

“CENTURION*” – COIN TELEPHONE SETS

QSD400A1 AND QSD2400A1

MAINTENANCE AND ASSEMBLY OF PARTS

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1. MAINTENANCE

1.01 It is recommended that field maintenance of QSD400A1 and QSD2400A1 coin telephone sets be limited to:

- Line switch contact cleaning
- Coin relay contact cleaning
- Hood unit assembly cleaning

Caution: Solvent must not be used.

- Clearing of foreign objects from the coin paths
- Cleaning the NSQ1016 L2 coin chute

Caution: Do not lubricate. Solvent must not be used for cleaning.

- Substitution of defective replaceable parts.

Note: If practicable the hood unit assembly and the coin chute may be washed with warm soapy water and rinsed.

1.02 The field replaceable parts are listed in Table A.

**TABLE A
FIELD REPLACEABLE PARTS**

PART NO.	ITEM
NSQ1016L2	Coin Chute
P0501296	Coin Switch Module
P0521284	Apparatus Module
NE-C4A	Ringer
P015E687	Coin Relay Assembly
P015E491	Coin Return Assembly
P0521271†	Dial and Housing Assembly
P0521277‡	Dial and Housing Assembly
QDB1M†	Dial
NE-35Q3K1‡	Dial
NE-G3QH-††	Handset
P0521273†	Cover Unit Assembly
P0521274‡	Cover Unit Assembly
P0501279	Chute Return Assembly
P05018**†	Hood Unit Assembly
P05019**‡	Hood Unit Assembly
P0521260	Printed Circuit Board Assembly
NE-22QD	Lock (Cover Unit Assembly)
P0500824	Window (Upper Card)
P0500825	Window (Lower Card)
P0501269	Window (Number Card)
P0501274	Coin Return Ramp
P0500826	Plate Back Upper
P0500827	Plate Back Lower
††	Add color code
**	Replace with color code
†	QSD400A1
‡	QSD2400A1 (The NE-35Q3K1 dial is not available with the word operator printed beside the 0.)

* A trademark of Northern Electric.

SECTION 506-3241-500

1.03 The removal and assembly instructions for the replaceable items are described in Part 3, Assembly of Field Replaceable Parts.

1.04 For maintenance and testing purposes, the cover unit can be removed and supported with the QTH43A tool as shown in Fig. 1. The use of the QTH43A tool permits maintenance and testing functions to be conducted with the coin telephone set fully operational.

2. FAULT ANALYSIS

2.01 Electrical and mechanical faults are identified in the CENTURION coin telephone set by performing the tests described in the fault analysis charts.

2.02 The tests described in Charts 1 through 8, must be performed in the numerical sequence of the charts for the installation and the maintenance of the CENTURION coin telephone set. Malfunction of the components is identified by the failure of a test or operation. The remedial actions for each fault are listed in preferential order.

2.03 The coins required to complete the tests on the mechanical totalizer include one 25-cent, one 10-cent and two 5-cent coins. The coin requirement for testing the electronic totalizer must amount to the initial rate using a combination of 5-cent, 10-cent or 25-cent coins.

2.04 The tools required to perform the tests are listed in Table B.

2.05 The wiring connections for the QSD400A1 and QSD2400A1 type coin telephone sets are given in Fig. 2.

2.06 The schematic diagrams for the QSD400A1 and QSD2400A1 coin telephone sets are shown in Fig. 3 and 4.

2.07 The fault analysis charts are listed below:

CHARTS	PAGE
1. Mechanical Totalizer Call Origination Test	11
2. Electronic Totalizer (VIR) Call Origination test	16
3. Coin Handling Test	18
4. Trap and Vane Test	19
5. Coin Relay Bias Margin Test	22
6. Transmission and Coin Identification Tone Tests	23
7. FASN Test	25
8. GI Test	26

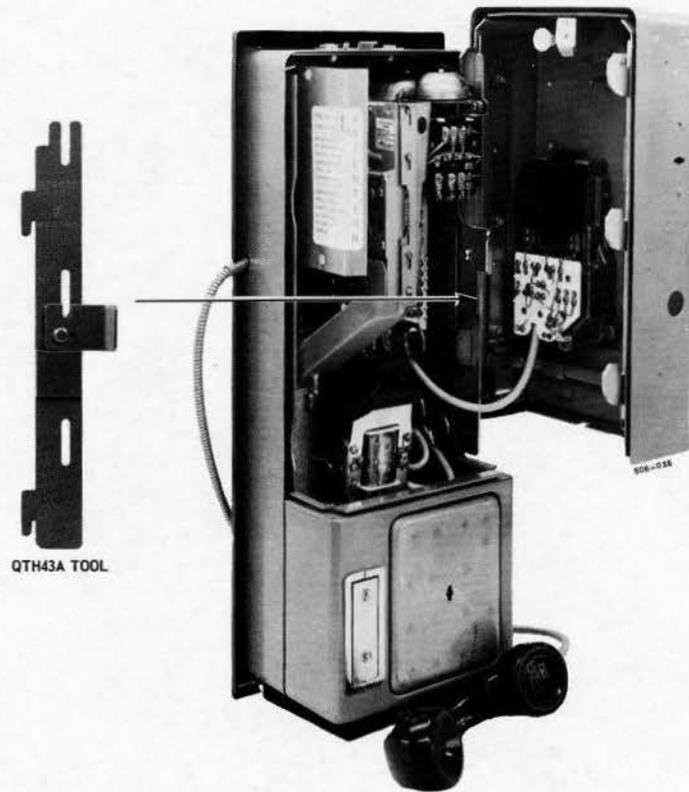


Fig. 1 – QSD400A1 or QSD2400A1 Coin Telephone Set Showing Cover Unit Assembly Removed and Supported by QTH43A Tool

TABLE B
TOOLS REQUIRED FOR TESTING THE QSD400A1 AND QSD2400A1
COIN TELEPHONE SETS

DESCRIPTION	USE
QTH43A Tool	Used to support the cover unit assembly on the housing unit assembly as shown in Fig. 1.
NE-146A Bias Margin Gauge	Used for the coin relay bias margin test.
NS-14995 Tool	Used in the trap and vane test.
Dial Hand Test Set	Used during fault clearing procedure.
NE-139B Tool	Used to spread coins in the coin receptacle.
NS-14510L1 Meter (or equivalent)	Used to check current flow during ground isolation test.

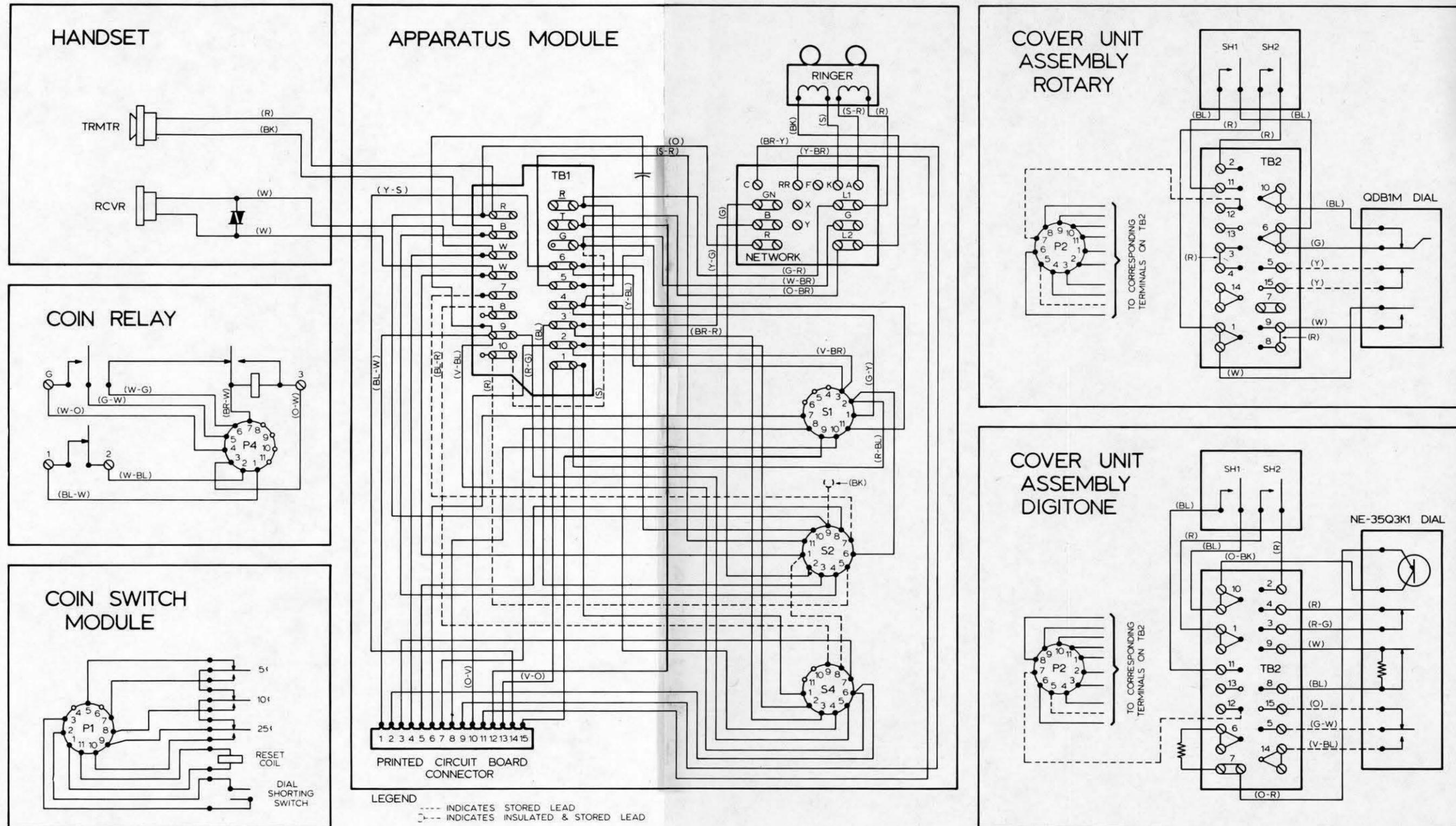
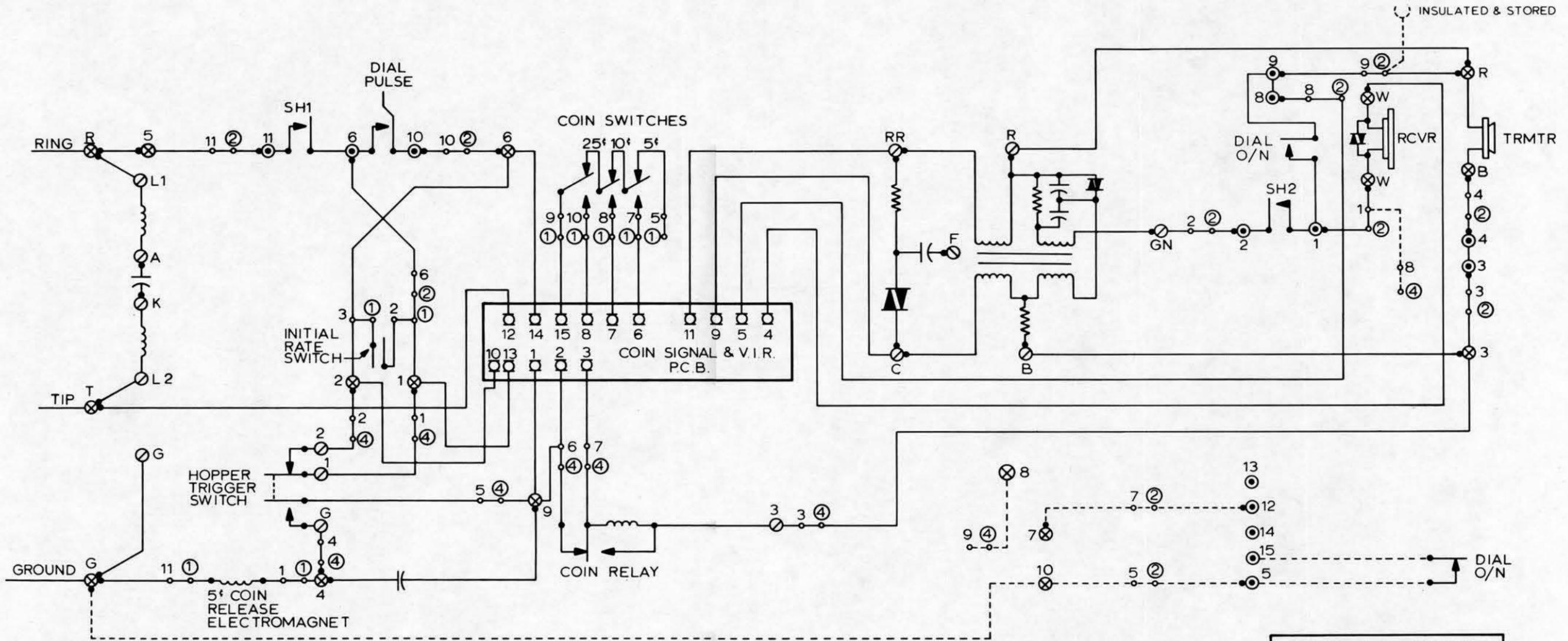


Fig. 2 - Connection Diagram - QSD400A1 and QSD2400A1 Coin Telephone Sets



LEGEND of CONNECTIONS	
	NETWORK OR COIN RELAY SCREW TERMINAL
	TB1 SCREW TERMINAL
	TB2 SCREW TERMINAL
	PC B EDGE CONNECTOR
	TERMINAL 7 ON PLUG SOCKET 2
	SPADE TIP CONNECTION AT SCREW TERMINAL
	SOLDERED CONNECTION AT SCREW TERMINAL
	STORED WIRING

Fig. 3 - Schematic Diagram of QSD400A1 Coin Telephone Set

CHART 1 – MECHANICAL TOTALIZER CALL ORIGINATION TEST

STEP	PROCEDURE	FAULT	REMEDIAL ACTION
1	Refer to Step 2 for ground-start CO line and to Step 11 for loop-start CO line.		
GROUND START LINE			
2	Remove handset from hook.	Dial tone heard in handset.	Replace handset on hook to obtain coin return voltage from CO. Repeat Step 2. If fault is still present proceed as follows: (a) Check coin relay for proper resetting of hopper trigger switch. Substitute coin relay assembly. (b) Check connections on TB1.
3	Deposit first 5-cent coin. Dial tone is heard in handset.	Dial tone is not heard in handset.	(a) Using the dial hand test set, check if a fault is present on the CO line. (b) Check for defective handset. (c) Check for defective line switch contacts SH1 and SH2. Clean contacts SH1 and SH2.

CHART 1 (Cont) – MECHANICAL TOTALIZER CALL ORIGINATION TEST			
STEP	PROCEDURE	FAULT	REMEDIAL ACTION
4	Dial any digit except 1 or 0. Operation of dial does not break dial tone.	Operation of dial breaks dial tone.	<p>(d) Check for defective contacts on hopper trigger switch. Clean contacts on hopper trigger switch.</p> <p>(e) Check connections on TB1 and TB2.</p> <p>(f) Substitute the PCB assembly.</p> <p>Replace handset on hook to obtain coin return voltage from CO. Repeat Steps 2, 3, and 4. If fault is still present proceed as follows:</p> <p>(a) Check switch module to determine that release magnet releases magnet wheel and also that magnet wheel rotates freely on passing 5-cent coins through unit. Substitute switch module if faulty.</p> <p>(b) Check connection on TB1 and TB2.</p>
5	Deposit second 5-cent coin. Dial any digit except 1 or 0 to break tone.	Operation of dial does not break dial tone.	<p>(a) Check switch module as in Step 4. Substitute switch module if faulty.</p>

CHART 1 (Cont) – MECHANICAL TOTALIZER CALL ORIGINATION TEST

STEP	PROCEDURE	FAULT	REMEDIAL ACTION
6	Replace handset on hook to return coins.	Coins are not returned.	<p>(b) Check dial and substitute if faulty.</p> <p>(c) Check set wiring on TB1 and TB2.</p> <p>Correct as described in Chart 3.</p>
7	Remove handset from hook.		
8	Deposit 10-cent coin to obtain dial tone in the handset.	Dial tone is not heard in handset.	<p>Replace handset on hook to obtain coin return voltage from CO. If 10-cent coin is not returned, operate coin release lever to release stuck coin. Check coin chute to determine that 10-cent coin passes through properly. Repeat tests 7 and 8. If fault is still present, check that 10-cent coin is operating the hopper trigger switch. Substitute coin relay assembly.</p>
9	Replace handset on hook to obtain coin return.	Coin not returned.	Correct as described in Chart 3.
10	Repeat Steps 7, 8, and 9 using 25-cent coin.		

CHART 1 (Cont) – MECHANICAL TOTALIZER CALL ORIGINATION TEST			
STEP	PROCEDURE	FAULT	REMEDIAL ACTION
	LOOP START LINE		
11	Remove handset from hook and obtain dial tone.	Dial tone not heard in handset.	Remedial action same as for Step 3, except omit check on hopper trigger contacts.
12	Deposit first 5-cent coin and dial any digit except 1 or 0. Operation of dial does not break dial tone.	Operation of dial breaks dial tone.	Replace handset on hook to return coin. Repeat Steps 11 and 12 and if fault is still present proceed as follows: (a) Check switch module to determine that release magnet releases magnet wheel and also that magnet wheel rotates freely on passing 5-cent coins through unit. Substitute switch module if faulty. (b) Check connections on TB1 and TB2.
13	Deposit second 5-cent coin. Dial any digit except 1 or 0 to break dial tone.	Operation of dial does not break dial tone.	Same as Step 5.
14	Replace handset to return coins.	Coins are not returned.	Correct as described in Chart 3.
15	Remove handset from hook and obtain dial tone.		

CHART 1 (Cont) – MECHANICAL TOTALIZER CALL ORIGINATION TEST

STEP	PROCEDURE	FAULT	REMEDIAL ACTION
16	Deposit 10-cent coin and dial any digit except 1 or 0 to break dial tone.	Operation of dial does not break dial tone.	Replace handset on hook to obtain coin return voltage from CO. If 10-cent coin is not returned, operate coin release lever to release stuck coin. Check coin chute to determine that 10-cent coin passes through properly. Repeat tests 15 and 16. If fault is still present: <ul style="list-style-type: none"> (a) Check that 10-cent coin operates hopper trigger switch. (b) Check dial. (c) Check TB1 and TB2 wiring. (d) Substitute coin relay assembly.
17	Replace handset on hook to return coin.	Coin not returned.	Correct as described in Chart 3.
18	Repeat Steps 15, 16 and 17 using 25-cent coin.		

CHART 2 – ELECTRONIC TOTALIZER (VIR) CALL ORIGATION TEST

Note: To facilitate the description of this test, the instructions apply to 20-cent initial rate.

STEP	PROCEDURE	FAULT	REMEDIAL ACTION
1	Remove handset from hook. Dial tone heard in handset.	Dial tone is not heard.	<ul style="list-style-type: none"> (a) Using the dial hand test set check if the fault is present on the CO line. (b) Check for defective handset. (c) Check wire connections on TB1 and TB2. (d) Check and clean line switch contacts SH1 and SH2 on the dial housing assembly. (e) Substitute the PCB assembly.
2	Deposit part of the initial rate, e.g., 10-cents and dial any digit except 1 or 0.	Operation of dial breaks dial tone.	<ul style="list-style-type: none"> (a) Check connections on TB1 and TB2. (b) Check connections on PCB assembly. (c) Substitute the PCB assembly. (d) Substitute the coin switch module.

CHART 2 (Cont) – ELECTRONIC TOTALIZER (VIR) CALL ORIGINATION TEST

STEP	PROCEDURE	FAULT	REMEDIAL ACTION
3	Deposit the remainder of the initial rate, e.g., two 5-cent coins and dial any digit except 1 or 0.	Operation of dial does not break dial tone.	(a) Check connections on TB1 and TB2. (b) Ensure that dial operates. (c) Substitute the PCB assembly. (d) Substitute the coin switch module.
4	Replace handset on hook. Coins are returned.	Coins not returned.	Correct fault as described in Chart 3.
5	Remove handset from hook. Dial tone is heard in handset.	Dial tone is not heard.	Complete fault clearing procedure as described in Step 1.
6	Deposit a number of coins to exceed initial rate, e.g. 25-cent coin. Dial any digit except 1 or 0.	Operation of dial does not break dial tone.	(a) Check connections on TB1 and TB2. (b) Ensure that dial operates. (c) Substitute the PCB assembly. (d) Substitute the coin switch module.
7	Deposit all possible combinations of coins which amount to the initial rate and repeat Steps 2 through 5 for each coin combination.		

CHART 3 – COIN HANDLING TESTS

STEP	PROCEDURE	FAULT	REMEDIAL ACTION
1	Remove handset from hook.		
2	Deposit one coin of each denomination, 5, 10 and 25 cents.		
3	Check for presence of dial tone, then replace handset on hook to return coins.	One or more coins are not returned.	<p>Check for the following possible faults:</p> <p>(a) Coins jammed in the coin guide, (near coin entry slot), coin chute, switch module, coin relay hopper, chute return assembly, or coin return assembly. Clear coins and check for possible causes of jamming.</p> <p>(b) If coins are resting on trap of coin relay, check the coin relay circuit for continuity to station ground. Check for dirty hopper trigger switch contacts, open coin relay coil, wrong or poor connections on TB1 or the coin relay.</p> <p>(c) Coin relay jammed due to full cash receptacle. Level coins and notify collection department.</p> <p>(d) Defective coin trunk. Refer to test center.</p> <p>(e) Traffic overload. Wait for coin return battery.</p>

CHART 4 – TRAP AND VANE TEST

STEP	PROCEDURE	FAULT	REMEDIAL ACTION
1	Remove hood and cover unit assemblies.		
2	Remove coin chute, coin return ramp, and coin switch module.		
3	Remove coin relay dust cover or guard. <i>Caution: To prevent jamming of selector card and cam, the selector card is tilted by pressing downwards on one of the tabs on either side of the card before manually operating the coin relay.</i>		
4	Press downward on left tab 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 downwards.		
5	With armature fully operated, insert NS-14995 tool into hopper and operate the trap to the limit of its travel.		

CHART 4 (Cont) – TRAP AND VANE TEST			
STEP	PROCEDURE	FAULT	REMEDIAL ACTION
6	Release armature and slowly withdraw tool. Armature, trap, and vane should return to nonoperated position and trap should be locked.	<p>Armature, trap, or vane does not return to its normal position.</p> <p>Vane does not restore properly.</p> <p>Trap does not operate, restore, or lock properly.</p>	<p>Relay could be mounted in a binding position. Loosen mounting screws and realign relay; tighten screws.</p> <p>Vane binds. Remove coin relay and free vane.</p> <p>Vane broken. Replace hopper and relay assembly.</p> <p>Check for the following defective apparatus and replace as necessary.</p> <p>(a) broken trap.</p> <p>(b) bent or broken trap spring.</p> <p>(c) broken trap lever.</p> <p>(d) bent or broken trap pin.</p>
7	Press downwards on right tab of selector card and manually operate coin relay armature to its full extent of travel. Coin vane moves to return (right) position; coin trap moves downwards.		
8	Repeat Steps 5 and 6.		

CHART 4 (Cont) – TRAP AND VANE TEST

STEP	PROCEDURE	FAULT	REMEDIAL ACTION
9	Replace coin relay dust cover, or guard.		
10	Install coin switch module, coin return ramp and coin chute.		
11	Replace hood and cover unit assemblies.		

CHART 5 – COIN RELAY BIAS MARGIN TEST

STEP	PROCEDURE	FAULT	REMEDIAL ACTION
1	Remove hood and cover unit assemblies. Support cover with QTH43A tool.		
2	Remove coin relay dust cover or guard assembly.		
3	Lift handset, deposit coins and obtain dial tone. Call test center and request a bias margin test. (Use Central Office test circuit where available.)		
4	Fit NE-146A bias margin gauge to right side of the selector card.		
5	Request test center to apply CO collect voltage.	Relay does not operate correctly to collect coin.	Defective coin relay. Replace coin relay.
6	Fit NE-146A bias margin gauge to left side of selector card.		
7	Request test center to apply CO return voltage.	Relay does not operate correctly to return coin.	Defective coin relay. Replace coin relay.
8	Remove NE-146A gauge.		
9	Place handset on hook.		
10	Replace coin relay dust cover or guard assembly.		
11	Replace hood and cover unit assemblies.		

CHART 6 – TRANSMISSION AND COIN IDENTIFICATION TONE TESTS

STEP	PROCEDURE	FAULT	REMEDIAL ACTION
1	Complete call to operator or test center.		
2	Request identification of each coin deposited.	Poor or no transmission.	<p>(1) Check CO line for loop defect.</p> <p>(2) With the dial hand test set check the following components and substitute if faulty:</p> <ul style="list-style-type: none"> (a) Check for damaged, broken, or loose station wire connections. (b) Check for defective handset. (c) Ensure that the station Tip, Ring, and Ground connections are correct. (d) Check connections on NE-425QE1 network on apparatus module.
3	Deposit 5-cent coin, 10-cent coin, and 25-cent coin.	Improper or no coin signals.	<p>Substitute the following components and perform test after each substitution.</p> <ul style="list-style-type: none"> (a) PCB assembly.

CHART 6 (Cont) – TRANSMISSION AND COIN IDENTIFICATION TONE TESTS

STEP	PROCEDURE	FAULT	REMEDIAL ACTION
4	Request operator or test center to return coins.	Coins not returned.	(b) coin switch module. (c) apparatus module. Repeat request and if failure re-occurs, refer to test center for a check on CO equipment.
5	Request ringback from operator or test center. Restore handset on hook.	No ringing or low volume.	(a) With dial hand test set check for generator on the CO line. (b) Adjust ringer. (c) Substitute ringer. (d) Substitute apparatus module.
6	Answer ringback from operator or test center.		

CHART 7 – FASN TEST

Note: To facilitate the description of this test, the instructions apply to a 20 cent initial rate.

STEP	PROCEDURE	FAULT	REMEDIAL ACTION
1	Remove handset from hook.		
2	Dial tone heard in handset.	Dial tone is not heard in handset.	Correct dial tone fault as described in Chart 1.
3	Deposit coins having a total value less than the initial rate. Dial test number for chargeable local calls. Calls will be directed to a recorded announcement to indicate that call cannot be completed.	Call is completed to test number.	Replace handset on hook to return coins, then repeat Steps 1, 2, and 3. If fault is still present, proceed as follows: <ul style="list-style-type: none"> (a) Check the lead connections on TB1. (b) Check the lead connections on the PCB assembly. (c) Substitute the PCB assembly.
4	Restore handset on hook. Coins will be returned.		
5	Repeats Steps 1, 2 and 3 except coin deposits shall equal or exceed the initial rate.	Call cannot be completed to test number.	Check for faults as shown for Step 3.

CHART 8 – GROUND ISOLATION (GI) TEST			
STEP	PROCEDURE	FAULT	REMEDIAL ACTION
1	Remove handset from hook.		
2	Remove hood and cover unit assembly. Support cover with QTH43A tool.		
3	Ensure that hopper trigger switch is not tripped.		
4	Set NS-14510 or equivalent meter to 120 mA scale and check current between terminals 9 and 4 on TB1.	Ammeter indicates a current flow exceeding 5 mA.	(a) Check lead connections on TB1. (b) Check lead connections on the PCB assembly. (c) Substitute PCB assembly.

3. ASSEMBLY OF FIELD REPLACEABLE PARTS	CHART	COMPONENT	PAGE
	13	Dial Housing Assembly and Dial	31
3.01 The instructions for substituting the field replaceable components in the CENTURION coin telephone set are contained in the following charts. The field replaceable components are listed in Table A.	14	Ringer NE-C4A	33
	15	PCB Assembly	34
	16	Handset NE-G3QH	34
	17	Coin Chute NSQ1016L2	35
	18	Coin Return Ramp and Chute Return Assembly	36
	19	Coin Switch Module	36
	20	Coin Relay	38
	21	Coin Return Assembly	39
CHART	COMPONENT	PAGE	
9	Hood Unit Assembly	27	
9	Cover Unit Assembly	27	
10	Apparatus Module	29	
11	Cover Unit Assembly Lock	30	
12	Instruction and Number Cards	30	

CHART 9 – REMOVAL AND REPLACEMENT OF HOOD AND COVER UNIT ASSEMBLIES

STEP	PROCEDURE
HOOD UNIT ASSEMBLY	
1	Remove handset from hook.
2	Insert P0896911 or P0532301 tool into hood lock at top of set (Fig. 5).
3	Unlock by rotating tool 1/4 turn in either direction.
4	Tilt hood slightly forward and remove by lifting upward and forward.
5	Return hood lock to locked position to remove tool.
COVER UNIT ASSEMBLY	
6	Unlock NE-22QD lock on left side of cover unit assembly.
7	Insert P0896911 or P0532301 tool in key hole located above NE-22QD lock (Fig. 6).
8	Rotate tool counterclockwise approximately 1/16 turn to release locking mechanism.
<p><i>Caution: The cover unit assembly cannot be completely removed until plug 2 is disengaged from jack 2 inside the set.</i></p>	

CHART 9 (Cont) – REMOVAL AND REPLACEMENT OF HOOD AND COVER UNIT ASSEMBLIES

STEP	PROCEDURE
9	Grasp cover unit assembly firmly by the side flanges and slide it forward until the cover unit is clear.
10	Support cover unit assembly while disconnecting plug 2.
11	Remove rubber spacer between circuit pack and coin chute if present. Discard spacer. (This spacer is required for protection during transportation only.)
12	Remove P0896911 or P0532301 tool by restoring cover unit lock system to locked position.
13	Replace hood and cover unit assembly by reversing above procedure.

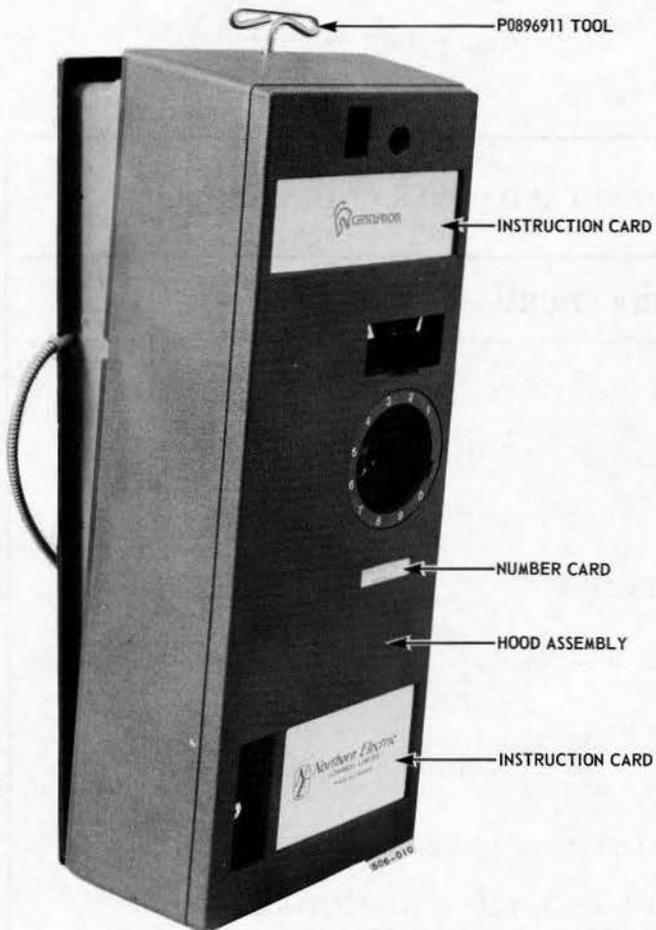


Fig. 5 – Coin Telephone Set Showing the Location of P0896911 Tool When Unlocking the Hood Assembly

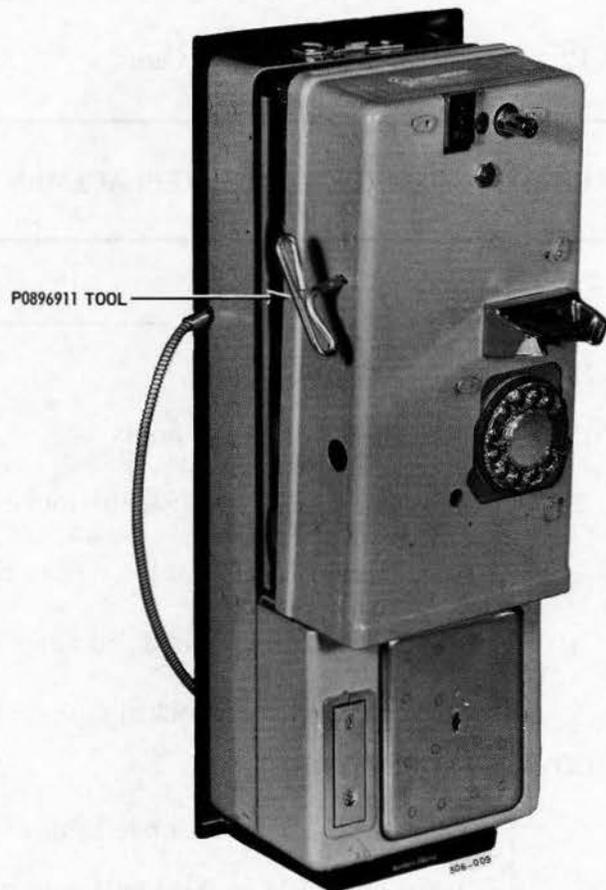


Fig. 6 – Coin Telephone Set Showing the Location of P0896911 Tool When Unlocking the Cover Unit Assembly

CHART 10 – REMOVAL AND REPLACEMENT OF APPARATUS MODULE (Fig. 9)

STEP	PROCEDURE
1	Remove hood and cover unit assemblies as described in Chart 9.
2	Remove plugs 1 and 4 from jacks on apparatus module.
3	Disconnect handset leads from terminals R, B, W, and W on terminal strip TB1.
4	Disconnect station wiring leads from terminals on T, R, and G on TB1.
5	Remove the switch module as described in Chart 19.
6	Remove the PCB assembly as described in Chart 15.
7	Pry open the cord clamp directly below the PCB edge connector and remove the edge connector cord.
8	Remove the screws which fasten the PCB edge connector to the mounting bracket. Pull the PCB edge connector and cord forward (Fig. 9) and lift the cord clear of the coin relay hopper.
9	Completely loosen the captive screw located beside jack 1.
10	Pull lower end of module forward approximately 1/4 inch, and lower module until upper end of module mounting bracket is clear of locating slots in housing mounting plate.
11	Pull module forward carefully to avoid unnecessary interference with chute mounting bracket or coin relay.
12	Replace apparatus module by reversing above procedure.

CHART 11 – INSTALLATION AND REMOVAL OF COVER UNIT ASSEMBLY LOCK

STEP	PROCEDURE
1	Remove hood and cover unit assemblies as described in Chart 9.
2	Ensure that lock is operational.
3	Remove four Allen head screws, adjacent to lock location hole on the inside of the cover unit assembly, with a 5/32-inch Allen wrench.
4	Place cover unit assembly locking bolts in locked position.
5	Lock NE-22QD lock and remove key.
6	Align lock with hole and four screw holes in the cover.
7	Insert four Allen head screws and tighten them with a 5/32-inch Allen wrench.
8	To remove lock reverse above procedure.

CHART 12 – INSTALLATION AND REMOVAL OF INSTRUCTION AND NUMBER CARDS

STEP	PROCEDURE
INSTRUCTION CARDS	
1	Remove hood assembly as described in Chart 9.
2	Remove the clear plastic window and metal retaining plate by pressing inwards on the center of the outer surface of the window. This pressure causes the window and plate to disengage from the inside of the hood.
3	Insert or remove the instruction card between the window and the retaining plate. Insert one edge of the assembly in the window opening and bow the assembly inwards to spring the opposite edge into position.
NUMBER CARD	
4	Grasp the center edges of the retaining plate located inside the hood, and pull until the retaining plate is disengaged from the flange at each end.
5	Insert or remove the number card behind the plastic window.
6	Insert one edge of the retaining plate in position, bow the plate and spring the opposite edge into position.

CHART 13 – SUBSTITUTION OF THE DIAL HOUSING ASSEMBLY AND DIAL

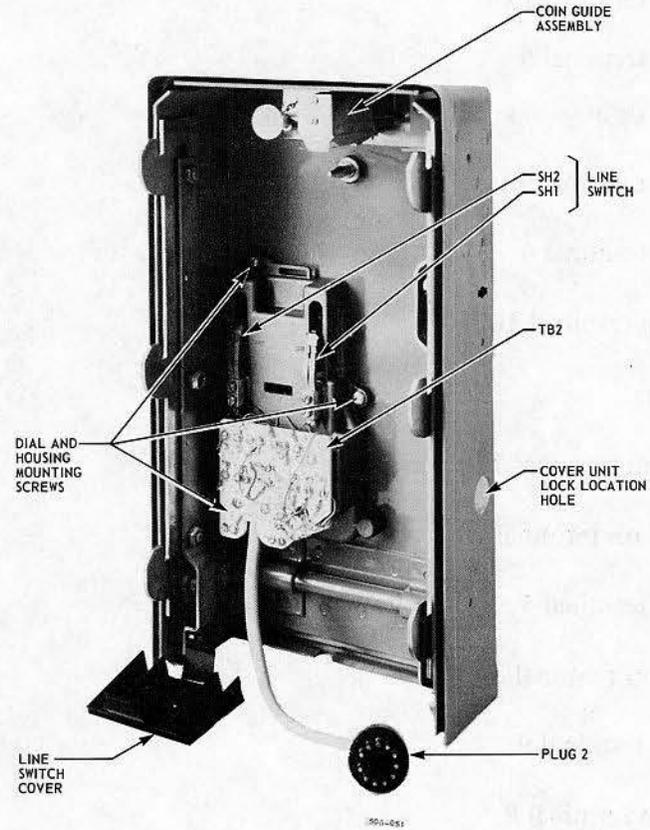
STEP	PROCEDURE
1	Remove hood and cover unit assemblies as described in Chart 9.
2	Remove three mounting screws located at the top, side and base of dial and housing assembly. (See Fig. 7.)
	 <p>The diagram shows the internal components of a cover unit assembly. Labels include: COIN GUIDE ASSEMBLY at the top; SH2 and SH1 (LINE SWITCH) on the right side; TB2 below the switch; COVER UNIT LOCK LOCATION HOLE on the right side; DIAL AND HOUSING MOUNTING SCREWS pointing to the central dial assembly; LINE SWITCH COVER at the bottom left; and PLUG 2 at the bottom right. A small number '506-051' is visible at the bottom center of the diagram.</p>
	Fig. 7 – Cover Unit Assembly
3	Disconnect plug 2 if cover assembly is supported by the QTH43A tool.
4	Lift dial and housing assembly from cover.
5	With dial and housing assembly removed, proceed with removal of dial.
6	Loosen screws on side of dial. Do not remove screws from dial mounting.

CHART 13 (Cont) – SUBSTITUTION OF THE DIAL HOUSING ASSEMBLY AND DIAL

STEP	PROCEDURE
7	<p>Disconnect dial leads on TB2 as follows:</p> <p>Rotary Dial</p> <ul style="list-style-type: none"> (a) Y lead on terminal 15 (b) Y lead on terminal 5 (c) W lead on terminal 1 (d) W lead on terminal 9 (e) G lead on terminal 6 (f) BL lead on terminal 10 <p>DIGITONE Dial</p> <ul style="list-style-type: none"> (a) O-R lead on terminal 7 (b) O-BK lead on terminal 10 (c) R lead on terminal 4 (d) R-G lead on terminal 3 (e) W lead on terminal 9 (f) BL lead on terminal 8 (g) O lead on terminal 15 (h) G-W lead on terminal 5 (i) V-BL lead on terminal 14
8	<p>Pry dial bracket on one side of dial with a screwdriver, and free two bosses from the aligning holes on the bracket.</p>

CHART 13 (Cont) – SUBSTITUTION OF THE DIAL HOUSING ASSEMBLY AND DIAL

STEP	PROCEDURE
9	Tilt dial slightly and lift from dial and housing assembly. If replacing dial, press on dial to engage the two bosses in the aligning holes on the bracket.
10	Replace dial in the dial and housing assembly by performing Steps 1 through 9 in the reverse order. Ignore instructions given in Step 8 when replacing dial. Ensure that DIGITONE dial guard is in position prior to replacing dial housing assembly.

CHART 14 – SUBSTITUTION OF RINGER NE-C4A

STEP	PROCEDURE
1	Remove hood and cover unit assemblies as described in Chart 9.
2	Remove apparatus module as described in Chart 10.
3	Remove ringer leads on the NE-425QE1 network from following terminals: (a) R lead on terminal L1 (b) BK lead on terminal L2 (c) S lead on terminal K (d) S-R lead on terminal A
4	Loosen captive screws on side of gongs so ringer is disengaged from apparatus module framework.
5	Pull ringer away from apparatus module to free prong at top of ringer from rubber grommet.
6	Replace NE-C4A ringer on apparatus module by performing Steps 1 through 5 in the reverse order.

CHART 15 – SUBSTITUTION OF THE PCB ASSEMBLY

STEP	PROCEDURE
1	Remove hood and cover unit assembly as described in Chart 9.
2	Plug 2 must be disconnected when PCB assembly is removed or inserted.
3	Grasp front edge of PCB assembly at top and bottom. Do not apply pressure on components on PCB assembly.
4	Pull PCB assembly outward.
5	Insert PCB assembly in connector in the housing unit assembly, with components facing coin chute and lever assembly.
6	Reconnect plug 2 to jack 2 on apparatus module.

CHART 16 – SUBSTITUTION OF HANDSET NE-G3QH

STEP	PROCEDURE
1	Remove hood and cover assembly as described in Chart 9.
2	Disconnect the following handset leads from TB1 : (a) W lead on terminal W (b) W lead on terminal W (c) R lead on terminal R (d) BK lead on terminal B
3	Remove cord from the plastic wiring clamps.
4	Remove PCB assembly (see Chart 15).

CHART 16 (Cont) – SUBSTITUTION OF HANDSET NE-G3QH	
STEP	PROCEDURE
5	Completely loosen both screws on cord clamp. The screws should remain with the clamp for ease of replacement.
6	The cord clamp is disengaged from the armor shield on the cord by sliding the clamp forward until the armor shield enters the large end of the key hole opening. The clamp may then be pulled endwise off the armor shield. With the clamp removed, the cord tube assembly may also be pulled endwise off the cord and the cord may then be easily withdrawn through the opening in the housing.
7	Replace handset by performing Steps 1 through 6 in a reverse order.

CHART 17 – SUBSTITUTION OF COIN CHUTE NSQ1016L2 (Fig. 10)	
STEP	PROCEDURE
1	Remove hood and cover unit assembly as described in Chart 9.
2	Remove PCB assembly as described in Chart 15.
3	Lift and hold spring loaded slide latch on coin chute mounting bracket and move front edge of coin chute to left until chute mounting studs are clear of chute bracket and slide latch.
4	Allow slide latch to return to its normal position.
5	Pull forward on coin chute to disengage rear mounting studs of coin chute from locating holes in mounting plate on rear wall of housing.
6	Replace coin chute by performing Steps 1 through 5 in reverse order.

CHART 18 – SUBSTITUTION OF THE COIN RETURN RAMP AND CHUTE RETURN ASSEMBLY (Fig. 9)

STEP	PROCEDURE
1	Remove hood and cover unit assemblies as described in Chart 9.
2	Lift spring loaded slide latch on the coin chute mounting bracket. Pull coin return ramp forward until mounting tabs are disengaged from slots in upper end of coin return assembly and lower end of coin chute mounting bracket.
3	Remove guard assembly or plastic cover on coin relay.
4	Loosen pan head screw next to coin relay screw on lower part of coin hopper casting.
5	Lift upward on chute return assembly to remove it. <i>Caution: This step must be carried out carefully to avoid damage to the wiring on the side of the coin relay.</i>
6	Replace coin return ramp and chute return assembly by performing Steps 1 through 5 in a reverse order.

CHART 19 – SUBSTITUTION OF THE COIN SWITCH MODULE

STEP	PROCEDURE
1	Remove hood and cover unit assembly as described in Chart 9.
2	Remove coin return ramp as described in Chart 18.
3	Disconnect plug 1 from jack 1 on apparatus module.
4	Completely loosen coin switch module mounting screw while pulling forward on module. Mounting screw should remain captive in coin switch module bracket in order to facilitate refastening of module into the set.
5	Remove coin switch module. (See Fig. 8.)

CHART 19 (Cont) – SUBSTITUTION OF THE COIN SWITCH MODULE

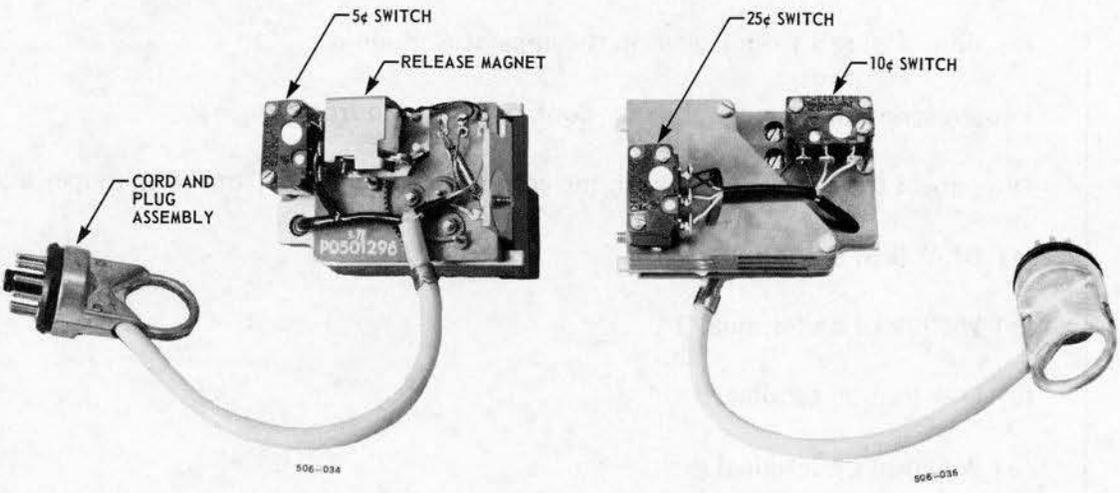
STEP	PROCEDURE
	 <p style="text-align: center;">Fig. 8 – Side Views of the Coin Switch Module</p>
6	Replace coin switch module by engaging the two rectangular lugs at rear of coin switch module in two rectangular holes in housing mounting plate.
7	Tighten mounting screw.
8	Connect plug 1 to jack 1 on apparatus module.
9	Coins of each denomination should be deposited to determine that a proper alignment exists between coin chute, coin switch module and coin relay hopper mouth.

CHART 20 – SUBSTITUTION OF THE COIN RELAY (Fig. 9)

STEP	PROCEDURE
1	Remove the hood and cover unit assembly as described in Chart 9.
2	Disconnect plug 4 from jack 4 on the apparatus module.
3	Loosen screw and remove the stay hook on the cable from plug 4.
4	Disconnect the following leads on the coin relay and remove from coin hopper hook: (a) BL-W lead on terminal 1 (b) W-BL lead on terminal 2 (c) O-W lead on terminal 3 (d) W-O lead on terminal G
5	Remove two screws from each side of the coin trigger.
6	Remove two slotted hex-head screws in the coin hopper casting from each side of the relay.
7	Remove the coin return ramp and switch module as described in Chart 18 and 19.
8	Pull coin relay outward so the coin trigger is not damaged. The cord which extends around the rear of the hopper must be lifted over the top of the hopper.
9	Replace the coin relay by performing Steps 1 through 8 in a reverse order.

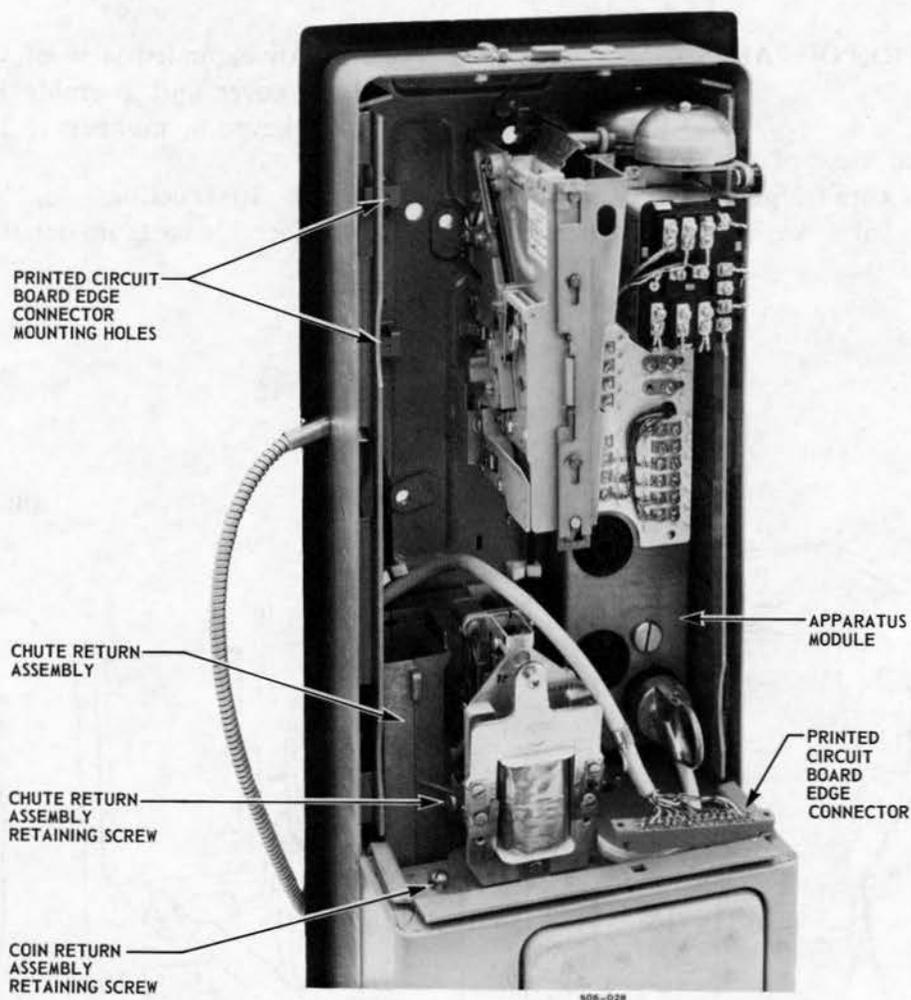


Fig. 9 – Mounting Arrangement for Coin Return Chute Assembly

CHART 21 – SUBSTITUTION OF THE COIN RETURN ASSEMBLY (Fig. 10)

STEP	PROCEDURE
1	Remove hood and cover assembly as described in Chart 9.
2	Remove coin return ramp and chute return assembly as described in Chart 18.
3	Remove coin return assembly retaining screw (Fig. 9) next to the base of the coin relay.
4	Tilt top of coin return assembly forward from front of the housing.
5	Remove coin return assembly by pulling outward and upward.
6	Replace coin return assembly by performing Steps 1 through 5 in reverse order.

TABLE B
QSD400A1 AND QSD2400A1 COIN TELEPHONE SET
IDENTIFICATION OF PARTS

ITEM NO. FIG. 10	IDENTIFICATION	DESCRIPTION	QSD400A	QSD2400A
1		0.190-24 (No. 10-24) x 0.375 Long Flat Head Machine Screw	2	2
3		0.112-40 (No. 4-40) x 0.5625 Long Pan Head Machine Screw	2	2
4	P0247764	Machine Screw	3	3
		0.190-24 (No. 10-24) x 0.25 Long Pan Head Machine Screw	2	2
6		0.125-40 (No. 5-40) x 0.1875 Long Pan Head Machine Screw	1	1
7		0.190-24 (No. 10-24) x 0.4375 Long Pan Head Machine Screw	1	1
8	P015E895	Machine Screw	1	1
13D	P0511315	Socket Head Lock Screw	8	8
14	P0511305	Captive Screw	2	2
16		Washer, 0.116 I.D. x 0.312 O.D. x 0.029		
22	P0500823	Pan	1	1
23	P0501274	Coin Return Ramp	1	1
24	P0500802	Baffle Plate	1	1
25	P0501720	Cord Clamp	1	1
31B	P0521274†	Cover Unit Assembly		1
31B	P0521273†	Cover Unit Assembly	1	
33B	P0514535	Housing Unit Assembly	1	1
34B	P0501299	Cord Tube Assembly	1	1
35B	P0501296	Coin Switch Module	1	1
36B	P0501279	Chute Return Assembly	1	1
37B	P015E491	Coin Return Assembly	1	1
38B	P015E718	Coin Relay and Hopper Assembly	1	1
39B	P0501263	Chute Bracket and Lever Assembly	1	1
40B	P0521260	PCB Assembly	1	1
42B	P0521284	Apparatus Module	1	1
43B	P015E388#	Spacer and Spring Assembly	1	1
44B	P0501738	Vault Liner Assembly		
48B	P05018**	Hood Unit Assembly	1	
48B	P05019**	Hood Unit Assembly		1
65	NE-2A	Door	1	1
66	NE-1B#	Coin Receptacle		
67	NE-1C#	Receptacle Cover		
68	NE-22QD#	Lock (Note 1)		
69	NE-22QC#	Lock	1	1
70	NE-G3QH-*	Handset	1	1
71	NSQ1016L2	Coin Chute	1	1
72	NE-1B	Rail		
		0.164-32 (8-32) x 0.3125 Long Screw and Washer Assembly	3 (Note 2)	3 (Note 2)

Notes:

1. An exclusive NE-22QD type lock combination can be assigned by Northern Electric Company to a specific customer upon request.
2. Supplied with Coin Relay and Hopper Assembly (Item 38B).

† These assemblies are shown in Fig. 11 and the parts identification in Table C.

Order separately or as part of security kit.

* Add color code as listed in Table A.

** Last two digits indicate color. When ordering parts, replace asterisks with appropriate color code as listed in Table A.

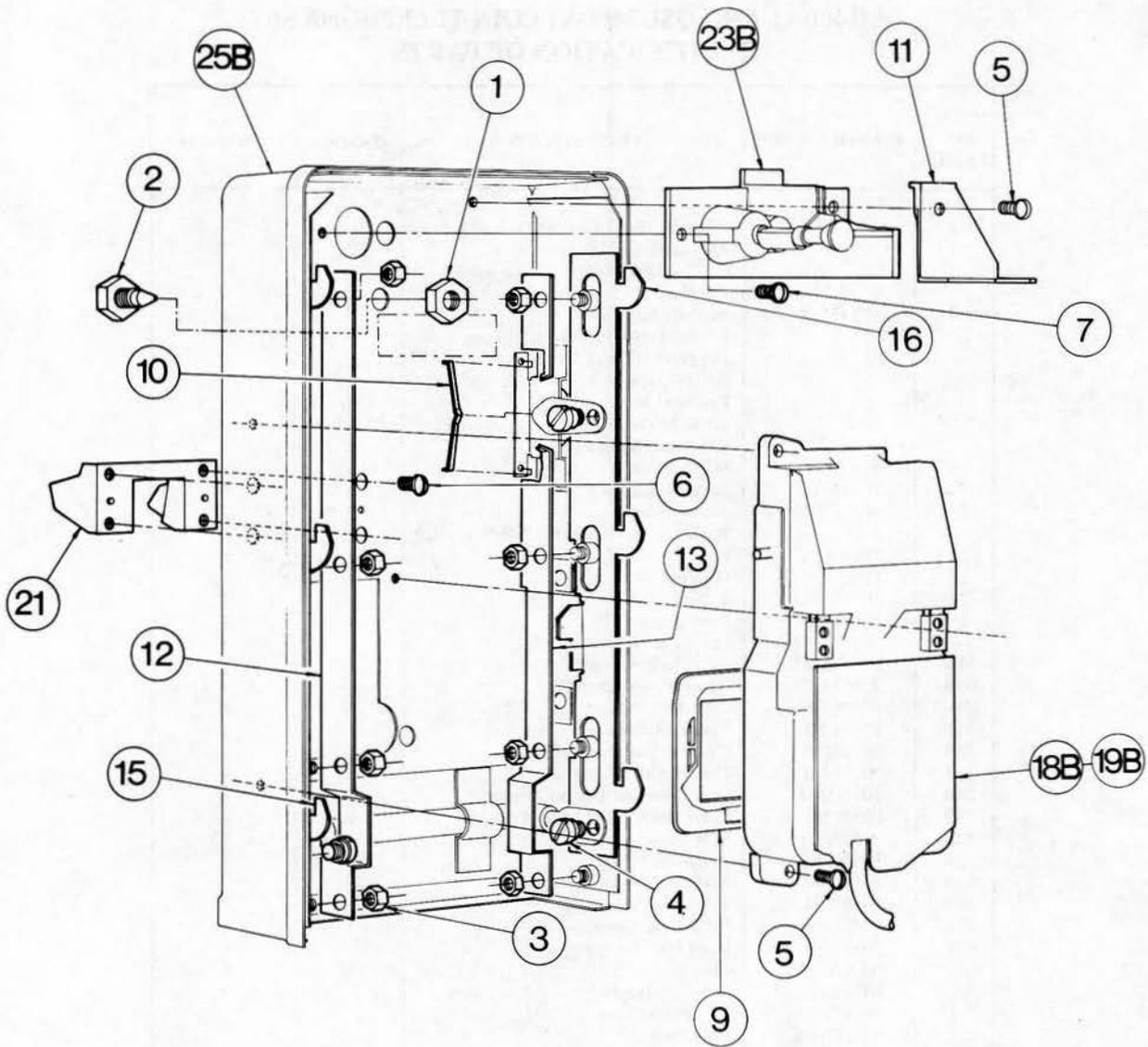


Fig. 11 — Exploded View of Cover Unit Assembly (P0521273 or P0521274)

TABLE C
COVER UNIT ASSEMBLY IDENTIFICATION OF PARTS

ITEM NO. FIG. 11	IDENTIFICATION	DESCRIPTION	P0521273 (ROTARY)	P0521274 (DIGITONE)
1		0.375-24 (3/8-24) Hex. Nut	1	1
2	P0501275	Pin Alignment	1	1
3		0.250-28 (1/4-28) Hex. Nut	8	8
4	P015E337	Screw, Shoulder Machine	3	3
5		0.190-24 (No. 10-24) x 0.4375 in length Pan Head Machine Screw	5	5
6		0.190-32 (No. 10-32) x 0.25 in length Pan Head Machine Screw	4	4
9	P0514540	Dial Cover		1
10	P015E333	Spring, Detent	1	1
11	P0514767	Retainer	1	1
12	P097L208	Strap Link, Right	1	1
13	P097L207	Strap Link, Left	1	1
15	P097L211	Bolt, Right	1	1
16	P097L212	Bolt, Left	1	1
18B	P0521271	Dial and Housing Assembly	1	
19B	P0521272	Dial and Housing Assembly		1
21	P0521251	Hook	1	1
23B	P0501266	Coin Guide Assembly	1	1
25B	P0500804	Cover Assembly	1	1