PANEL COIN TELEPHONE SETS

QSD300A AND QSD2300A TYPES

PREPAY

IDENTIFICATION AND INSTALLATION

(a) QSD300A Type

(b) QSD2300A Type

Fig. 1 – Front View of QSD300A and QSD2300A Coin Telephone Sets

CONTENTS PAGE

1. GENERAL

1.01 This section describes the QSD300A and QSD2300A prepay, single coin slot, panel coin telephone sets. Dismantling and assembling information is given to facilitate installation of the coin telephone sets. Station wiring and option connections are also provided.

2. DESCRIPTION

2.01 The QSD300A and QSD2300A coin telephone sets are single slot, prepay type panel coin telephones. The QSD300A, equipped with a rotary dial, and QSD2300A, equipped with a DIGITONE* dial, are shown in Fig. 1. The sets can be converted from rotary dial to DIGITONE dial by interchanging the door assembly.

2.02 The panel coin telephone set components are contained within a sheet steel housing which is fabricated by a combination of welding and bolt fasteners for maximum security.

2.03 The front of the set features a brushed chrome center panel which contains the coin slot, coin release lever, handset hook, dial, instruction and number card windows, coin return, and cash compartment door. Decorator panels of brushed stainless steel or panels with a painted finish are inserted on each side of the center panel.

2.04 The QSD300A and QSD2300A coin telephone sets are equipped with mechanical and electronic initial rate totalizers which inhibit dialing from the coin telephone until a preselected amount in coins has been deposited.

2.05 When shipped from the factory, the QSD300A and QSD2300A sets are arranged to operate on the mechanical totalizer at a 10-cent initial rate. With this arrangement the set may be used on either ground-start or loop-start central office (CO) lines.

2.06 The electronic variable initial rate (VIR) totalizer on the printed circuit board (PCB) assembly in the coin telephone set can be modified to change the initial rate from 5-cents to 40-cents inclusive in increments of 5-cents.

2.07 The free access to selected numbers (FASN) feature permits coinless calling to special preselected numbers. The CO must be equipped for FASN and the line must have a loop-start line circuit.

2.08 Ground isolation (GI) disconnects the grounding circuit from the transmission path to minimize line induced noise during voice transmission. This feature requires that the CO line is equipped with a loop-start line circuit.

2.09 The coin identification signals are transmitted to the operator by a solid state tone generator when the required coins are deposited in the coin telephone set.

*A trademark of Northern Electric.

2.10 The transmission qualities of the QSD300A and QSD2300A coin telephone sets are similar to those of the NE-500 type telephone set.

2.11 The maximum loop resistance for satisfactory operation of the set is determined by such parameters as minimum CO battery voltage, feeding-bridge resistance, ringing cut-off current, etc. To ensure reliable operation it is recommended that the following conditions be met.

(a) With the handset off-hook the dc voltage at the ring and tip terminals of the set must not be less than 4.4 volts.

(b) The current in the ring side of the line should not be less than 23.0 milliamperes with the hopper trigger switch in the normal position (i.e., not tripped).

Example of long loop:

CO battery	45.0 volts
Feeding-Bridge Resistance	200 ohms X 200 ohms
Current	23.0 milliamperes
Loop resistance	1365 ohms

Note: Other factors associated with the CO may limit the loop resistance to less than 1365 ohms. For higher loop resistance a long line circuit should be used.

2.12 The coin telephone set weighs approximately 55 pounds (25 kilograms).

2.13 The dimensions of the QSD300A and QSD2300A coin telephone sets are shown in Fig. 2.

3. CIRCUIT DESCRIPTION

Coin Signaling

3.01 Coins inserted in the single slot and accepted by the chute are sorted into the appropriate channel before passing through the coin switch module. As the coin passes through the coin switch module, a switch is activated which in turn energizes the solid-state tone generator. The generator sends bursts of tone appropriate to the coin deposited to permit operator recognition. The signals are not heard in the receiver of the coin telephone set. The number of tone bursts for each coin deposited are:

- one burst for a 5-cent coin
- two bursts for a 10-cent coin
- five bursts for a 25-cent coin (transmitted at twice the rate of the 5-cent and 10-cent coin tone bursts).

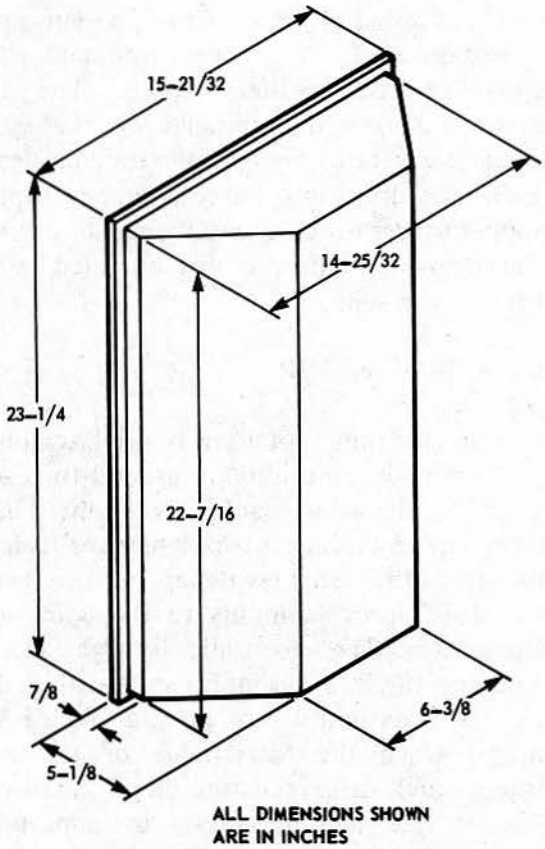

Fig. 2 – Rear View of QSD300A and QSD2300A Telephone Sets, Showing Physical Dimensions

Mechanical Totalizer

3.02 The mechanical totalizer detects the total number of 5-cent coins deposited for 10-cent initial rate calls.

3.03 The first 5-cent coin is trapped in the switch module. The 5-cent coin in the trapped position holds a switch operated. This switch provides a connection to ground which is necessary for central offices having ground start line circuits. The second 5-cent coin is deflected by the first 5-cent coin (which is trapped) and passes on through the switch module into the coin relay hopper. On entering the hopper, it trips the hopper trigger switch. The operated hopper trigger switch removes a short circuit from the dial and the user can now dial.

3.04 A deposited 10-cent coin or 25-cent coin is segregated by the coin chute and passes through the coin switch module. The tone generator monitors the switches on the switch module and generates the appropriate coin signals. The coin then drops into the coin hopper, tripping the hopper trigger which allows the call to proceed. The mechanical totalizer is not operated by the deposit of these coins.

Electronic Totalizer (VIR)

3.05 The electronic totalizer is used to inhibit dialing (or continuity to ground for FASN operation) in the same manner as the mechanical totalizer. The electronic totalizer receives its input signals from the same switches on the switch module which provide inputs to the coin signal tone generator. The electronic totalizer can be strapped (on the PCB assembly) so that it enables dialing (or continuity to ground for FASN operation) when the total value of the coins deposited equals or exceeds the preset initial rate. The initial rate may be preset by appropriate strapped connections on the PCB assembly.

FASN Operation

3.06 When the coin telephone set is used with a CO which is equipped to provide FASN service the user receives dial tone by lifting the handset and may complete a call to any free access number without depositing coins.

3.07 When a non-FASN call is made, ground identification is detected by the CO when the initial rate is deposited.

GI Feature

3.08 The GI feature provides a means of disconnecting the station ground from the transmission network whenever line current is flowing. This feature achieves a substantial reduction in transmission circuit noise caused by induced voltages on the line.

3.09 GI is activated by current on the ring side of the line. When this feature is used, ground tests or coin collect/return functions, which require an electrical continuity to ground, must be made on the tip side of the line only.

Coin Rejection

3.10 Slugs, washers, tokens or foreign coins inserted through the coin entry slot are directed to the coin chute and rejected to the coin return assembly or held up. The coin-return lever when operated, has a positive clearing action, which releases the slugs, washers, etc., into the coin return assembly.

4. ORDERING INFORMATION

4.01 The panel coin telephone sets are ordered as follows:

COIN TELEPHONE SET QSD300A
COIN TELEPHONE SET QSD2300A

4.02 To provide a complete installation the following components must be ordered separately.

- Cash compartment door NE-1A-30
- Cash compartment lock, NE-22QC
- Upper housing lock, NE-22QD (keys must be ordered separately)

- Cash receptacle, NE-1B

- Cash receptacle cover, NE-1C

4.03 The QSD300A and QSD2300A are available with the following decorator panels.

(a) Stainless steel decorator panels PO502663 are supplied with all panel coin telephone sets.

(b) Black decorator panels PO502662 are available but have to be ordered separately.

(c) Zinc plated decorator panels PO502661 are supplied on a special order basis only (for special paint finishes applied by the customer).

4.04 Instruction and number cards should be supplied locally and must be in accordance with the dimensions given in Table B.

4.05 The QSD300A and QSD2300A coin telephone sets may be mounted as follows.

- Recessed into a wall so that the front panel is flush with the surface of the wall. The Apparatus Box QBM2A (Fig. 3) is provided to fit into the wall prior to the installation of the coin telephone set. The customer will be responsible for providing the recess in the wall of the proper dimensions. Mounting screws are provided with the Apparatus Box for the purpose of fastening the coin telephone set to the Apparatus Box. Dimensions and mounting screw holes for the Apparatus Box are shown in Fig. 3. See Table A for fasteners required.

- Mounted in a location where Burgess-Day Type 101 Panel Coin Telephone mounted in a Burgess-Day Type 1065-327 panel wall mounting box was previously installed. An Adapter QAA16A is available for this purpose. Mounting screws are supplied with this adapter.

- Mounted in furniture designed specifically for this type of panel coin telephone.

4.06 The coin telephone set components that may be substituted in the field are listed in Table D.

4.07 If the coin telephone set has been installed, but is not ready for service, place a QSW1A out of service sign in the coin entry slot so that customers cannot deposit coins. When service is established, remove the sign or arrange for the agent or other responsible person to do so. The QSW1A sign, as shown in Fig. 4, is installed by inserting the double pronged projection into the coin entry slot and pressing firmly into place until the sign is flush against the front surface. The sign may be removed by pulling it out of the coin entry slot.

4.08 Installation accessories are listed in Table C.

TABLE A

FASTENERS USED IN MOUNTING APPARATUS BOX QBM2A				
MOUNTING SURFACES	HOLE SIZE REQUIRED	QUANTITY	SIZE AND TYPE	NOTES
Softwood	1/8-inch or No. 30	8	1-3/4 inch No. 14 F.H. wood screw	1,2
Hardwood	1/8-inch or No. 30	8	1-1/4 inch No. 14 F.H. wood screw	1,2
Masonry Concrete Brick	5/16-inch	8	2-inch No. 14 F.H. wood screw in No. 16 plastic anchor	1,2
Cinder Block	3/4-inch	8	1/4 by 4-inch R.H. Toggle Bolt	1,2

Notes:

1. At least 4 screws must be placed in the sides or the bottom and top of the apparatus box.
2. Additional fasteners may be placed for added security.

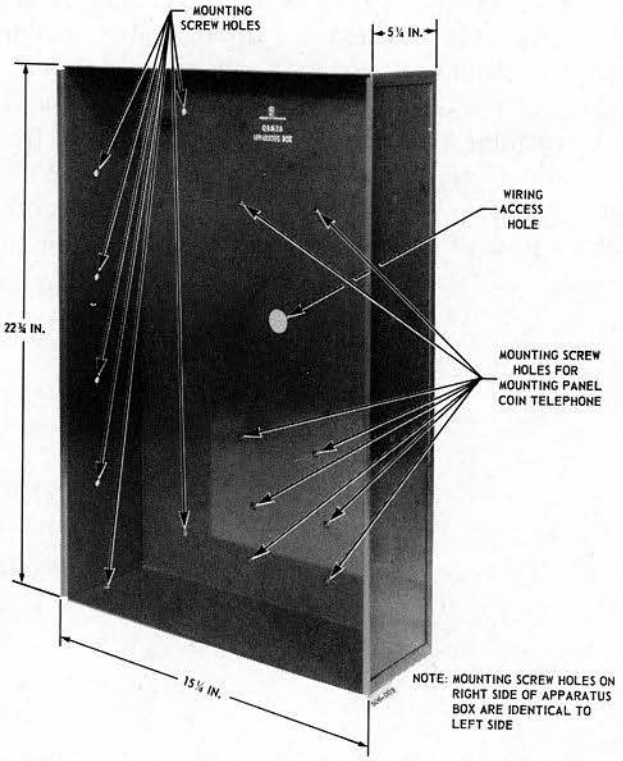

Fig. 3 – Apparatus Box QBM2A

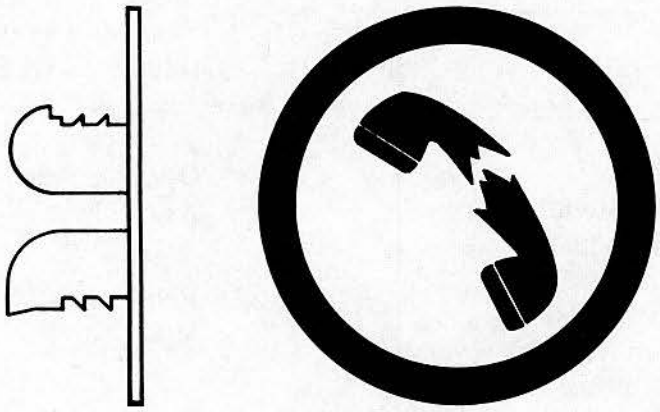

Fig. 4 – QSW1A Out of Service Sign

TABLE B
INSTRUCTION CARD SIZES

CARD LOCATION	WIDTH (±0.020)	HEIGHT (±0.020)	THICKNESS (MAX.)
Instruction Cards	7.580 in.	3.130 in.	0.020 in.
Number Card	1.800 in.	0.400 in.	0.020 in.

TABLE C
INSTALLATION ACCESSORIES FOR QSD300A AND QSD2300A SETS

ORDERING CODE	USE
Apparatus Box QBM2A	For installations recessed into a wall
Adapter QAA16A	For installation in ADCO type 1065-327 panel wall mounting box
Tool, P0896911	To unlock the door assembly. The tool is shown in Fig. 6.

TABLE D
COMPONENTS REPLACEABLE IN THE FIELD

PART NO.	ITEM
NSQ1016 L1	Coin Chute
P0502569	Coin Switch Module
P0521246	Apparatus Module
NE-D1QA	Ringer
P0521209	Coin Relay Assembly
P015E491	Coin Return Assembly
P0521213*	Dial and Housing Assembly
P0521214†	Dial and Housing Assembly
QDB1P*	Dial
NE-35Q3K1†‡	Dial
NE-G3QF-52	Handset
P0521211*	Door Assembly
P0521212†	Door Assembly
P0896913	Coin Return Chute Assembly
P0521260	Printed Circuit Board Assembly
P0502604	Coin Guide and Bracket Assembly
NE-22QD	Lock (Upper Housing Door)
P0896963	Window (Instruction Card)
P0896334	Window (Number Card)
P0892802	Cord Retainer
P0502663	Decorator Panel Kit (Stainless Steel)
P0502662	Decorator Panel Kit (Black Simulated Vinyl)
P0502661	Decorator Panel Kit, Blank (For Customer Applied Finish)

* QSD300A Type

† QSD2300A Type

‡ The NE-35Q3K1 Dial is not available with the word operator printed by the 0.

5. INSTALLATION

INSTALLATION REQUIREMENTS

5.01 Information required for installation of the QSD300A and QSD2300A coin telephone sets is contained in the following charts.

Chart 1 Opening and Removing the Door Assembly

Chart 2 Removal and Replacement of Apparatus Module

Chart 3 Removal and Replacement of Coin Chute

Chart 4 Removal and Replacement of PCB Assembly

Chart 5 Removal and Replacement of Coin Return Chute Assembly

Chart 6 Removal and Replacement of Coin Switch Module

Chart 7 Installation and Removal of Instruction and Number Cards

Chart 8 Installation and Removal of Upper Housing Lock

Chart 9 Conversion From Mechanical to Electronic Totalizer

Chart 10 FASN Conversion

Chart 11 G1 Conversion.

5.02 The following factors should be considered when choosing a location for the installation of the panel coin telephone set:

- Accessible for public usage
- Adequate light
- Privacy
- Minimum noise or vibration
- Absence of grease, smoke or dust
- Clear of moving machinery, piled merchandise, narrow aisles or stairways
- Check local installation practices before mounting the coin telephone set on surfaces that would be expensive to repair if the set is removed.
- Telephone and wiring must be located at least 6 inches from neon light fixtures, transformers or other equipment likely to cause inductive effects.
- The QSD300A and QSD2300A coin telephone sets must be mounted on a vertical surface. A tilt greater than 1.5 degrees in any direction can cause chute malfunction.

MOUNTING INSTRUCTIONS

5.03 The QSD300A and QSD2300A coin telephone sets have mounting screw holes identical to those provided on the NE-233 type coin collectors. Fig. 5 shows the arrangement of the mounting screw holes.

5.04 The mounting surface for the panel coin telephone must be vertical. A tilt in any direction may cause malfunction of the coin chute.

5.05 The suggested mounting height of the panel coin telephone set is 63 inches from the top of housing to the floor.

5.06 To provide access to all mounting screw holes it will be necessary to remove assemblies listed below in the following sequence.

(1) Coin Signal Printed Circuit Board (Chart 4).

(2) Coin Switch Module (Chart 6).

(3) Coin Chute (Chart 3).

(4) Coin Return Chute (Chart 5).

5.07 Wiring shall enter through the 1-inch diameter hole in the rear wall of housing or the 5/8-inch diameter hole on the side of the set.

5.08 The usual precautions for wiring of coin telephones shall be observed:

- Conceal wiring near the telephone or use approved moulding or tubing.
- Locate protectors and connecting blocks where they will be inaccessible to the coin telephone set user.

5.09 Provision is made for adding four security studs (P010E070) (Fig. 5). Security studs cannot be used in most enclosures since vertical movement of the set is necessary to engage the stud in the keyhole slot.

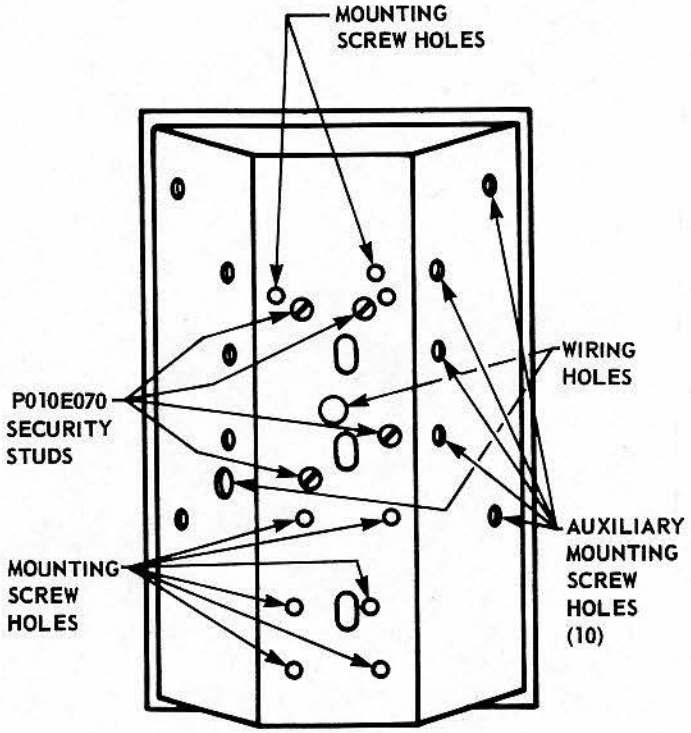

Fig. 5 – Arrangement of Mounting and Wiring Holes

CONNECTIONS AND OPTION SELECTION

5.10 Connect the station wiring leads, tip, ring, and ground, to the T, R, and G connections on TB1.

5.11 When shipped from the factory the QSD300A and QSD2300A coin telephone sets are wired for 10-cent mechanical totalizer operation. The mechanical totalizer permits connection to loop-start or ground-start CO lines.

5.12 To convert the QSD300A and QSD2300A sets from the mechanical totalizer to the electronic totalizer (VIR) proceed as described in Chart 9.

5.13 To use the sets with a CO which is equipped for FASN service convert as described in Chart 10.

5.14 To convert the QSD300A and QSD2300A Sets for GI proceed as described in Chart 11.

5.15 The door is removed from the housing assembly as described in Chart 1. The P0896911 tool (Fig. 6) is used to unlock the door.

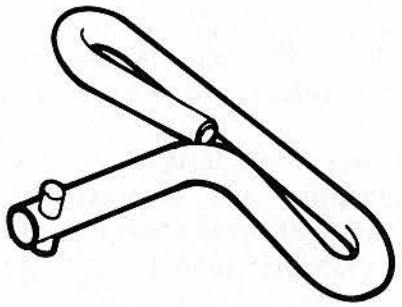

Fig. 6 – P0896911 Tool

CHART 1 – OPENING AND REMOVING THE DOOR ASSEMBLY

STEP	PROCEDURE
	OPENING THE DOOR ASSEMBLY
1	Unlock NE-22QD Lock (rotate key clockwise)
2	Insert P0896911 Tool (Fig. 6) in keyhole on right side. Rotate tool 1/8 turn clockwise to release right-hand bolt.
3	Move key from right-side to left-side keyhole. Rotate tool 1/8 turn counterclockwise to release left-hand bolt.
4	Remove handset from hook.
5	Door is hinged at the bottom. Open door by pulling outward at the top.
6	Adjust position of open door by moving the supporting chain to a new position in the notch at the upper end of the left hand lock strike.
7	Close the door by reversing the above procedure.
	REMOVING THE DOOR ASSEMBLY
8	Disengage plug 3 from jack 3 on the connector bracket assembly.
9	Support the door and unhook the chain from the notch at the top of the lock strike.
10	With the door open nearly 90°, lift the hinge end of the door upward until it is clear of the flange on the front of the housing.
11	Replace the door by reversing the above procedures. (Check that cords or restraining chain are not trapped in the hinge area.)

CHART 2 – REMOVAL AND REPLACEMENT OF APPARATUS MODULE (Fig. 7)	
STEP	**PROCEDURE**
1	Open the door assembly as described in Chart 1.
2	Disengage coin release linkage from coin chute (Fig. 8).
3	Loosen fastening screw for coin guide assembly as shown in Fig. 8. Swing the coin guide assembly outward on its hinge.
4	Disconnect plugs 1 and 2 from jacks 1 and 2.
5	Remove PCB assembly as described in Chart 4.
6	Loosen the fastening screw for the apparatus module (Fig. 8).
7	Lift the module upward until lower end clears the housing bracket.
8	Replace the apparatus module by reversing the above procedure.

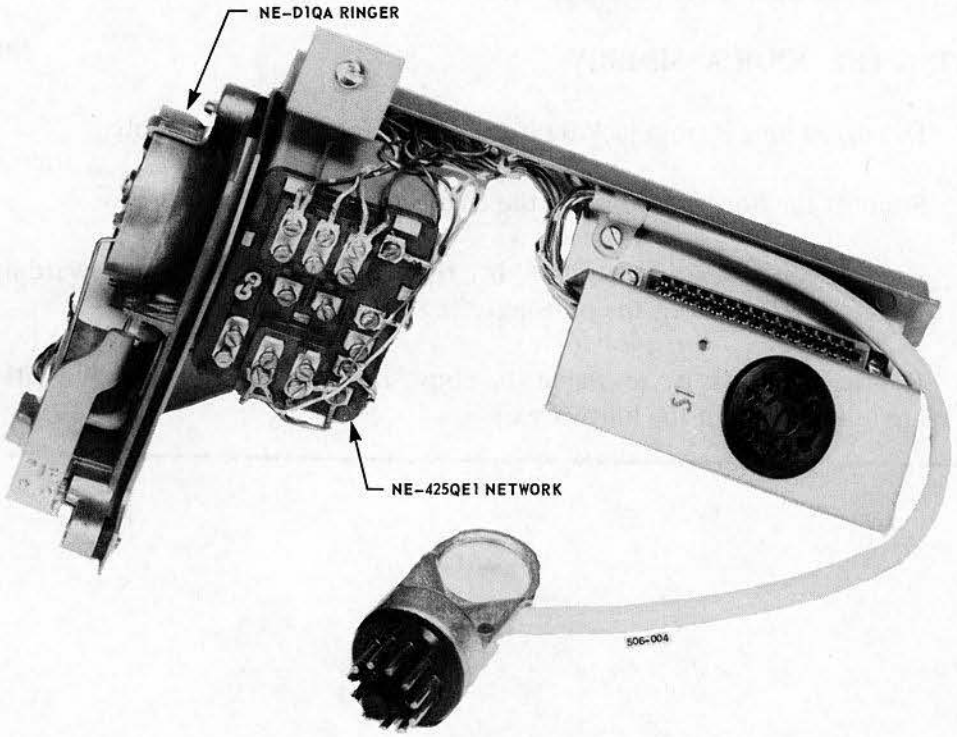

Fig. 7 – Apparatus Module

CHART 3 – REMOVAL AND REPLACEMENT OF COIN CHUTE NSQ1016 L1	
STEP	**PROCEDURE**
1	Open door assembly as described in Chart 1.
2	Disengage coin release linkage from coin chute (Fig. 8).
3	Disengage coin chute retainer on upper left side of chute bracket (Fig. 8).
4	Lift chute upward until lower end can be pulled outward, then pull upper end upward and forward to clear mounting bracket.
5	Replace the coin chute by reversing above procedure.

CHART 4 – REMOVAL AND REPLACEMENT OF PRINTED CIRCUIT BOARD ASSEMBLY	
STEP	**PROCEDURE**
1	Open door assembly as described in Chart 1.
2	Disconnect plug 2 from jack 2.
3	Grasp front edge of PCB assembly at top and bottom. Do not apply pressure on components of PCB assembly.
4	Pull PCB assembly outward, away from connector. PCB should be pulled out carefully to avoid damage to the components on the PCB.
5	Insert PCB with component side adjacent to the right hand lock strike and outside wall of housing.
6	Reconnect plug 2 to jack 2.

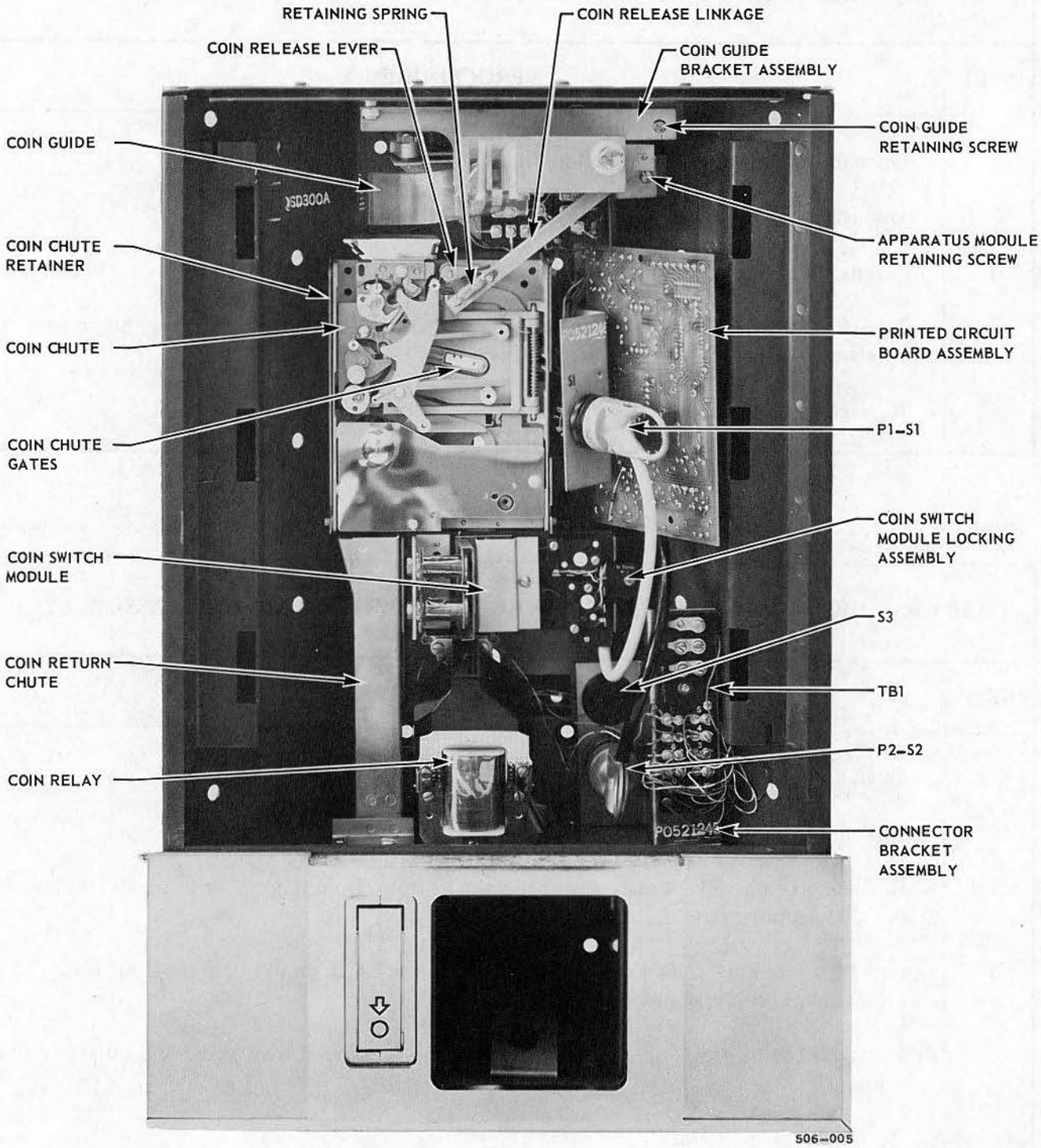

Fig. 8 – QSD300A and QSD2300A Coin Telephone Set Door Assembly Removed

CHART 5 – REMOVAL AND REPLACEMENT OF COIN RETURN CHUTE ASSEMBLY (Fig. 9)	
STEP	**PROCEDURE**
1	Open door assembly as described in Chart 1.
2	Remove coin chute as described in Chart 3.
3	Loosen retaining screw (Fig. 9).
4	Remove three mounting screws (Fig. 9).
5	Tilt assembly forward and lift upward.
6	Replace the assembly by reversing the above procedure.

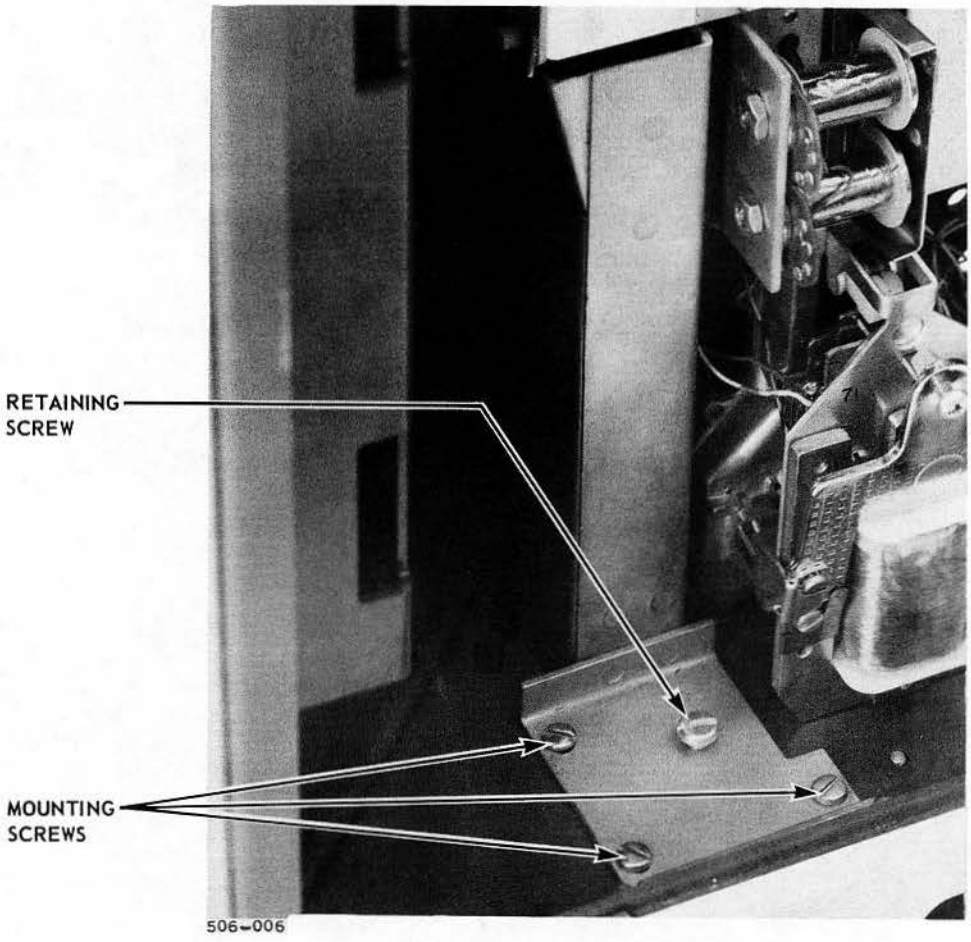

Fig. 9 – Mounting Arrangement for Coin Return Chute Assembly

CHART 6 – REMOVAL AND REPLACEMENT OF THE COIN SWITCH MODULE	
STEP	**PROCEDURE**
REMOVAL OF SWITCH MODULE	
1	Open door assembly as described in Chart 1.
2	Disconnect plug 1 from jack 1.
3	Rotate the retaining screw 1/4 turn counterclockwise to free right end of module.
4	Pull right end of module forward until it clears the mounting bracket.
5	Move the whole module to the right until it clears the left side of the mounting bracket.
REPLACEMENT OF SWITCH MODULE	
6	Align two locating tabs on left side of module with two slots on the left side of chute bracket.
7	Align locking assembly with oval slot on right side of bracket.
8	Press the right side of the module backwards against the mounting bracket.
9	Rotate the locking assembly 1/4 turn clockwise.

CHART 7 – INSTALLATION AND REMOVAL OF INSTRUCTION AND NUMBER CARDS	
STEP	**PROCEDURE**
INSTRUCTION CARD (UPPER & LOWER)	
1	Remove clear plastic window. Slide window upward using finger pressure friction on outer surface of window. When lower edge of window is exposed the bottom of the window may be pried out and the window removed.
2	Insert instruction card.
3	Replace clear plastic window.
NUMBER CARD	
4	Remove clear plastic window using NS-16750 L3 releaser.
5	Insert number card.
6	Replace clear plastic window.

CHART 8 – INSTALLATION AND REMOVAL OF UPPER HOUSING LOCK (NE-22QD)	
STEP	**PROCEDURE**
1	Open and remove the door assembly as described in Chart 1.
2	Remove the four hexagon nuts but do not remove the washer spacers from the lock mounting studs (Fig. 10).
3	Place the key in the NE-22QD lock and operate the lock to fully withdraw the lock bolt.
4	Fit the lock to the four mounting studs. (The key must remain in the lock and the lock bolt shall be withdrawn. The key handle must be inserted through the hole in the door.)
5	Replace the four hexagon nuts and tighten.
6	Replace and close the door assembly.

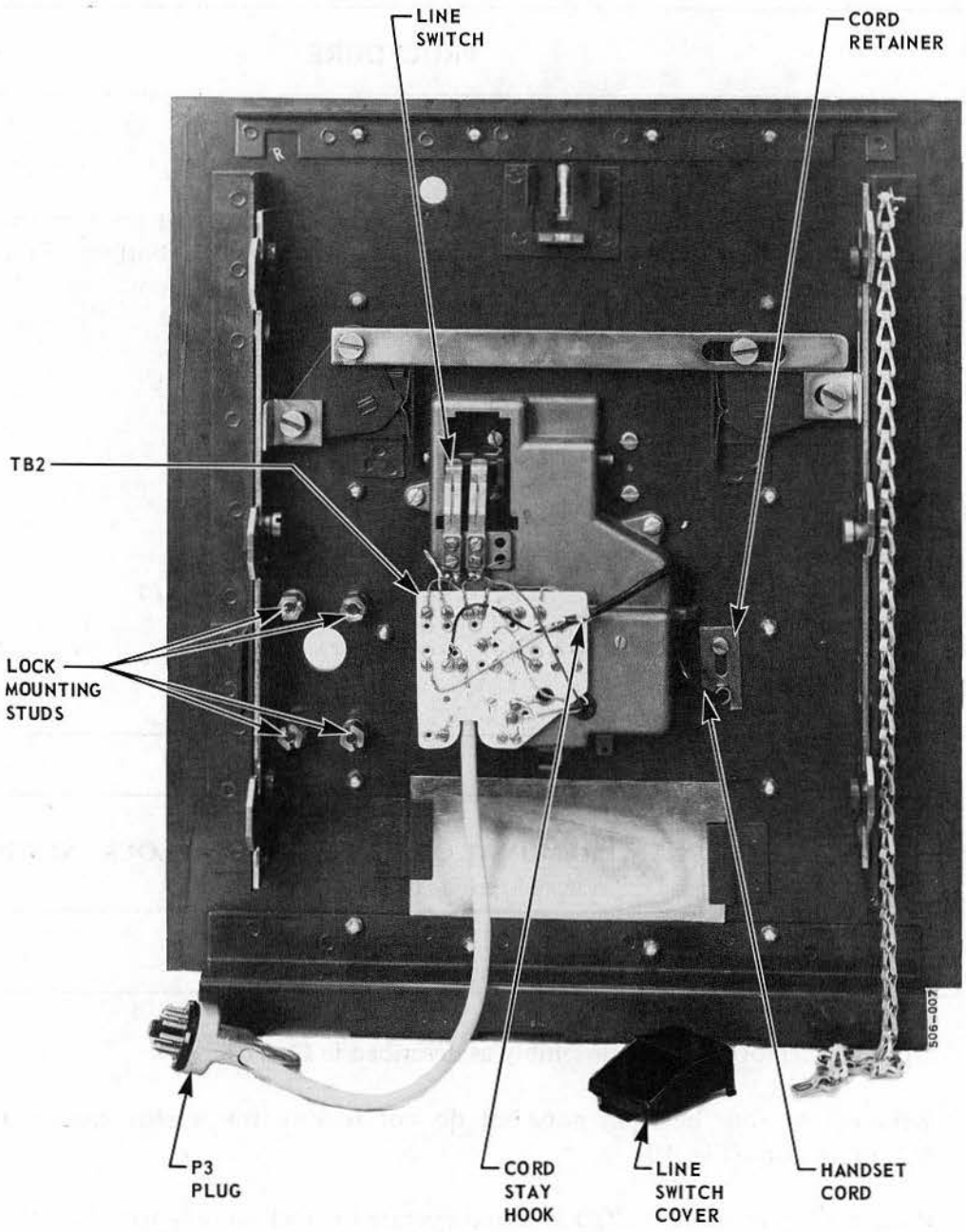

Fig. 10 – Door Assembly

CHART 9 – CONVERSION FROM MECHANICAL TO ELECTRONIC TOTALIZER (VIR)

STEP	PROCEDURE
1	Ensure that CO line is wired for loop start. Dial tone is heard in handset before any coins are deposited.
2	Open the door assembly as described in Chart 1.
3	Move R-G lead on TB1 on connector bracket assembly from terminal 5 to terminal G.
4	Disable the 5-cent coin trap on the switch module. (This may be done by wedging the release magnet armature in the operated position. If there is no intention of reactivating the mechanical totalizer, the release magnet armature assembly may be removed completely. The protective cover plate should be replaced.)
5	Remove PCB assembly from apparatus module as described in Chart 4.
6	Move R lead to required initial rate terminal (Fig. 11).
7	Move one G lead from terminal A to terminal B.
8	Insert PCB assembly.
9	Close the door assembly.
10	Perform operation test described in Part 6, Chart 13.