (2) Insert the instruction card in the slot in the faceplate and push it up with your fingers as shown in Fig. 28.
- (3) Snap the instruction card in place.
- (4) Ensure that the instruction card is seated properly in the slot.
- (5) Tighten the card-locking setscrew in the faceplate (if provided) using a No. 4 (.050) Allen wrench and turning it clockwise as shown in Fig. 29.

V. Instruction Card (2-Type Set)

4.62 The customer instruction card is not furnished and must be obtained locally. The instruction card is secured to the coin telephone set in one of the following methods:

- (a) An 812360410 card spring (DA) is provided in the bottom of each card slot on the early 2-type sets. This spring puts pressure on the bottom of the card to hold it in place.
- (b) A cam, located in the top of each card slot on the later 2-type sets, holds the card secure. The cam is operated with a No. 4 (.050) Allen wrench.

4.63 To remove the instruction card from a coin telephone set that is equipped with a spring, do the following:

- (1) Push down the instruction card (in the housing faceplate) by using your fingers as shown in Fig. 34.
- (2) Pry out the old instruction card from the top using a small screwdriver or equivalent.

4.64 To install a new instruction card in a coin telephone set that is equipped with a spring, do the following:

- (1) Insert the new instruction card into the slot of the faceplate.
- (2) Push down on the instruction card using your fingers as shown in Fig. 34.
- (3) Snap the instruction card into place in the faceplate.
- (4) Ensure that the card is seated properly.

4.65 To remove the instruction card from a coin telephone set equipped with a cam, do the following:

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

4.66 To install a new instruction card in a coin telephone set equipped with a cam, do the following:

- (1) Turn the cam until the low side is adjacent to the card opening using a No. 4 (.050) Allen wrench.
- (2) Insert the instruction card into the slot in the faceplate.
- (3) Push up the instruction card in the slot with your fingers as shown in Fig. 35.

- (4) Snap the instruction card into place.
- (5) Ensure that the instruction card is seated properly in the slot.
- (6) Secure the instruction card in the slot by turning the cam 180 degrees (either clockwise or counterclockwise).

5. OPERATION TESTS



For 1-type sets, the tests specified in Tables O through S shall be used to ensure proper set operation. For 2-type sets, the tests specified in Tables O and P shall be used to ensure proper set operation. On trouble reports of coins collected or returned in error, try to obtain the area code and the telephone number of the called party to facilitate tracing trouble in the central office. For additional tests relating to general coin service, refer to Section 506-900-503 or to the Public Services Maintenance Check Booklet.

5.01 The following apparatus is required to do the operation test:

- For 1-type sets, a KS-20950, List 2 cover parking tool shown in Fig. 69 (Note) or a P11C test cord as shown in Fig. 70

Note: Any KS-20950, List 1 tool that shows excessive movement (looseness) or loose rivets should be replaced with a new tool (preferably the List 2 if available), to avoid dropping the front cover.

- For 2-type sets, a P11C test cord
- Coins (1 penny, 2 nickels, 1 dime, and 2 quarters)
- KS-14995, List 3 coin trap and vane release tool as shown in Fig. 71
- 146B bias margin gauge as shown in Fig. 72.

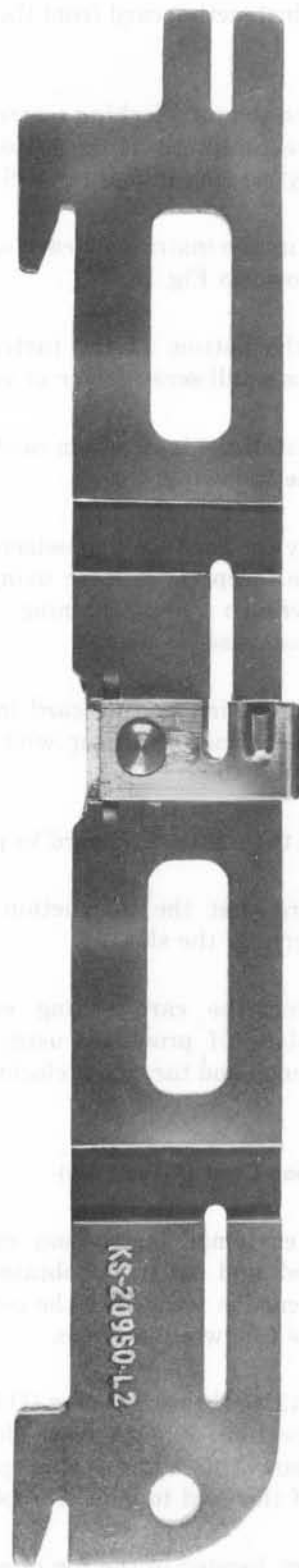


Fig. 69—KS-20950, List 2 Cover Parking Tool

5.02 Table O includes the following operation tests for the DTF service:

- Dial Tone
- Totalizer and Coin Relay Operation
- Trap and Vane Release
- Coin Relay Bias Margin
- Testing with ACTS.

5.03 Table P includes the following tests for the CF service:

- Totalizer and Coin Relay Operation (on-hook)
- Totalizer Operation (off-hook)

- Dial Shorting
- Trap and Vane Release
- Coin Relay Bias Margin
- Testing with ACTS.

5.04 Table Q includes the operation tests for the DPP service where the ACTS is not available.

5.05 Table R includes the operation tests for the DPP service where the ACTS is available.

5.06 Table S includes the operation tests for the MPP service.

5.07 Refer to Table T for operate values on the coin relay.



Fig. 70—P11C Test Cord


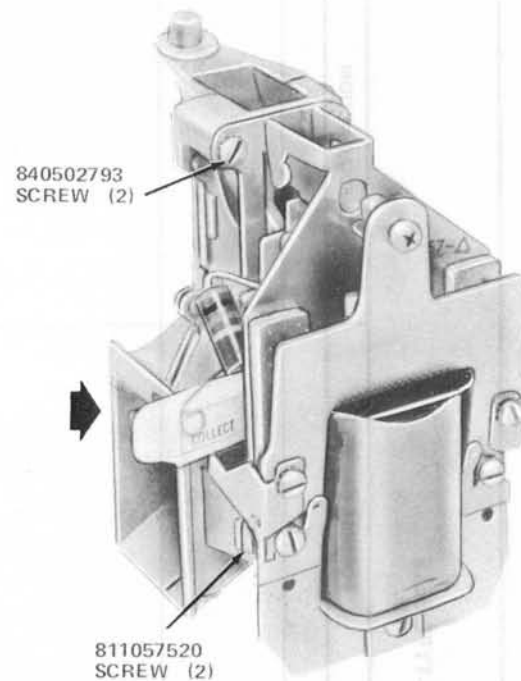
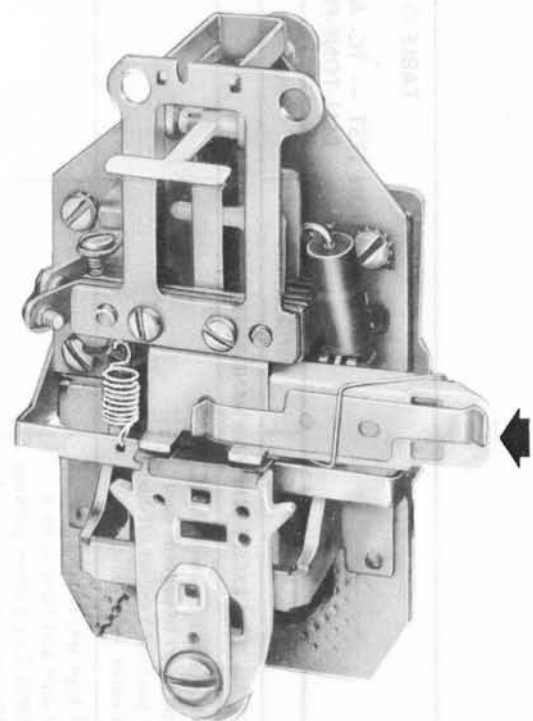
	
	SINGLE SLOT COIN TELEPHONE SET MAINTENANCE
	INSPECT EXTERIOR Handset, Cords, Dial Cards: Instruction & No Coin Release, Return Bucket
	COIN TESTS 5c, 10c, 25c Dial Tone Coin Return On-Hook Coin Return Trouble Analysis
	INSPECT INTERIOR Chute Assembly Connections, Plugs Switchhook
	COIN RELAY Bias Margin,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

Fig. 71—KS-14995, List 3 Tool



SIDE VIEW



BACK VIEW

Fig. 72—Bias Margin Gauge in Position for Collect Test

TABLE O
OPERATION TEST — 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 (1-type only) to prevent cord from pushing handset off-hook when cover is set down.	—	—	—	—
2	For 1-type set, remove coin cover unit and hang it on a KS-20950, List 2 cover parking tool (Fig. 69). If parking tool is not available or cannot be used at station, disconnect P1, place coin cover unit on a firm level surface, and connect a P11C cord between P1 and J1 of 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. Traffic overload. Switchhook contacts SH1 not making. P1 and P2 reversed. Totalizer in CF mode. TB2 not wired correctly. TB3 not wired correctly.	Replace handset. Wait. Clean contacts or replace coin dial unit. Reconnect properly. Switch to DTF mode. Wire correctly. Wire correctly.

TABLE O (Contd)

**OPERATION TEST — 1C- AND 2C-TYPE SETS
DIAL-TONE-FIRST**

TABLE O (Contd)					
OPERATION TEST — 1C- AND 2C-TYPE SETS					
DIAL-TONE-FIRST					
STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
DIAL-TONE-FIRST (Contd)					
4 (Contd)	Go off-hook. (Contd)	Dial tone received. (Contd)	No dial tone. (Contd)	Defective totalizer.	Replace totalizer.
				Defective wiring in chassis or coin dial unit.	Replace defective apparatus.
				Nonstation trouble.	Refer to test desk.
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 not breaking.	Replace coin dial unit.
				Defective coin trunk.	Refer to test desk.
				Defective totalizer.	Replace defective apparatus.
				Defective chassis.	
				Defective coin relay.	
				Defective dial.	Replace dial.
Tip, ring, or ground reversed.	Wire correctly.				
7	Deposit nickel less than initial rate and dial a number that requires initial rate.	Dial tone breaks.	Dial tone does not break.	Defective chassis.	Replace chassis.
				Initial rate set incorrectly.	Reset rate.
				TB3 not wired correctly.	Wire correctly.
				Totalizer contacts T1 making with less than initial rate deposited.	Reset totalizer rate or replace totalizer.
				Traffic overload.	Wait and repeat test.
				Nonstation trouble.	Refer to test desk.

TABLE O (Contd)

OPERATION TEST — 1C- AND 2C-TYPE SETS

DIAL-TONE-FIRST

TABLE O (Contd)					
OPERATION TEST — 1C- AND 2C-TYPE SETS					
DIAL-TONE-FIRST					
STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
TOTALIZER AND COIN RELAY OPERATION (Contd)					
8	Depress switchhook.	Coin returned. Note: Coin may have already returned on announcement trunk seizure.	Coin not returned.	Switchhook contacts not breaking.	Replace coin dial unit.
				Defective coin trunk.	Refer to test desk.
				Traffic overload.	
				Nonstation trouble.	
				Defective totalizer.	Replace defective apparatus.
				Defective chassis.	
				Defective coin relay.	
9	Go off-hook, deposit initial rate, dial a number that requires a deposit. Note: Ensure that called number will not be answered.	Ring tone heard in handset.	Insufficient deposit recording heard.	Initial rate set for more than deposit.	Reset rate.
				Defective T1 or F contacts in totalizer.	Replace defective apparatus.
				Defective chassis.	
				Switchhook SH3 (NO) not making.	Clean contact, replace coin dial unit.
10	Go on-hook.	Coins returned.	Coins not returned.	TB3 not wired correctly.	Wire correctly.
				Defective coin trunk.	Refer to test desk.
				Nonstation trouble.	
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					
Note: Refer to Table P.					
COIN RELAY BIAS MARGIN TEST					
Note: Refer to Table P.					

TABLE O (Contd)

**OPERATION TEST — 1C- AND 2C-TYPE SETS
DIAL-TONE-FIRST**

TABLE O (Contd)					
OPERATION TEST — 1C- AND 2C-TYPE SETS					
DIAL-TONE-FIRST					
STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
RETURNING SET TO NORMAL OPERATION WHERE ACTS IS NOT AVAILABLE					
12	Call operator. Deposit nickel, dime, and quarter.	Coins identified by operator.	Improper coin tone signals.	Defective totalizer.	Replace defective apparatus.
13	Listen for coin tones in handset as coins are deposited.	Low coin tones heard in handset.	Loud coin tones heard in handset.	Defective chassis.	
14	Request operator to return coins.	Coins returned.	Coins not returned.	Defective chassis.	
15	Request operator to ring back (hang up).	Ringer operates at maximum volume.	No ringback or low volume.	Nonstation trouble.	Repeat request and if failure reoccurs, refer to test desk.
16	Call dial test number and verify all touch-tone telephone frequencies (if applicable).	—	—	Defective ringer or leads.	Replace ringer.
				Ringer out of adjustment.	Adjust.
				Open ringer capacitor in network.	Replace chassis.
				Improper line assignment.	Refer to test desk.
RETURNING SET TO NORMAL OPERATION WHERE ACTS IS AVAILABLE					
17	Dial ACTS test line. (Number supplied by local supervision.)	Announcement "COIN TEST" is heard. After 1 second silence, announcement "PLEASE DEPOSIT NICKEL" is heard.	Announcement not heard. Note: If coin test line is busy, reorder tone will be heard.	Nonstation trouble.	Refer to test desk.
18	Deposit a nickel. Note: Dime and quarter are verified in same manner.	Test line identifies coin by announcement "NICKEL." Note: Dime and quarter are verified in same manner as a nickel.	Announcement "TIMING ERROR" is heard. Note: If retest is desired, do not hang up. After 1/2 second, "PLEASE DEPOSIT NICKEL" announcement will be repeated.	Defective totalizer.	Replace defective apparatus. (If trouble persists, refer to test desk for loop analysis, i.e., bridge tap or excessive loading.)

TABLE O (Contd)
OPERATION TEST — 1C- AND 2C-TYPE SETS
DIAL-TONE-FIRST

STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
RETURNING SET TO NORMAL OPERATION WHERE ACTS IS AVAILABLE (Contd)					
18 (Contd)	Deposit a nickel. Note: Dime and quarter are verified in same manner. (Contd)	Test line identifies coin by announcement "NICKEL." Note: Dime and quarter are verified in same manner as a nickel. (Contd)	No immediate announcement. Note: Coin signals of improper level and/or frequency are not recognized and are treated as if no coin was deposited. If no coin is detected within 6 seconds after original request for deposit, request will be repeated for retest. If no coin is detected after three additional requests, announcement "TEST HAS ENDED" will be made and test line will disconnect.	Defective chassis.	Replace defective apparatus. (If trouble persists, refer to test desk for loop analysis, i.e., bridge tap or excessive loading.)
			Test line recognized a coin other than that deposited. Note: This can occur during the basic sequence if improper coin is deposited or if totalizer generates an improper signal. Test line identifies coin as detected, returns coin then repeats previous coin request announcement.	Defective totalizer.	
19	Listen for coin tones in handset as coins are deposited.	Low coin tones heard in handset.	Loud coin tones heard in handset.	Defective chassis.	Replace chassis.

TABLE O (Contd)					
OPERATION TEST — 1C- AND 2C-TYPE SETS DIAL-TONE-FIRST					
STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
RETURNING SET TO NORMAL OPERATION WHERE ACTS IS AVAILABLE (Contd)					
20 (Optional)	Deposit additional coins in any sequence if desired; however, a 2-minute overall time limit is placed on each test call. If this is exceeded, an announcement "TEST HAS ENDED" will be heard, a coin return signal will be generated, and connection will be broken.	Test line will identify coins as deposited.	Same as Step 18.	Same as Step 18.	Same as Step 18.
21	Hang up handset.	Coins return.	Coins do not return.	Nonstation trouble.	Refer to test desk.
22	Dial station under test from a nearby telephone or call operator and request operator to call back, go on-hook, and wait for incoming calls.	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.
				Nonstation trouble.	Refer to test desk.

TABLE P
OPERATION TEST — 1C- AND 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 (1-type only) to prevent cord from pushing handset off-hook when cover is set down.	—	—	—	—
2	For a 1-type set, remove coin cover unit and hang it on a KS-20950, List 2 cover parking tool (Fig. 69). If parking tool is not available or cannot be used at station, disconnect P1, place coin cover unit 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. Connect a P11C cord between P1 and J1.	—	—	—	—
TOTALIZER AND COIN RELAY OPERATION (ON-HOOK)					
Note: On repeated "No Dial Tone" reports, a totalizer current flow test should be performed in addition to the following.					
4	Deposit penny and operate coin release mechanism.	Coin is returned.	Coin does not return.	Blocked coin chute. Defective coin release mechanism.	Clear. Replace defective linkage.
5	Deposit quarter in chute.	Coin relay refunds coin.	Coin does not return or coin is collected.	Blocked coin chute. Tip and ring reversed or coin trunk trouble. P1 and P2 reversed. Totalizer in DTF mode (1C- and 2C-type set only). TB3 not wired correctly (1C- and 2C-type set only).	Clear. Reconnect or refer to test desk. Reconnect properly. Switch to CF mode. Wire correctly.

TABLE P (Contd)

OPERATION TEST — 1C- AND 2C-TYPE SETS
COIN-FIRST

STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
TOTALIZER AND COIN RELAY OPERATION (ON-HOOK) (Contd)					
5 (Contd)	Deposit quarter in chute. (Contd)	Coin relay refunds coin. (Contd)	Coin does not return or coin is collected. (Contd)	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.	Clear contacts or replace coin dial unit.
				Switchhook contacts SH2 and SH4 not breaking.	Adjust contacts or replace coin dial unit.
				Defective totalizer.	Replace defective apparatus.
				Defective A relay.	
				Defective handset.	
				Defective dial (touch-tone telephone set only).	
				Defective wiring in dial housing or chassis.	
6	Deposit nickel.	Nickel returned.	Nickel does not return.	Defective coin relay.	Wire correctly.
				Coin relay improperly wired.	
				Switchhook transfer contacts SH1 (NC) or SH3 (NC) not making.	
				TB2 not wired correctly.	
				Defective wiring in dial housing or chassis.	
				Traffic overload.	Wait for refund pulse.

TABLE P (Contd)
OPERATION TEST — 1C- AND 2C-TYPE SETS
COIN-FIRST

STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
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.
				Switchhook transfer contacts SH3 (NC) not breaking (rotary dial sets only).	Replace coin dial unit.
				Defective chassis or chassis wiring.	Replace chassis or correct wiring.
				Defective wiring in coin dial unit.	Replace coin dial unit.
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 coin dial unit.
				Switchhook transfer contacts SH1 (NO) not making.	
				Totalizer set for more than initial rate.	Reset totalizer rate.
				Conduct current flow test on totalizer and measure loop and ground resistance with test desk.	Test action according to testboard results.
				T1 contacts (NO) not making.	Replace totalizer.
				F contacts (NC) not making.	
				Defective wiring in coin dial unit.	Replace coin dial unit.
				Defective dial.	
				Defective chassis.	Replace defective apparatus.
				Defective totalizer.	
				Totalizer transfer contacts T2 (NC) not making (totalizer steps continuously).	Replace totalizer.

TABLE P (Contd)
OPERATION TEST — 1C- AND 2C-TYPE SETS
COIN-FIRST

TABLE P (Contd)					
OPERATION TEST — 1C- AND 2C-TYPE SETS					
COIN-FIRST					
STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
TOTALIZER OPERATION (OFF-HOOK) (Contd)					
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 dial.
				Defective handset (touch-tone telephone only).	Replace defective apparatus.
				Defective wiring in chassis or coin dial unit.	
10	Go on-hook.	Coins not returned.	Coins returned.	Defective dial.	Replace dial.
			Coins returned.	Traffic overload.	Wait for refund pulse.
				Coin trunk trouble.	Refer to test desk.
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.
				Traffic overload.	Wait for refund pulse.
13	Go on-hook.	Coins returned.	Coins not returned.	Traffic overload.	Wait for refund pulse.
				Coin trunk trouble.	Refer to test desk.
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.
17	Hang up handset.	Nickel returns.	Nickel does not return.	Traffic overload.	Wait for coin return pulse.
				Defective coin trunk.	Refer to test desk.

TABLE P (Contd)

OPERATION TEST ANALYSIS — 1C- AND 2C-TYPE SETS
COIN-FIRST

STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
TRAP AND VANE RELEASE TEST					
18	Remove chute totalizer from set.	—	—	—	—
19	Remove coin relay dust cover.	—	—	—	—
Caution: Tilt selector card by pressing down on one of the ears before manually operating coin relay. This avoids jamming selector card and cam engaging surfaces.					
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, List 3 tool into hopper to operate trap to limit of its travel (Fig. 57).	—	—	—	—
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 realign relay; tighten screws.
			Vane does not restore properly.	Vane binds.	Replace relay.
			Trap does not operate, restore, or lock properly.	Vane broken.	Remove coin relay from hopper and free vane.
				Trap broken.	Replace vane.
				Trap spring bent or broken.	Replace defective apparatus.
				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 and coin trap moves downward.	—	—	—

TABLE P (Contd)
OPERATION TEST — 1C AND 2C-TYPE SETS
COIN-FIRST

STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
TRAP AND VANE RELEASE TEST (Contd)					
24	With armature fully operated, insert KS-14995, List 3 tool into hopper to operate trap to limit of its travel (Fig. 57).	—	—	—	—
25	Release armature and slowly withdraw tool.	Same as Step 22.	Same as Step 22.	Same as Step 22.	Same as Step 22.
26	Install dust cover.	—	—	—	—
27	Install chute totalizer.	—	—	—	—
COIN RELAY BIAS MARGIN TEST					
Note: Make this test when coin relay fails to operate properly or on repeated reports of coins do not return.					
28	Remove coin relay dust cover.	—	—	—	—
29	Go off-hook, obtain dial tone, call test desk, and request bias margin test. (Use central office test circuit where available.)	—	—	—	—
30	Slip 146B bias margin gauge over left pole piece extension arm from left side of coin relay (Fig. 72).	—	—	—	—
31	Request test desk to apply central office collect (or return) voltage as indicated in 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.	Replaces coin relay.

TABLE P (Contd)
OPERATION TEST — 1C AND 2C-TYPE SETS
COIN-FIRST

STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
COIN RELAY BIAS MARGIN TEST (Contd)					
32	Reverse 146B bias margin gauge by turning it around on same pole piece extension arm.	—	—	—	—
33	Request test desk to collect (or refund) as indicated on 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 and request test desk to perform coin relay current flow test.	—	—	—	—
35	Go on-hook.	—	—	—	—
36	Install dust cover.	—	—	—	—
RETURNING SET TO NORMAL OPERATION WHERE ACTS IS NOT AVAILABLE					
37	Call operator. Deposit nickel, dime, and quarter.	Coins identified by operator.	Improper coin tones.	Defective totalizer.	Replace totalizer.
				Defective chassis.	Replace chassis.
38	Listen for coin tones in handset as coins are deposited.	No coin tones or low level coin tones heard in handset.	Loud 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 test desk.
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.
				Nonstation trouble.	Refer to test desk.
41	Call dial test number and verify all touch-tone telephone frequencies (if applicable).	—	—	—	—

TABLE P (Contd)

OPERATION TEST — 1C AND 2C-TYPE SETS

COIN-FIRST

STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
RETURNING SET TO NORMAL OPERATION WHERE ACTS IS AVAILABLE					
42	Dial ACTS test line. (Number supplied by local supervision.) Note: Initial rate deposit is required in coin-first service.	Coin(s) returned (coin-first only). Announcement "COIN TEST" is heard. After 1 second silence, announcement "PLEASE DEPOSIT NICKEL" is heard.	Deposited coin(s) do not return. Announcement not heard. Note: If coin test line is busy, reorder tone will be heard.	Nonstation trouble.	Refer to test desk.
43	Deposit a nickel. Note: Dime and quarter are verified in same manner.	Test line identifies coin by announcement "NICKEL". Note: Dime and quarter are verified in same manner as a nickel.	Announcement "TIMING ERROR" is heard. Note: If retest is desired, do not hang up. After 1/2 second, "PLEASE DEPOSIT NICKEL" announcement will be repeated.	Defective totalizer.	Replace defective apparatus. (If trouble persists, refer to test desk for loop analysis, i.e., bridge tap or excessive loading.)
			No immediate announcement. Note: Coin signals of improper level and/or frequency are not recognized and are treated as if no coin was deposited. If no coin is detected within 6 seconds after original request for deposit, request will be repeated for retest. If no coin is detected after three additional requests, announcement "TEST HAS ENDED" will be made and test time will disconnect.	Defective chassis.	

TABLE P (Contd)
OPERATION TEST — 1C- AND 2C-TYPE SETS
COIN-FIRST

STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
RETURNING SET TO NORMAL OPERATION WHERE ACTS IS AVAILABLE (Contd)					
43 (Contd)	Deposit a nickel. Note: Dime and quarter are verified in same manner. (Contd)	Test line identifies coin by announcement "NICKEL". Note: Dime and quarter are verified in same manner as a nickel. (Contd)	Test line recognizes a coin other than that deposited. Note: This can occur during basic sequence if improper coin is deposited or if totalizer generates an improper signal. Test line identifies coin as detected, returns coin, and then repeats previous coin request announcement.	Defective totalizer.	Replace defective apparatus. (If trouble persists, refer to test desk for loop analysis, i.e., bridge tap or excessive loading.)
44	Listen for coin tones in handset as coins are deposited.	Low coin tones heard in handset.	Loud coin tones heard in handset.	Defective chassis.	Replace chassis.
45 (Optional)	Deposit additional coins in any sequence if desired; however, a 2-minute overall time limit is placed on each test call. If this is exceeded, an announcement "TEST HAS ENDED" will be heard, a coin return signal will be generated, and connection will be broken.	Test line will identify coins as deposited.	Same as Step 43.	Same as Step 43.	Same as Step 43.
46	Hang up handset.	Coins return.	Coins do not return.	Nonstation trouble.	Refer to test desk.
47	Dial station under test from a nearby telephone or call operator to call back. Go on-hook. Wait for incoming call.	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.
				Nonstation trouble.	Refer to test desk.

TABLE Q

**OPERATION TEST — 1E1 SET
DIAL POSTPAY WHERE ACTS IS NOT AVAILABLE**

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 coin cover unit and hang it on a KS-20950, List 2 cover parking tool (Fig. 69). If parking tool is not available or cannot be used at station, disconnect P1, place coin cover unit on a firm level surface, and connect a P11C cord between P1 and J1 of 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 and SH4 (NO) not making.	Clean contacts or replace coin dial unit.
				P1 and P2 reversed.	Reconnect properly.
				Totalizer in CF mode.	Switch to DTF mode.
				TB2 not wired correctly.	Wire correctly.
				Defective totalizer.	Replace totalizer.

TABLE Q (Contd)					
OPERATION TEST — 1E1 SET					
DIAL POSTPAY WHERE ACTS IS NOT AVAILABLE					
STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
DIAL TONE TESTS (Contd)					
4 (Contd)	Go off-hook. (Contd)	Dial tone heard. (Contd)	No dial tone. (Contd)	Defective wiring in chassis or coin dial unit.	Replace defective apparatus.
				Nonstation trouble.	Refer to test desk.
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 trouble.	Refer to test desk and correct trouble.
				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).	
7	Listen for coin tones in handset as coins are deposited.	Low tones may be heard.	Loud tones are heard.	Ring and tip reversed.	Correct.
				Nonstation trouble.	Refer to test desk.
				Defective chassis.	Replace chassis.
8	If KS-14995, List 3 tool was installed, disengage chute locking spring: slowly pull top of chute forward while holding KS-14995, List 3 tool. Lift chute and tool out of set and retrieve coins.	—	—	—	—

TABLE Q (Contd)
OPERATION TEST — 1E1 SET
DIAL POSTPAY WHERE ACTS IS NOT AVAILABLE

STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
TOTALIZER OPERATION (Contd)					
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 made properly.	Identification cannot be made.	Nonstation trouble.	Refer to test desk.
				Nonstation trouble.	Refer to test desk.
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, deposits coin tone.	No dial tone.	Traffic overload.	Wait and repeat test.
			Audible ringing not heard.		
14	Refer to Step 3. Deposit 5 cents less than initial rate.	Deposit coin tone remains.	Deposit coin tone not heard.	Nonstation trouble.	Refer to test desk.
			Deposit coin tone stops.	Initial rate set incorrectly.	Reset rate.
				Wrong code totalizer or defective totalizer.	Replace totalizer.
15	Deposit additional coins up to initial rate.	Deposit coin tone stops. Talk path is established.	Totalizer reads out.	Defective chassis.	Replace chassis.
			Deposit coin tone does not stop.	Initial rate set for more than deposit.	Reset rate.
			Defective hopper.	Defective hopper.	Replace defective apparatus.
			Defective totalizer.	Defective totalizer.	Refer to test desk.
			Nonstation trouble.	Nonstation trouble.	

TABLE Q (Contd)

**OPERATION TEST — 1E1 SET
DIAL POSTPAY WHERE ACTS IS NOT AVAILABLE**

STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
TOTALIZER OPERATION (Contd)					
16	If KS-14995, List 3 tool was installed, disengage chute locking spring; <i>slowly pull top of chute forward while holding KS-14995, List 3 tool</i> . Lift chute and tool out of set and retrieve coins.	—	—	—	—
17	Hang up.	Totalizer restores.	Totalizer does not restore.	Defective coin dial unit. Defective chassis. Nonstation trouble.	Replace defective apparatus. Refer to test desk.
18	Return set to normal operation.	—	—	—	—

TABLE R
OPERATION TEST — 1E1 SET
DIAL POSTPAY WHERE ACTS IS AVAILABLE

STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
1	If set has a 51A hopper, a KS-14995, List 3 tool can be inserted between coin chute and hopper to prevent loss of deposited coins. If set has a 50A hopper, test cannot be performed without losing coins.	—	—	—	—
2	Go off-hook	Dial tone heard.	No dial tone.	Defective handset. Traffic overload. Switchhook contacts SH1 (NO) or SH2 and SH4 (NO) not making. P1 and P2 reversed. Totalizer in CF mode. TB2 not wired correctly. Defective totalizer. Defective wiring in chassis or coin dial unit.	Replace handset. Wait and repeat test. Clean contacts or replace coin dial unit. Reconnect properly. Switch to DTF mode. Wire correctly. Replace totalizer. Replace defective apparatus.
3	Dial ACTS test line.	Announcement "COIN TEST" is heard. After 1 second silence, announcement "PLEASE DEPOSIT NICKEL" is heard.	Announcement not heard. <i>Note:</i> If coin test line is busy, reorder tone will be heard.	Nonstation trouble. Nonstation trouble.	Refer to test desk. Refer to test desk.

TABLE R (Contd)
OPERATION TEST — 1E1 SET
DIAL POSTPAY WHERE ACTS IS AVAILABLE

STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
4	Deposit a nickel. Note: Dime and quarter are verified in same manner.	Test line identifies coin by announcement "NICKEL". Note: Dime and quarter are verified in same manner as a nickel.	Announcement "TIMING ERROR" is heard. Note: If retest is desired, do not hang up. After 1/2 second announcement, "PLEASE DEPOSIT NICKEL" will be repeated.	Defective totalizer.	Replace defective apparatus and repeat test.
			No immediate announcement. Note: Coin signals of improper level and/or frequency are not recognized and are treated as if no coin was deposited. If no coin is detected after three additional requests, announcement "TEST HAS ENDED" will be made and test line will disconnect.	Defective chassis. Defective totalizer.	Replace defective apparatus and repeat test in Step 2 of the six-step coin station routine in the Public Services Maintenance Check Booklet. (If trouble persists, refer to test desk for loop analysis, i.e., bridge tap or excessive loading.)
			Test line recognizes a coin other than that deposited. Note: This can occur during the basic sequence if improper coin is deposited or if totalizer generates an improper signal. Test line identifies coin as detected, and then repeats previous coin request announcement.	Defective totalizer.	

TABLE R (Contd)
OPERATION TEST — 1E1 SET
DIAL POSTPAY WHERE ACTS IS AVAILABLE

STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
5	Listen for coin tones in handset as coins are deposited.	Low coin tones heard in handset.	Loud coin tones heard in handset.	Defective chassis.	Replace chassis.
6	Go on-hook.	—	—	—	—
7	Go off-hook. Dial operator and give number of station under test. Request operator to <i>call</i> 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.
8	Go off-hook. Request operator to identify nickel as it is deposited.	Identification properly made.	Identification cannot be made.	Nonstation trouble.	Refer to test desk.
9	Check for noise or cutout in handset cord.	Noise should not be heard.	Noise is heard.	Defective handset.	Replace handset.
10	Hang up. Retrieve coins.	—	—	—	—
11	Set with 51A hopper insert KS-14995, List 3 tool.	—	—	—	—
12	Go off-hook. Get dial tone and dial a local charge number. (This should be rearranged.)	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 trouble.	Refer to test desk.
13	Deposit 5 cents less than initial rate.	Deposit coin tone remains.	Deposit coin tone stops.	Initial rate set incorrectly.	Reset rate.
			Totalizer reads out.	Wrong code totalizer or defective totalizer.	Replace totalizer.
				Defective chassis.	Replace chassis.

TABLE R (Contd)						
OPERATION TEST — 1E1 SET DIAL POSTPAY WHERE ACTS IS AVAILABLE						
STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION	
14	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 deposit.	Reset totalizer.	
				Defective hopper.	Replace defective apparatus.	
				Defective totalizer.		
				Nonstation trouble.	Refer to test desk.	
15	Hang up.	Totalizer restores.	Totalizer does not restore.	Defective coin dial unit.	Replace defective apparatus.	
				Defective chassis.		
16	If KS-14995, List 3 tool was installed, disengage chute locking spring; slowly pull top of chute forward while holding KS-14995, List 3 tool. Lift chute and tool out of set and retrieve coins.	—	—	—	—	
17	Return set to normal operation.	—	—	—	—	

TABLE S
OPERATION TEST — 1E3 SET
MANUAL POSTPAY

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 coin cover unit and hang it on a KS-20950, List 2 cover parking tool (Fig. 69). If parking tool is not available or cannot be used at station, disconnect P1, place coin cover unit on a firm level surface, and connect a P11C cord between P1 and J1 of the coin chassis.	—	—	—	—
3	Insert KS-14995, List 3 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. Defective chassis. Defective switchhook. TB2 not wired correctly. Nonstation trouble.	Replace defective apparatus. Verify and correct. Refer to test desk.
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. Defective chassis. Ring and tip reversed. Totalizer mode switch in CF position.	Replace defective apparatus. Correct. Reposition switch to DTF.

TABLE S (Contd)
OPERATION TEST — 1E3 SET
MANUAL POSTPAY

STEP	ACTION	VERIFICATION	FAILURE	POSSIBLE CAUSE	REMEDIAL ACTION
TOTALIZER OPERATION (Contd)					
6	Listen for coin tones in handset as coins are deposited.	Low tones may be heard.	Loud tones are heard.	Defective chassis.	Replace chassis.
7	Disengage chute locking spring; slowly pull top of chute forward while holding KS-14995, List 3 tool. Lift chute and tool out of set and retrieve coins.	—	—	—	—
8	Check for noise or 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. Go on-hook.	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.
11	Call operator. With operator on line, deposit a coin and request operator to identify coin signal.	Identification properly made.	Identification cannot be made.	Open capacitor in network.	Replace chassis.
				Nonstation trouble.	Refer to test desk.
12	Thank operator and hang up.	—	—	—	—
13	Disengage chute locking spring; slowly pull top of chute forward while holding KS-14995, List 3 tool. Lift chute and tool out of set and retrieve coins.	—	—	—	—
14	Return set to normal operation.	—	—	—	—

TABLE T			
OPERATE VALUES OF COIN RELAYS			
MARKING ON RELAY	OPERATING TIME	OPERATE CURRENT	NONOPERATE CURRENT
P-15E687	Remove from Service†		
1A*	450±50 milliseconds	41 milliamps	30 milliamps
1A‡			

† On all routine and maintenance visits, replace the existing P-number relay with a 1A-type. The P-number relays (650 milliseconds) will not operate properly with No. 5 XBR and ESS§ electronic switch and are incompatible with the coin station test line and the KS-21250 test set. The P-type relays may be identified by the smaller 5/32-inch diameter restoral spring as compared to the larger 9/32-inch restoral spring on 1A relays as shown in Fig. 7 and 8 in the Public Services Maintenance Check Booklet.

‡ Coin relays marked **1A without the asterisk** symbol have divided rather than solid contact springs.

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