

## CHARGE-CARD PHONE INSTALLATION AND MAINTENANCE

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**1. GENERAL**

**1.01** This section provides information concerning the Charge-Card Phone or Charge-Card Phone with Carrier Selection Keys with R-TEC Systems Universal Program Rev B, D, or E (firmware 46-005-50). Included are instructions for installation and maintenance of these phones.

**1.02** This paragraph documents revisions and states reasons for reissue of this practice.

**1.03** The Charge-Card Phone is available as a Wall Mounted Phone, Desk Top Phone or Chassis Assembly. The Charge-Card Phone with Carrier Selection Keys is available as a Wall Mounted Phone, Desk Top Phone, Panel Mounted Phone, or Chassis Assembly. When interfaced with compatible ancillary equipment, these phones provide charge-a-call, calling-card, and commercial credit-card service. The phones with carrier selection keys provide the user with long distance carrier selection by the pressing of a single key or by entering the carrier's code at the DTMF keypad. The standard phone provides long distance carrier selection by entering the carrier's code at the DTMF keypad.

**1.04** The setting of the option switches and programming of the phone determines the call restrictions, output format, and the interface with ancillary equipment. The phone is capable of transmitting credit-card data and other information using DTMF pulsing.

**1.05** Additional technical literature available for these phones is:

- 300-410-150, Issue 1 — *Description, Option Planning and Application Considerations* Technical Practice
- F410-001 — “Carrier Selection Keypad Repair Kit” Service News
- K410-003 — “Charge-Card Phone Modified Firmware” Service News
- K410-001 — “Charge-Card Phone Available for Canadian Sales” Application News
- K410-002 — “Interexchange Carrier Labels Now Available from R-TEC Systems” Application News

**1.06** For additional literature or assistance in ordering, contact your local R-TEC Systems sales representative or R-TEC Systems Customer Service Department, 2100 Reliance Parkway, Bedford, Texas 76021, (817) 540-8278. For technical assistance contact R-TEC Systems Technical Service Department at (817) 540-8217.

## 2. DESCRIPTION

**2.01 Wall Mount Phone:** These phones consist of a front cover assembly and a rear pan assembly. The front cover is secured to the rear pan with a flat-head security screw with provisions for the installation of a customer provided WECO 29A type lock.

**2.02 Desk Top Phone:** These phones consist of a cover assembly and a base assembly. The cover is secured to the base with a button-head security screw. Provisions are made which allow fastening to a flat surface or loose mounting of the phone. When fastened to a flat surface the attaching screws and incoming line are not accessible when the cover is in place. The cover assembly is of stainless steel construction with walnut end panels.

**2.03 Panel Mount Phone:** These phones consist of a factory assembled housing and chassis assembly. A hinged stainless steel front panel provides access to the option switches and wiring connections. The front panel is secured with two flat head security screws with provision for the installation of a customer provided WECO 29A type lock.

**2.04 Chassis Assembly:** This assembly consists of a Front Panel Subassembly, Handset, Cir-

cuit Board with Processor, and miscellaneous hardware. The Chassis can be installed in a Model CCD 2478-410 Panel Housing manufactured by Redyref-Pressed and Welded Inc., or equivalent.

**2.05** All configurations of the phone contain the following easily replaceable modular sub-assemblies.

- Handset with Cord
- Circuit Board with Processor
- DTMF Keypad
- Card Reader
- Hookswitch
- Ringer

**2.06** In addition, the wall and panel mounted phones with carrier selection keys contain a Carrier Select Keypad Subassembly.

**2.07** The procedure for card insertion is next to the card reader on the front of the phone. Windows are provided for instructions to the user and for the phone number. The Charge-Card Phone with Carrier Selection Keys has satin finished carrier select keys with an indented surface for carrier identification labels. The instruction cards must be fabricated and procured locally (reference paragraph 9., Specifications for dimensions).

## 3. UNPACKING/INSPECTION/STORAGE

**3.01** Unpack each carton or crate and inspect the unit(s) for any visible signs of damage. Report any damage promptly to the freight carrier or, if insured separately, to the insurance company.

**3.02** Ensure each item has been received by checking received items against Table A (Wall or Panel Mount Phones), Table B (Desk Top Phones), or Table C (Chassis Assembly). In case of shortage, notify the freight carrier, insurance company, or R-TEC Systems Customer Service Department.

**3.03** If equipment is to be stored for any period of time, it is recommended that it be kept in the original shipping containers.

TABLE A

## WALL OR PANEL MOUNT PHONE LIST OF MATERIAL

PART NO.	DESCRIPTION	QTY
73-13-175	No. 8-32 x 1/4-inch Hex Nut	4
73-25-616	No. 8 Flat Washer	4
73-79-125	3/8-inch O.D. x 1/4-inch Spacer	4
73-76-750	1/4-20 x 1/2-inch Screw (Included with panel mount phones only)	4
73-81-409	Wall Mount Phones Technical Data Sheet	1
or		
73-81-410	Panel Mount Phones Technical Data Sheet	1
74-25-654	No. 8 Internal Tooth Lock Washer	4
74-25-656	1/4-inch Internal Tooth Lock Washer (Included with panel mount phones only)	4
76-011-18	Wall Mount Phone with Carrier Selection Keys, Dark Blue Cover and Light Blue Chassis	1
or		
76-011-19	Panel Mount Phone with Carrier Selection Keys and Light Blue Chassis	1
or		
76-011-28	Wall Mount Phone with Carrier Selection Keys, Light Brown Cover and Dark Brown Chassis	1
or		
76-011-29	Panel Mount Phone with Carrier Selection Keys and Dark Brown Chassis	1
or		
76-011-35	Wall Mount Phone with Dark Blue Cover and Light Blue Chassis	1
or		
76-011-38	Wall Mount Phone with Carrier Selection Keys, Grey Cover and Black Chassis	1
or		

TABLE A (Cont)

## WALL OR PANEL MOUNT PHONE LIST OF MATERIAL

PART NO.	DESCRIPTION	QTY
76-011-39	Panel Mount Phone with Carrier Selection Keys and Black Chassis	1
or		
76-011-45	Wall Mount Phone with Light Light Brown Cover and Dark Brown Chassis	1

TABLE B

## DESK TOP PHONE LIST OF MATERIAL

PART NO.	DESCRIPTION	QTY
72-07-524	Rubber Feet	4
73-81-412	Desk Top Phones Technical Data Sheet	1
76-011-97	Desk Top Phone	1
or		
76-011-99	Desk Top Phone with Carrier Selection Keys	1

## 4. PREPARATION FOR INSTALLATION

**4.01 Wall Mount, Panel Mount, and Desk Top Phones:** Gain Access to the Instruction Card(s) and Number Card by performing either (a), (b), or (c).

**Note:** Use an R-TEC Systems Security Screw T-Handle Wrench (Part No. 76-011-08) or equivalent to loosen or remove security screw(s).

(a) **Wall Mounted Phones:** Remove the rear pan from the phone by loosening the security screw and moving the rear pan down and away from the phone.

(b) **Panel Mounted Phones:** Loosening the two security screws and open the front panel.

TABLE C

## CHASSIS ASSEMBLY LIST OF MATERIAL

PART NO.	DESCRIPTION	QTY
72-02-101	Barrier Block	1*
72-08-545	18-inch Line Cord with Modular Connector	1*
72-44-845	Cable Swivel	1*
72-80-005	Grommet	1†
72-84-605 or 72-84-606	Handset, Black Handset, Brown	1 1
73-07-750	Ground Lug	1*
73-13-602	No. 6-32 Hex Nut	4†
73-13-603	No. 8-32 Hex Nut	4*
73-71-992	7/8-inch "E" type Retaining Ring	1*
73-74-205	No. 6-32 x 5/16-inch Phillips Head Screw	2*
73-74-208	No. 6-32 x 1/2-inch Phillips Head Screw	2*
73-81-413	Technical Data Sheet	1
74-25-615	No. 6 x 3/8-inch Flat Washer (Part of 76-011-20, -30, and -40)	4†
74-25-653	No. 6 Internal Tooth Lock Washer	4*
74-25-653	No. 6 Internal Tooth Lock Washer (Part of 76-011-20, -30, and -40)	4†
74-25-654	No. 8 Internal Tooth Lock Washer	4*
76-011-10	Circuit Board with Processor	1
78-14-569	Carrier Select Keypad (Part of 76-011-20, -30, and -40)	1†

TABLE C (Cont)

## CHASSIS ASSEMBLY LIST OF MATERIAL

PART NO.	DESCRIPTION	QTY
78-14-573	Front Panel Subassembly, Light Blue (Part of 76-011-20 and -37)	1
or 78-14-574	Front Panel Subassembly, Dark Brown (Part of 76-011-30 and -47)	1
or 78-14-575	Front Panel Subassembly, Black (Part of 76-011-40 and -57)	1

\* Packed in small parts envelope in chassis carton

† Packed in small parts envelope inside carrier select keypad carton

(c) **Desk Top Phones:** Separate the Cover Assembly and Base Assembly per Fig. 1 and the following instructions:

- (1) Lay the Handset by the left side of the phone.
- (2) Remove the Security Screw.
- (3) Carefully slide the Cover Assembly forward approximately one inch.

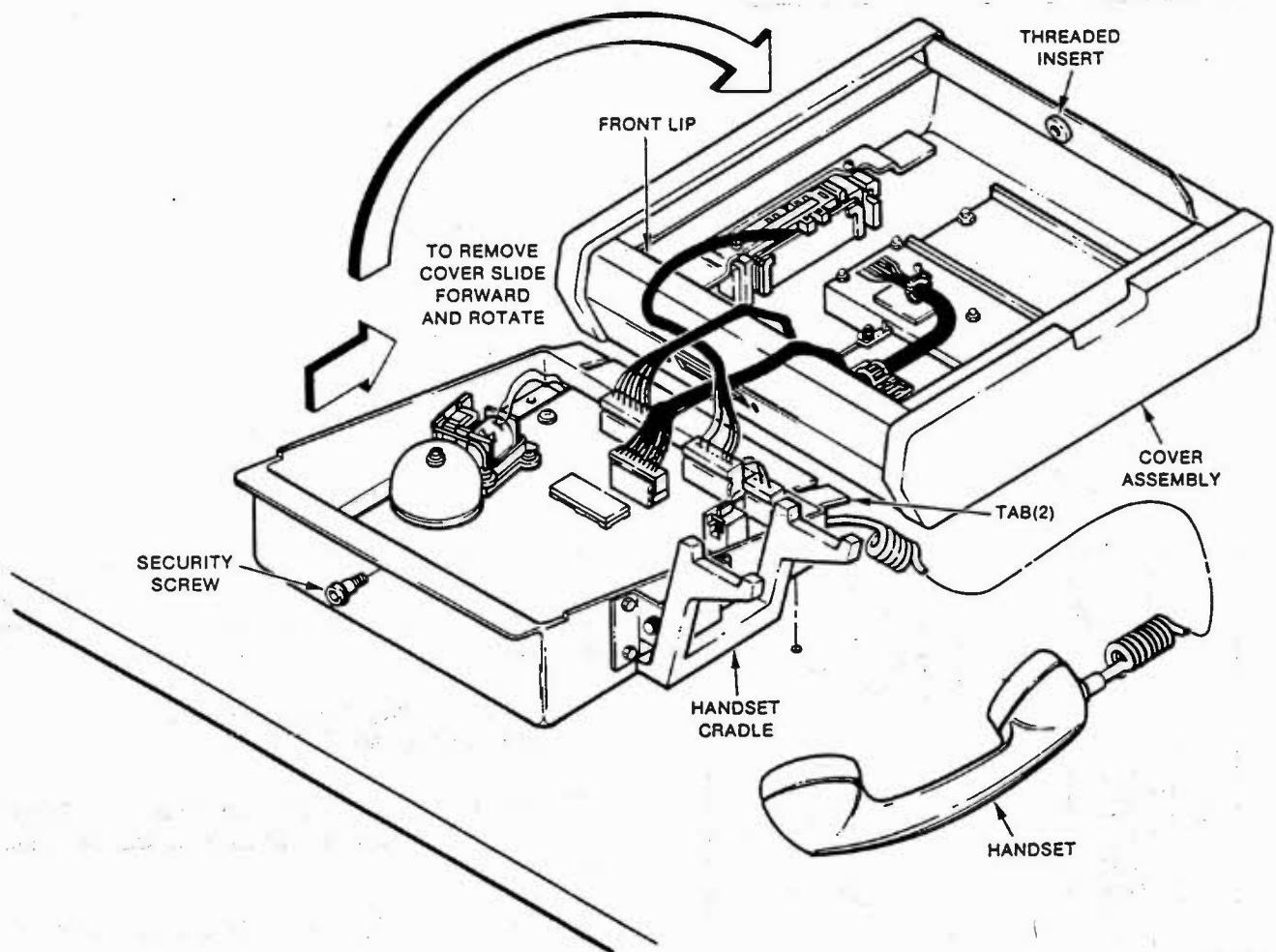
**Caution:** Care must be taken when doing the following step to ensure that none of the cables between the Cover Assembly and Base Assembly are damaged or their connectors loosened.

- (4) Rotate the Cover Assembly so that it is in front of the Base Assembly.

#### A. Information Card(s) Installation

**4.02 Wall and Panel Mount Phones:** Install the Upper Instruction Card per Fig. 2 and the following instructions:

- (1) Remove two No. 6-32 Hex Nuts, two No. 6 ITL Lock Washers, and Plate from the Cover (wall mounted phone) or Front Panel (panel mounted phone).



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Fig. 1—Cover Assembly Removal (Desk Top Phone)

(2) Place the instruction card and Plate over studs and secure with the previously removed hardware.

**4.03 Wall Mount Phones, Panel Mount Phones, and Chassis Assembly:** Install the Lower Instruction Card per Fig. 3 and the following instructions:

(1) Remove two No. 6-32 Hex Nuts, two No. 6 ITL Lock Washers, and Plate from the Front Panel Subassembly.

(2) Place the instruction card and Plate over studs and secure with the previously removed hardware.

**4.04 Desk Top Phones:** Install the Instruction Card per Fig. 4 and the following instructions:

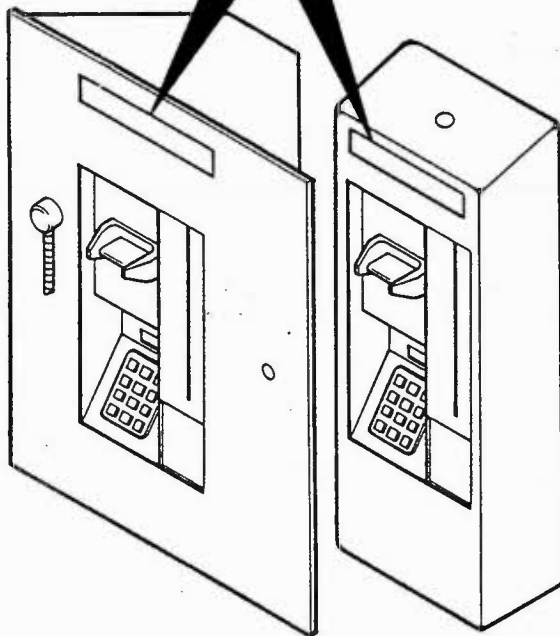
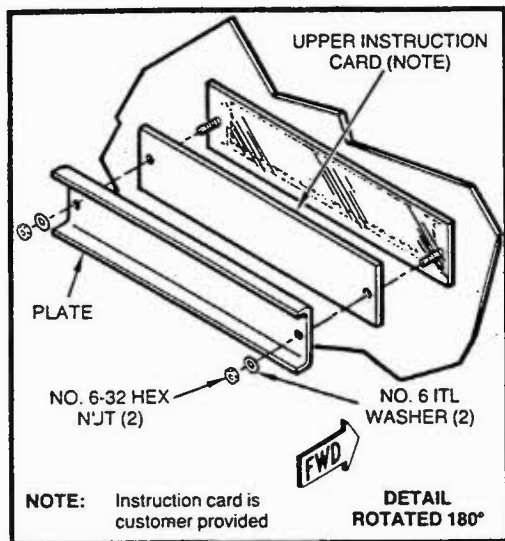
(1) Remove two No. 6-32 Hex Nuts, two No. 6 ITL Lock Washers, and Plate from the Cover Assembly.

(2) Place the instruction card and Plate over studs and secure with the previously removed hardware.

#### B. Number Card Installation

**4.05** Install the Number Card per the following instructions:

(1) Remove two No. 6-32 Hex Nuts, two No. 6 ITL Lock Washers, and Plate from the Front Panel Subassembly [Wall Mount Phones, Panel Mount Phones, and Chassis Assemblies (Fig. 5)] or Cover Assembly [Desk Top Phones (Fig. 4)].



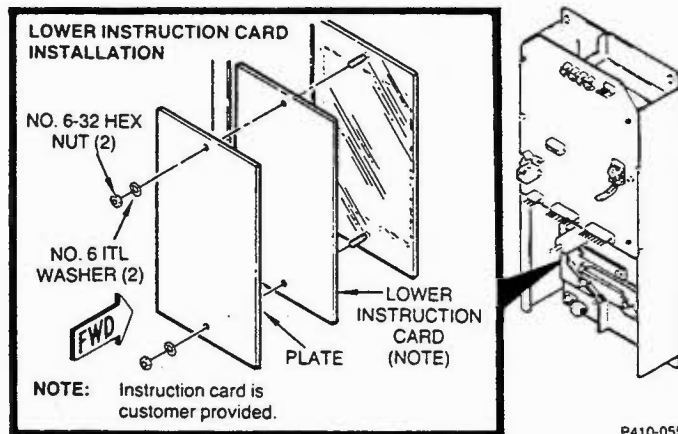
P410-054

Fig. 2—Upper Instruction Card Installation

(2) Place the Number Card and Plate over studs and secure with the previously removed hardware.

**C. Ringer Enabling or Disabling (Fig. 6)**

**4.06** Enable ringer by ensuring that the Ring Load Switch is in the "UP" position (turn counter clockwise).



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Fig. 3—Lower Instruction Card Installation

**4.07** Disable ringer by disconnect cable from the circuit board connector J9 and setting the Ring Load Switch to the "DOWN" position (turn clockwise).

**D. Lock or Lock Plug Bracket Installation (Panel or Wall Mount Phones)**

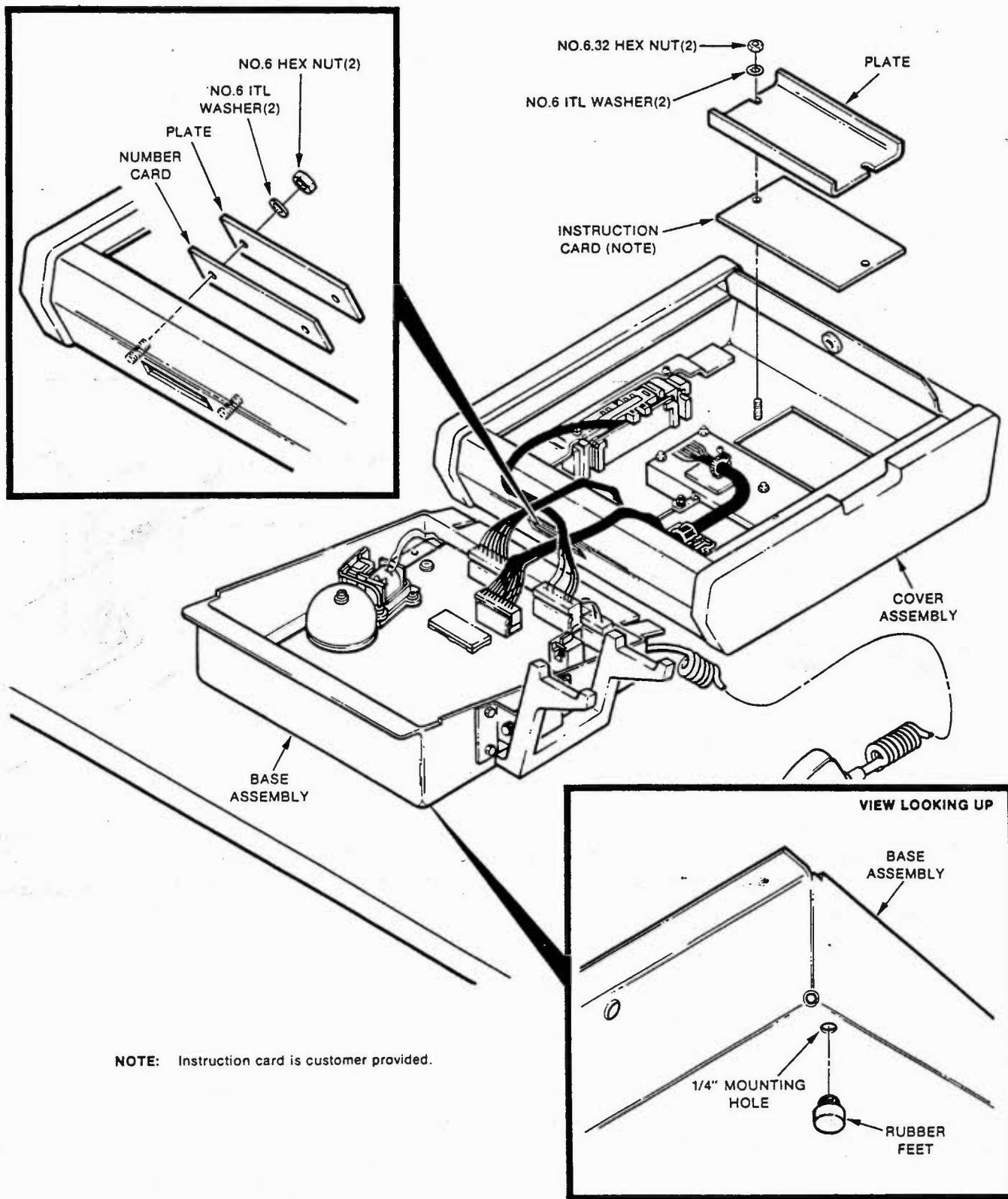
**4.08** Install a Lock Plug Bracket (Part No. 76-011-04) or WECO 29A type Lock on wall and panel mounted phones.

**4.09 WECO 29A Type Lock Installation (Fig. 7):**

- (1) Remove hardware from the envelope supplied with phone.
- (2) Place four Spacers on the four studs in the top of the Cover (Wall Mount Phones) or the Front Panel (Panel Mount Phones).
- (3) Place the customer furnished Lock on the studs ensuring that the key slot lines up with the hole in the Cover.
- (4) Secure lock using four No. 8 Flat Washers, four No. 8 ITL Washers, and four No. 8-32 Hex Nuts.

**4.10 Lock Plug Bracket Installation (Fig. 8):**

- (1) Remove hardware from the envelope supplied with phone.
- (2) Place Lock Plug Bracket on the four studs in the top of the Cover (wall mounted phone) or the Front Panel (panel mounted phone).



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Fig. 4—Instruction Card, Number Card, and Rubber Feet Installation (Desk Top Phone)



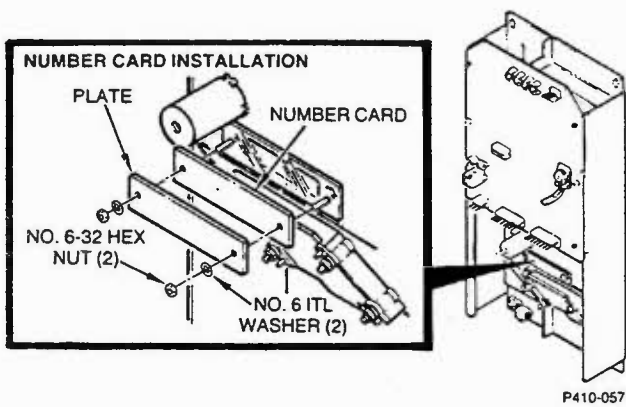


Fig. 5—Number Card Installation (Wall Mount Phones, Panel Mount Phones and Chassis Assemblies)

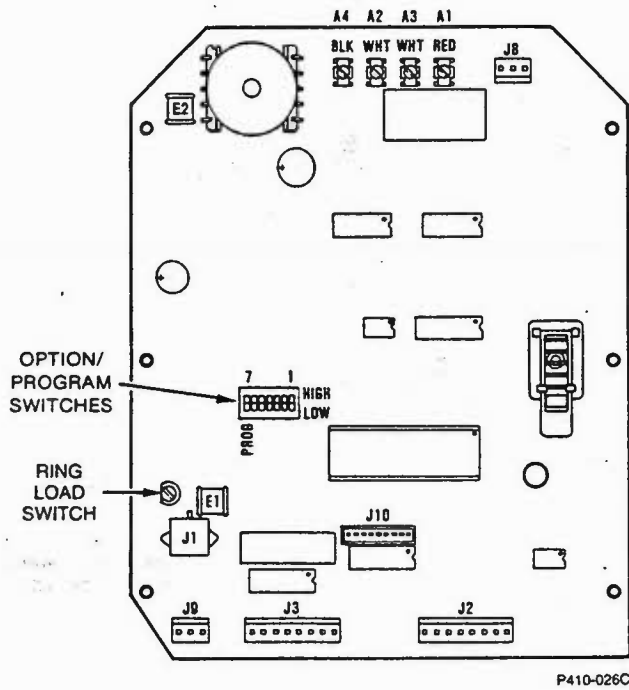


Fig. 6—Ring Load Switch and Option/Program Switches Locations

(3) Secure Lock Plug Bracket using four Spacers, four No. 8 Flat Washers, four No. 8 ITL Washers, and four No. 8-32 Hex Nuts.

**E. Rubber Feet Installation (Desk Top Phone)**

4.11 If a Desk Top Phone is to be loose mounted, install four Rubber Feet on the Base Assembly per Fig. 4 by pressing Rubber Feet firmly into the four 1/4-inch mounting holes.

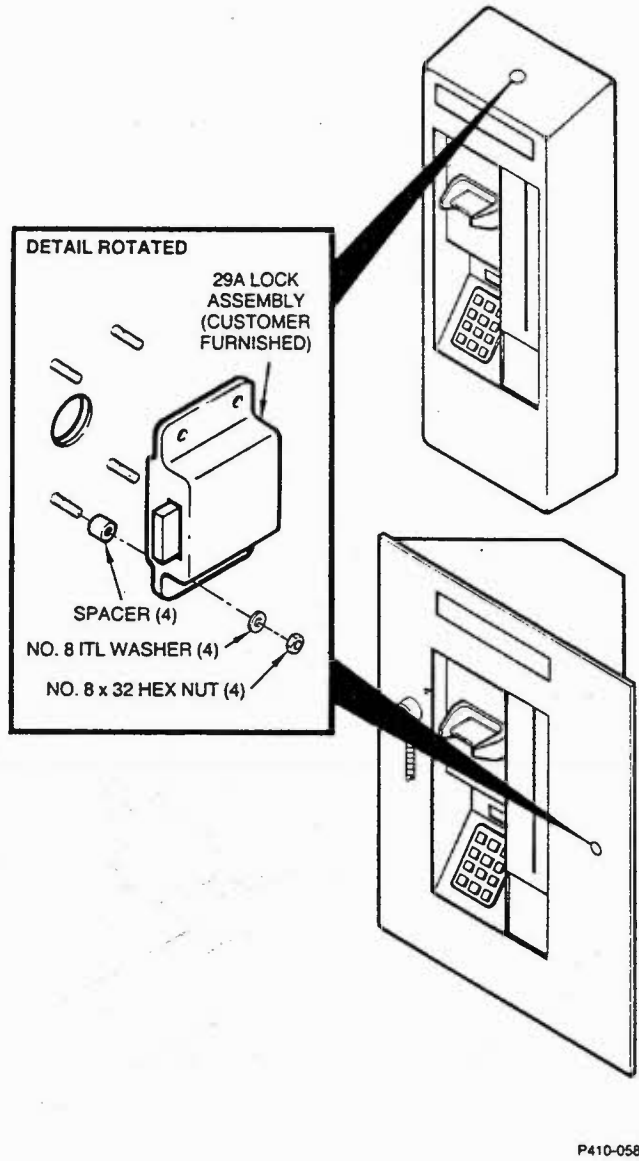
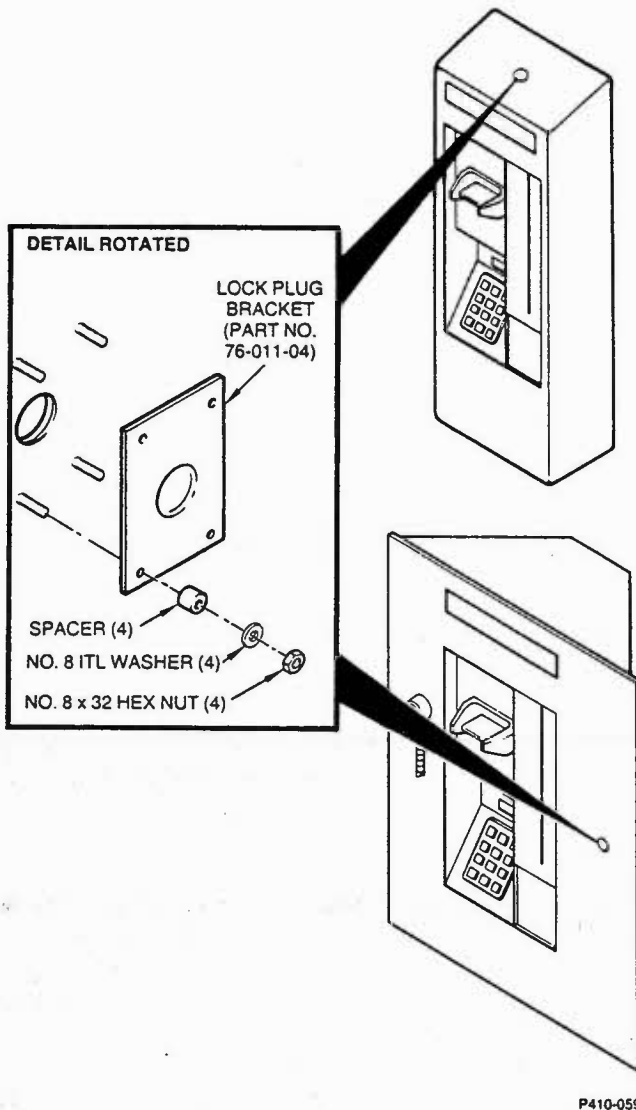


Fig. 7—Lock Installation (Wall or Panel Mounted Phones)

**F. Carrier Identification Labels Installation and Removal**

4.12 Carrier Identification Labels for the phones with carrier selection keys may be purchased from R-TEC Systems or supplied locally. Ordering and descriptive information is available in R-TEC System's "Application News K410-002". Contact Customer Service Department at (817) 540-8217. Reference paragraph 9. for mechanical dimensions of customer furnish labels.





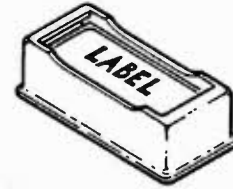
**Fig. 8—Lock Plug Bracket Installation  
(Wall or Panel Mounted Phones)**

#### 4.13 Carrier Identification Labels Installation:

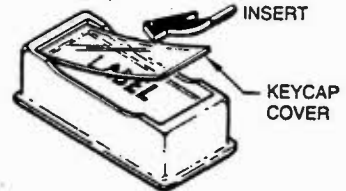
Prior to installing labels with adhesive back, clean the Carrier Select Keys with a solvent type cleaner that does not leave a residue. Install labels using Fig. 9 and the following instructions.

- (1) Place Label (with paper backing removed if applicable) in the indentation on the top of the Keycap (Reference Fig. 9, Step 1.)
- (2) Place one end of the Keycap Cover in indentation at either end of Keycap (Reference Fig. 9, Step 2.)
- (3) Bow center of the Keycap Cover up, place its loose end in the indentation at other end of Keycap (Reference Fig. 9, Step 3.)

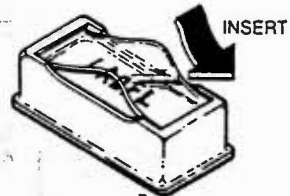
STEP 1:



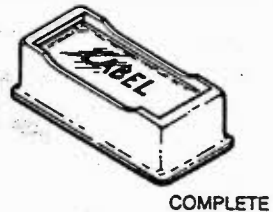
STEP 2:



STEP 3:



STEP 4:



P410-060

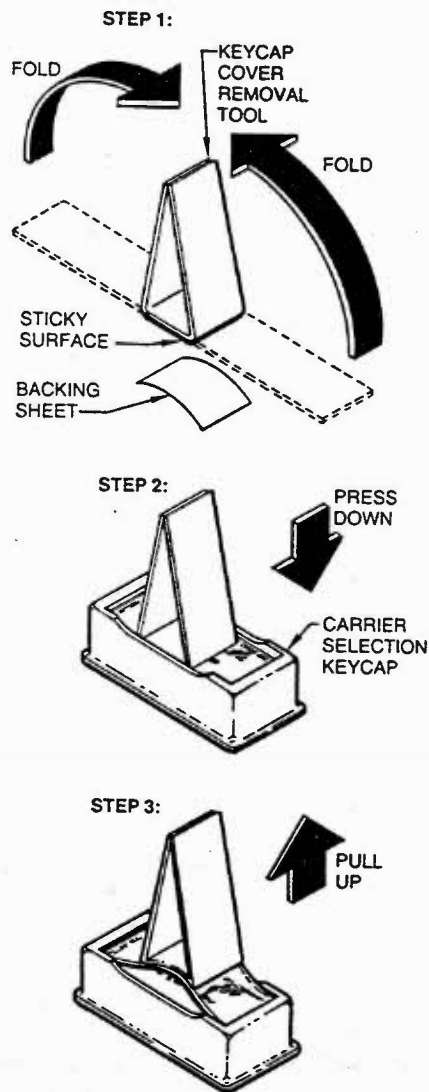
**Fig. 9—Carrier Identification Label and  
Keycap Cover Installation**

- (4) Fig. 9, Step 4 shows a Keycap with the Label and Cover properly installed.

#### 4.14 Carrier Identification Labels Removal:

Remove labels using the Keycap Cover Removal Tool furnished with the Keycap Covers, Fig. 10, and the following instructions.

- (1) Bend both ends of the Keycap Removal Tool up at the scored marks on the tool. Ensure that the Backing Sheet is on the outside of the formed triangle. Remove Backing Sheet. (Reference Fig. 10, Step 1.)
- (2) Place sticky surface of Keycap Removal Tool on Keycap Cover and press the tool down firmly (Reference Fig. 10, Step 2.)



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Fig. 10—Keycap Cover Removal

- (3) Firmly grasp the top of the Keycap Removal Tool and quickly pull the tool up (Reference Fig. 10, Step 3.)
- (4) Remove Carrier Identification Label from Keycap.

### G. Programming the Phone

**4.15** All Charge-Card Phones are equipped with an EEROM (Electrically Erasable Read Only Memory) which allows them to be programmed prior to installation without concern for program retention. This may be done using a line circuit, a -48V DC battery feed circuit having at least 400 ohms DC resistance or a Terminal Equipment Tester such as the Protel TEC-10-BELL or equivalent.

**4.16** To prepare for programming using a -48V DC battery feed circuit or line circuit, connect the circuit leads to the Tip and Ring Terminals of the Barrier Block (wall or panel mount phones), the red and green leads on an installed 18-inch cable with modular connector (chassis assemblies) or the spade clips on the cord of the desk phone.

**4.17** To prepare for programming using a terminal equipment tester, use the instructions supplied with the tester.

**4.18** Follow the instructions on the "Programming Work Sheet" to program the phone and set the Option/Program Switches.

**4.19** To complete the Preparation for Installation, secure the phone and repack in its original carton.

## 5. INSTALLATION

**Note:** Use an R-TEC Systems Security Screw T-Handle Wrench (Part No. 76-011-08) or equivalent to loosen or remove security screw(s).

### A. Wall Mount Phone

**5.01** Install the phone in any enclosure that will accept a box type coin or coinless telephone set, such as the WECO 1-type coin or 10A coinless telephone sets or on a flat vertical surface. If the phone is to be mounted above a horizontal surface such as a table or shelf allow 1/2-inch minimum clearance between lower edge of Rear Pan and horizontal surface.

**5.02** Run the Station Wire through the Grommet (Fig. 11) and attach to the Barrier Block. If additional grounding is required, route Ground Wire through Grommet and attach to Rear Pan and/or Cover Ground Lugs. Mount using four customer furnished 1/4-inch Screws (Fig. 11).

**Note:** If the Rear Pan is to be located such that the Station Wire or Ground Wire will be routed between the Rear Pan and enclosure or vertical surface use four customer furnished 1/4" spacers to provide Ground Wire and/or Station wire clearance.

**5.03** If the phone has a Lock installed, ensure that the lock is in the retracted position. Back the Security Screw (Fig. 11) out until it is flush with the internally threaded post.

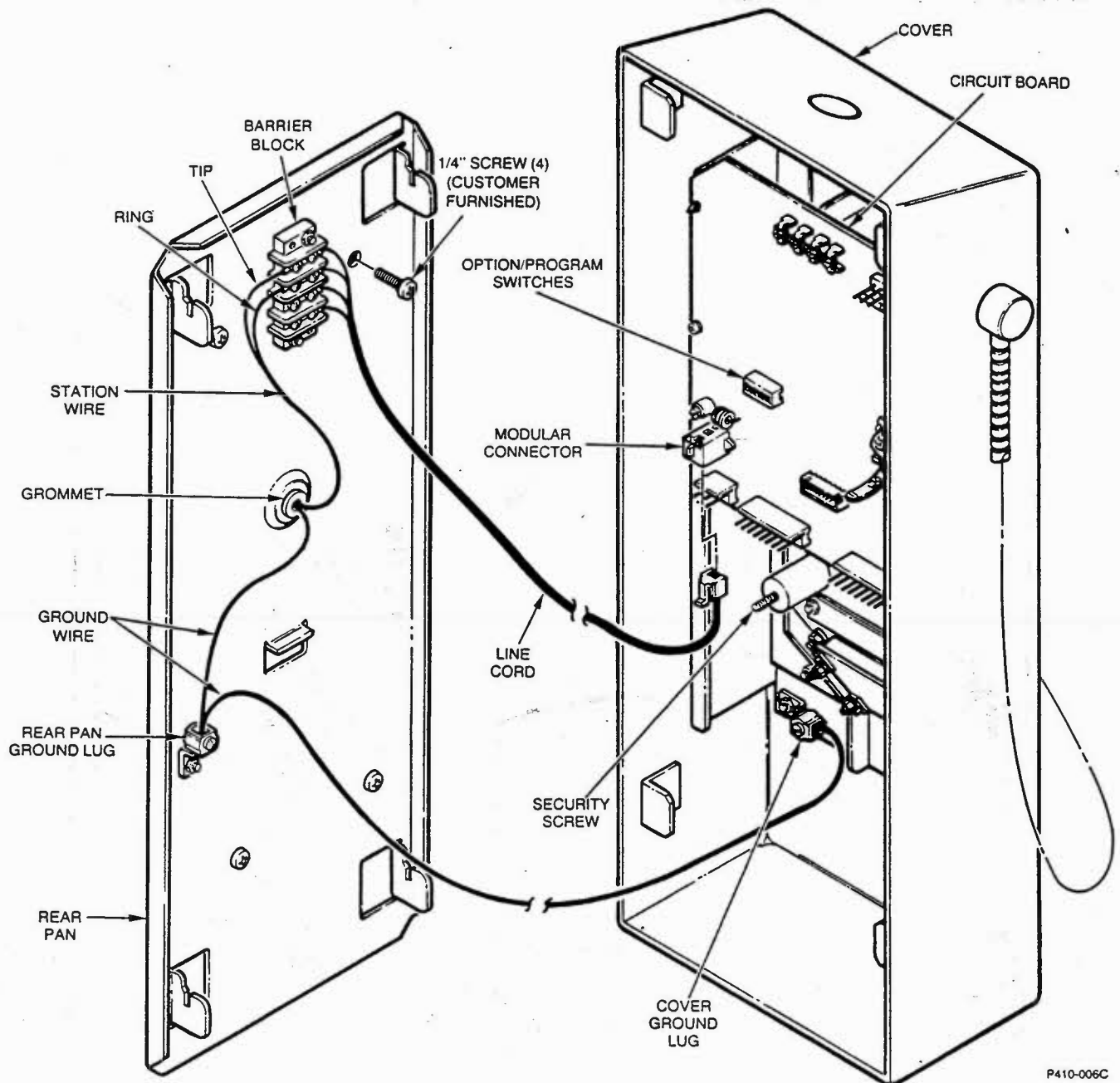


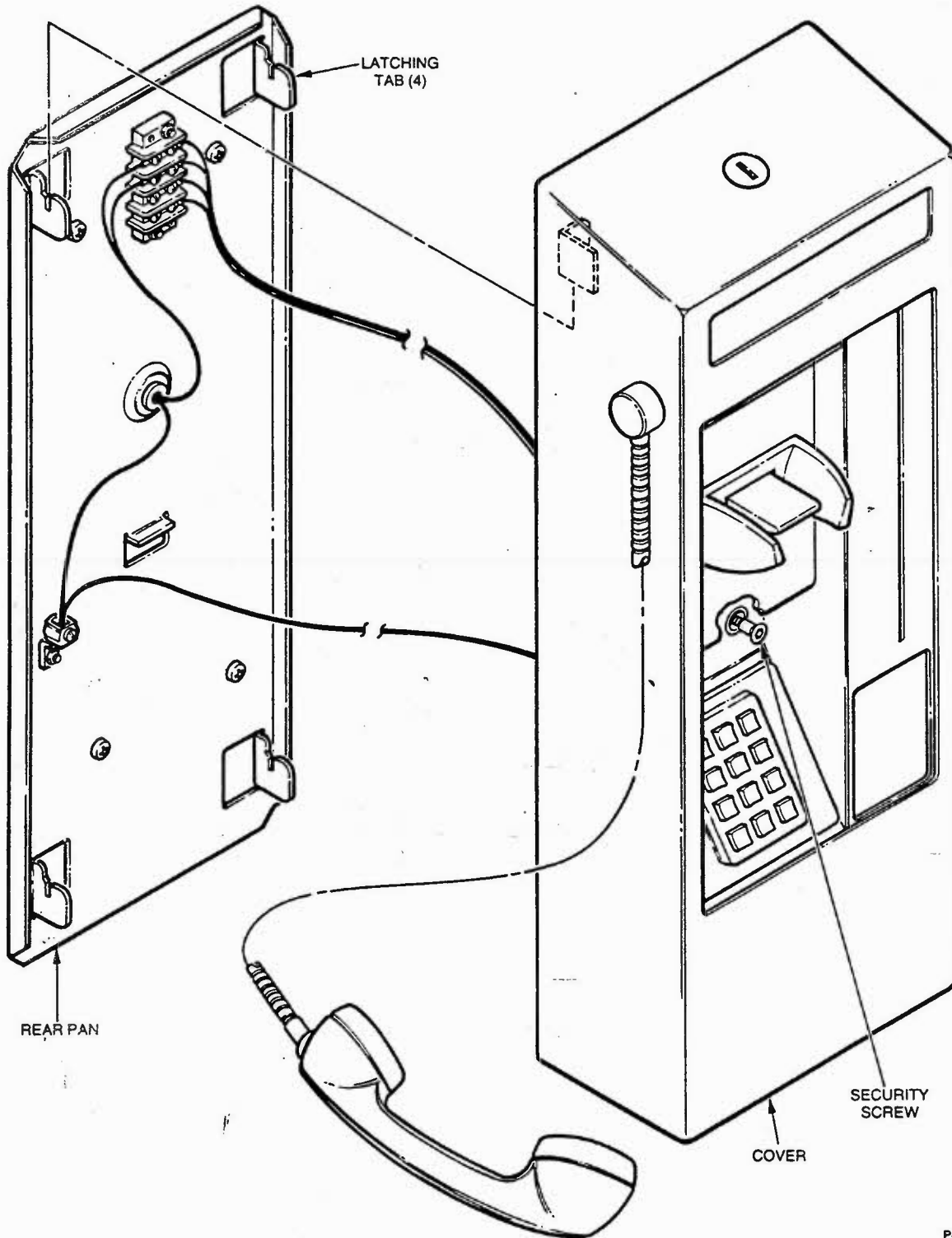
Fig. 11—Rear Pan Installation (Wall Mount Phone)

- 5.04** Hold the Cover close to the Rear Pan. Connect the Modular Connector on the Line Cord to the Circuit Board Subassembly (Fig. 11).
- 5.05** If the phone was not programmed prior to installation, use the "Programming Work Sheet" to configure the phone.
- 5.06** Set the Option/Program Switch Position 7 HIGH (NORM) (reference Fig. 6).

**Caution:** Operating the phone with Option/Program Switch Position 7 set LOW (PROG) may cause loss of revenue.

- 5.07** Keep the Line Cord clear of the Latching Tabs and install Cover by pushing Cover back and down (Fig. 12).
- 5.08** Tighten the Security Screw and engage the Lock Assembly (if used) to secure Cover.

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P410-002A

Fig. 12—Cover Installation (Wall Mount Phone)

**B. Desk Top Phone**

**5.09** Separate the Cover Assembly and Base Assembly per Fig. 13 and the following instructions:

- (1) Lay the Handset by the left side of the phone.
- (2) Use a security screw wrench to remove the Security Screw.
- (3) Carefully slide the Cover Assembly forward approximately one inch.

**Caution:** Care must be taken when doing the following step to ensure that none of the cables between the Cover Assembly and Base Assembly are damaged or their connectors loosened.

- (4) Rotate the Cover Assembly so that it is in front of the Base Assembly (reference Fig. 13).

**5.10** If the phone is to be fastened to the mounting surface, perform the following steps:

**Note:** When locating the phone, allow adequate clearance behind the phone to allow insertion of and removal of the security screw wrench and Security Screw. Check that the Handset Cradle with the Handset in place has adequate clearance.

- (1) Locate the four mounting holes per the Hole Pattern in Fig. 13, if wood or sheet metal screws (customer furnished) are to be used, drill the appropriate pilot holes. If machine screws are to be used, drill 1/4-inch holes.
- (2) Locate the 1/2-inch hole for the Line Cord per the Hole Pattern in Fig. 13.
- (3) Ensure that rubber feet have NOT been installed in the Base Assembly. If they have been installed, remove by prying loose with a standard screw driver.
- (4) Route the Line Cord through the 1/2-inch hole.
- (5) Place the Base Assembly over the four mounting holes. Check for proper alignment.
- (6) Secure the Base Assembly using four customer furnished No. 10 Screws.

**5.11** If the phone is to be loose mounted, check the phone to ensure that the four Rubber Feet have been installed. If not, install per instructions in paragraph 4.10.

**5.12** Connect the Line Cord to the Connector Block.

**5.13** If the phone was not programmed prior to installation, use the "Programming Work Sheet" to configure the phone.

**5.14** Set the Option/Program Switch Position 7 HIGH (reference Fig. 6).

**Caution:** Operating the phone with Option/Program Switch Position 7 set LOW may cause loss of revenue.

**5.15** Place the Cover Assembly on Base Assembly, ensure that the Cover's Front Lip goes under the Tabs on the Base (reference Fig. 13). Slide Cover to the rear.

**5.16** Press the Cover Assembly down and install the Security Screw through the hole in the back of the Base and into the threaded insert in the Cover. Tighten using a security screw wrench.

**5.17** Place Handset on the Cradle.

**C. Panel Mount Phone**

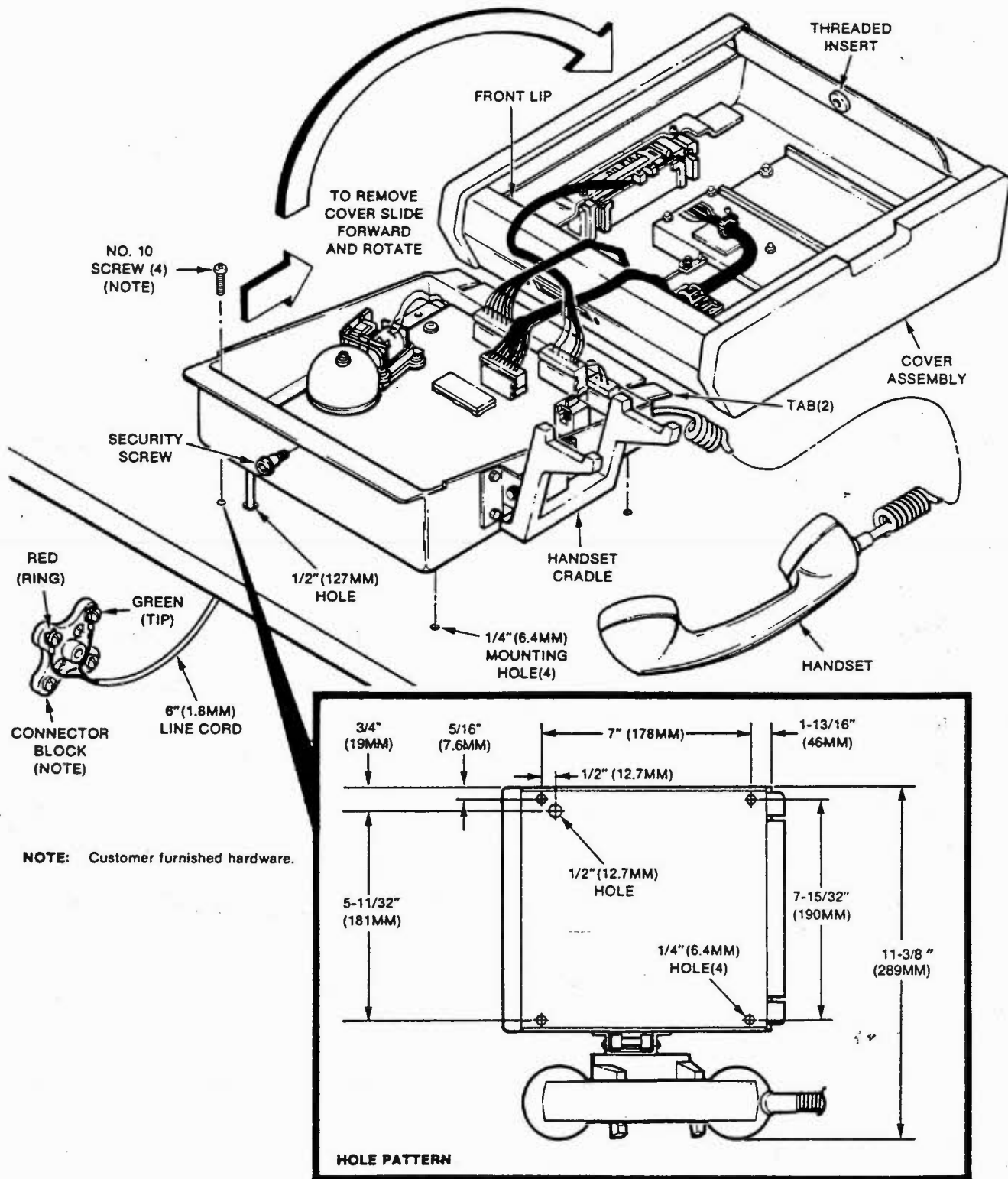
**5.18** Install the phone in any enclosure that will accept a panel type coin or coinless telephone set, such as the WECO 2-type coin or 20A coinless telephone sets using four 1/4-inch Internal Tooth Lock Washers and four 1/4-20 x 3/4-inch Screws (reference Fig. 14). Ensure that the Station Wire is routed through the Entry Hole before tightening mounting Screws.

**5.19** Connect the Station Wire to the Barrier Block.

**5.20** If the phone was not programmed prior to installation, use the "Programming Work Sheet" to configure the phone.

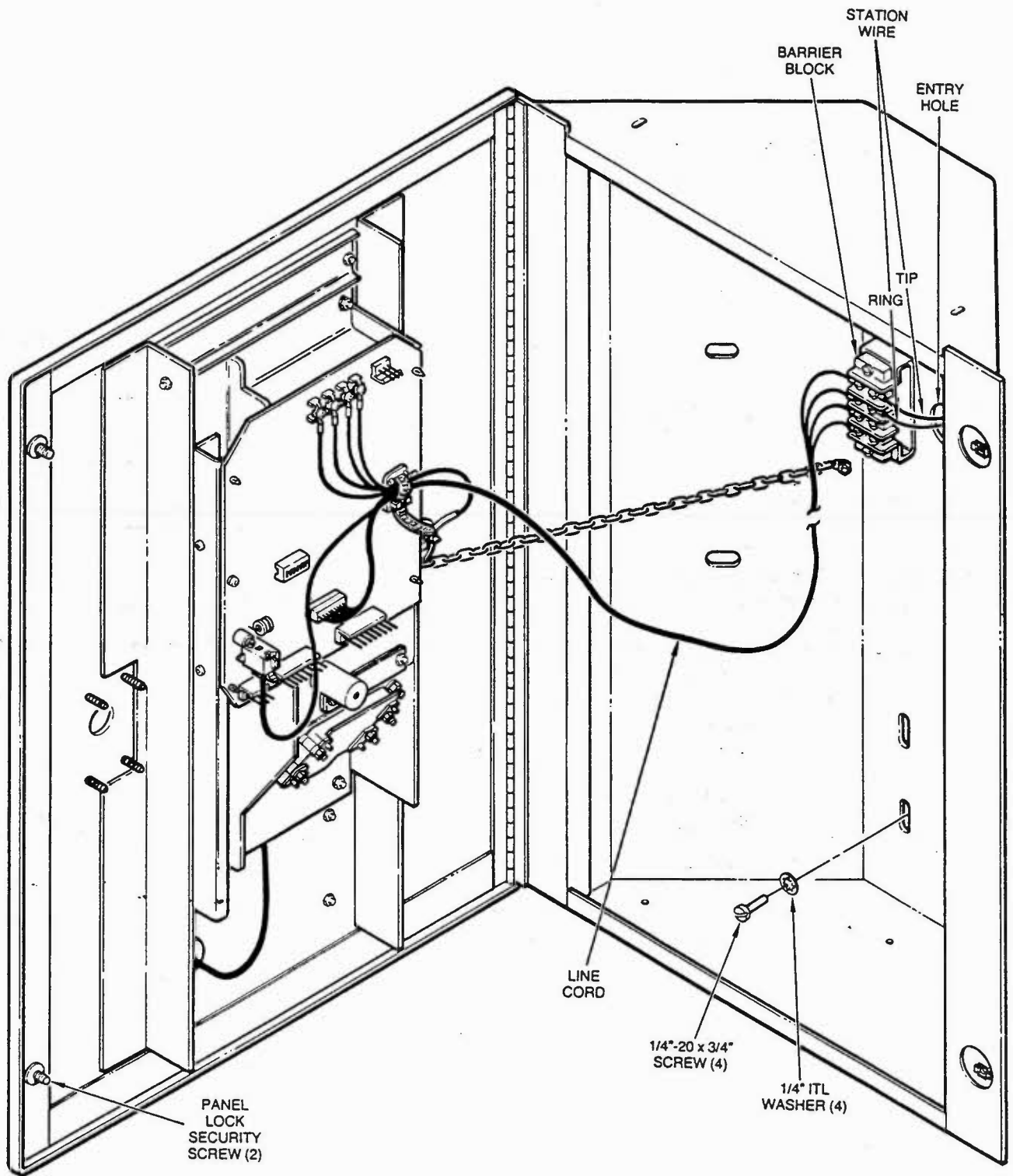
**5.21** Set the Option/Program Switch Position 7 HIGH (reference Fig. 6).

**Caution:** Operating the phone with Option/Program Switch Position 7 set LOW may cause loss of revenue.



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Fig. 13—Desk Top Phone Installation



P410-010D

Fig. 14—Panel Mount Phone Installation



5.22 Secure Front Panel by tightening the two Panel Lock Security Screws and engaging lock (if used).

#### D. Chassis Assembly

5.23 Install the Charge-Card Phone Chassis Assembly in a Model CCD 2478-410 Panel Housing manufactured by Redyref-Pressed and Welded Inc., or equivalent.

5.24 Loosen the two security screws which secure the panel door using a security screw wrench.

5.25 If a Carrier Selection Keypad is required, perform the following steps:

(1) Drill four 3/16-inch mounting holes and a 7/8-inch cable grommet hole per the dimensions in Fig. 15.

(2) Insert the Grommet in the 7/8-inch hole (reference Fig. 15).

(3) Route the Carrier Selection Keypad Cable through the Grommet.

(4) Place the Carrier Selection Keypad on the panel and secure using four No. 6-32 Hex Nuts, four No. 6 Internal Tooth Lock Washers, and four No. 6 x 3/8-inch Flat Washers.

5.26 Assemble the Cable Swivel and Handset cable. Install on the Front Panel using the "E" Type Retaining Ring (reference Fig. 16).

5.27 Install the Barrier Block on the bracket next to the entry hole using two No. 6-32 x 1/2-inch Phillips Head Screws and two No. 6 Internal Tooth Lock Washers (reference Fig. 17).

5.28 Connect the Station Wire and the Line Cord to the Barrier Block per Fig. 17.

5.29 Remove the Door Stop Chain Retainer Screw and install from the reverse side of the Stiffener. Place Door Stop Chain on Retainer Screw and secure with a customer furnished Lock Nut (reference Fig. 17).

5.30 Install the Front Panel Subassembly on the Front Panel using four No. 8-32 Hex Nuts, four No. 8 Internal Tooth Lock Washers, and Ground Lug (reference Fig. 18).

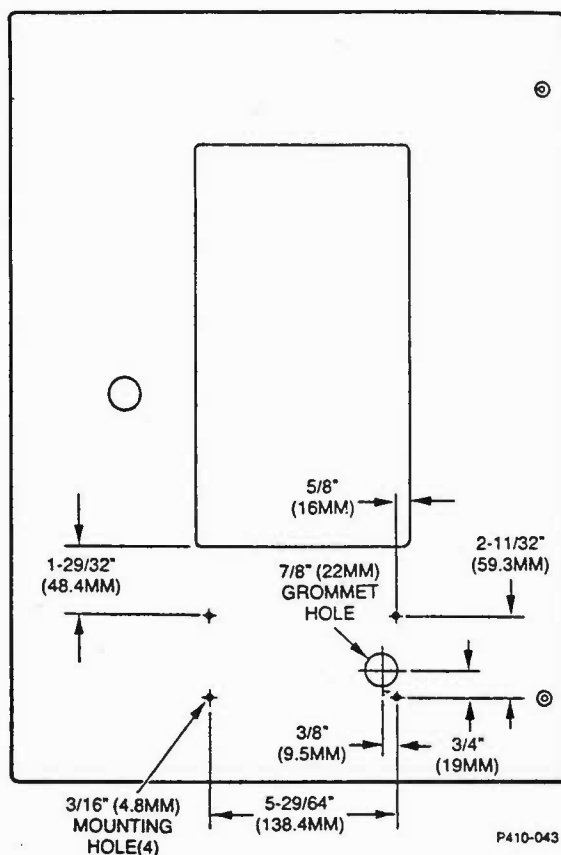


Fig. 15—Panel Modifications

5.31 Install the Circuit Board on the Front Panel Subassembly using two No. 6 x 5/16-inch Phillips Head Screws and two No. 6 Internal Tooth Lock Washers (reference Fig. 18).

5.32 Connect the four Lugs on the Receiver Cable to the four Terminals on the Circuit Board with the Red Wire going to Terminal A1, the White Wires going to Terminals A2 and A3, and the Black Wire going to Terminal A4 (reference Fig. 18).

5.33 Plug the connector on the cable from the Card Reader to connector J3 on the Circuit Board (reference Fig. 18).

5.34 Plug the connector on the cable from the DTMF Keypad to connector J2 on the Circuit Board (reference Fig. 18).

5.35 If the Ringer has been enabled (Ring Load Switch in the UP position), plug the connector on the cable from the Ringer to connector J9 on the Circuit Board (reference Fig. 18).

5.36 If a Carrier Selection Keypad is used, plug the connector on its cable to connector J10 on the Circuit Board (reference Fig. 18).

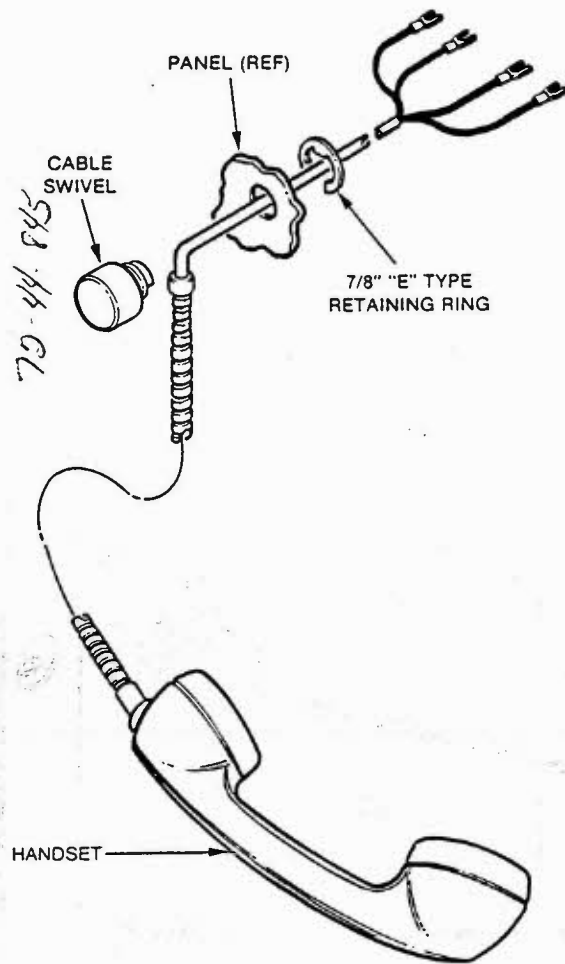


Fig. 16—Handset Installation

- 5.37** Connect the Modular Plug on the Line Cord from the Barrier Block to the Modular Jack J1 on the Circuit Board (reference Fig. 18). This step applies power to the phone.
- 5.38** Route the cables from the Modular Connector, Ringer, DTMF keypad, Carrier Select keypad and the Handset through the Cable Clamp on the Circuit Board. Secure Cable Clamp.
- 5.39** If additional grounding is required, connect wire to Ground Lug and an external ground.
- 5.40** If the phone was not programmed prior to installation, use the "Programming Work Sheet" to configure the phone.
- 5.41** Set the Option/Program Switch Position 7 HIGH (reference Fig. 6).

**Caution:** Operating the phone with Option/Program Switch Position 7 set LOW may cause loss of revenue.

- 5.42** Secure Front Panel by tightening the two security screws.

## 6. TURN-UP

- 6.01** Come off-hook and listen for dial tone and side tone.
- 6.02** Check the proper operation of the call restrictions to verify program retention.
- 6.03** Place a charge-card call to verify normal operation.
- 6.04** Verify incoming call completion and number assignment by having operator or test board ring the line.

## 7. MAINTENANCE

### A. Routine Maintenance

- 7.01** Recommended routine maintenance consist of checking the card reader heads whenever 25,000 to 100,000 cards (depending on environment) have been passed through them. To check the heads place several credit-card calls from the phone. Ensure that after each card is passed through a beep is heard in the receiver. If the phone fails on one of these tests proceed to clean the heads.

- 7.02 Head Cleaning:** Use R-TEC Systems Cleaning Card No. 76-011-11 or a cleaning card conforming to MCD-03-32-3 per the instructions supplied with the card.

### B. Troubleshooting

- 7.03** Problems which occur in an installation using Charge-Card Phones may involve the line and its associated equipment, the call processor, the phone's program options, or the phone's hardware.
- 7.04** Problems which involve the line and its associated equipment usually occur on all phones which use that equipment. Some of these problems are:

- Non-standard dial tone (350/440 Hz tone pair standard)

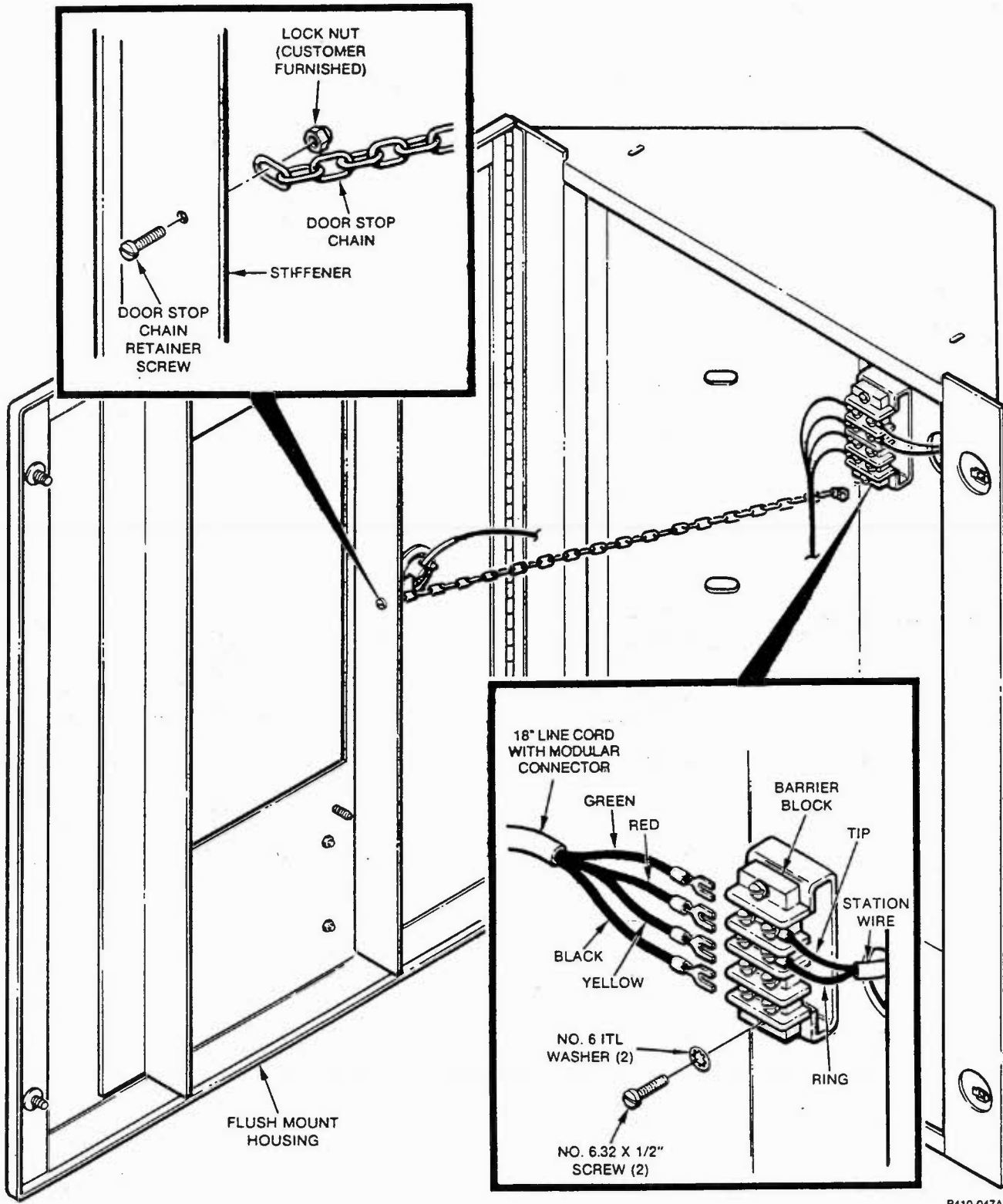
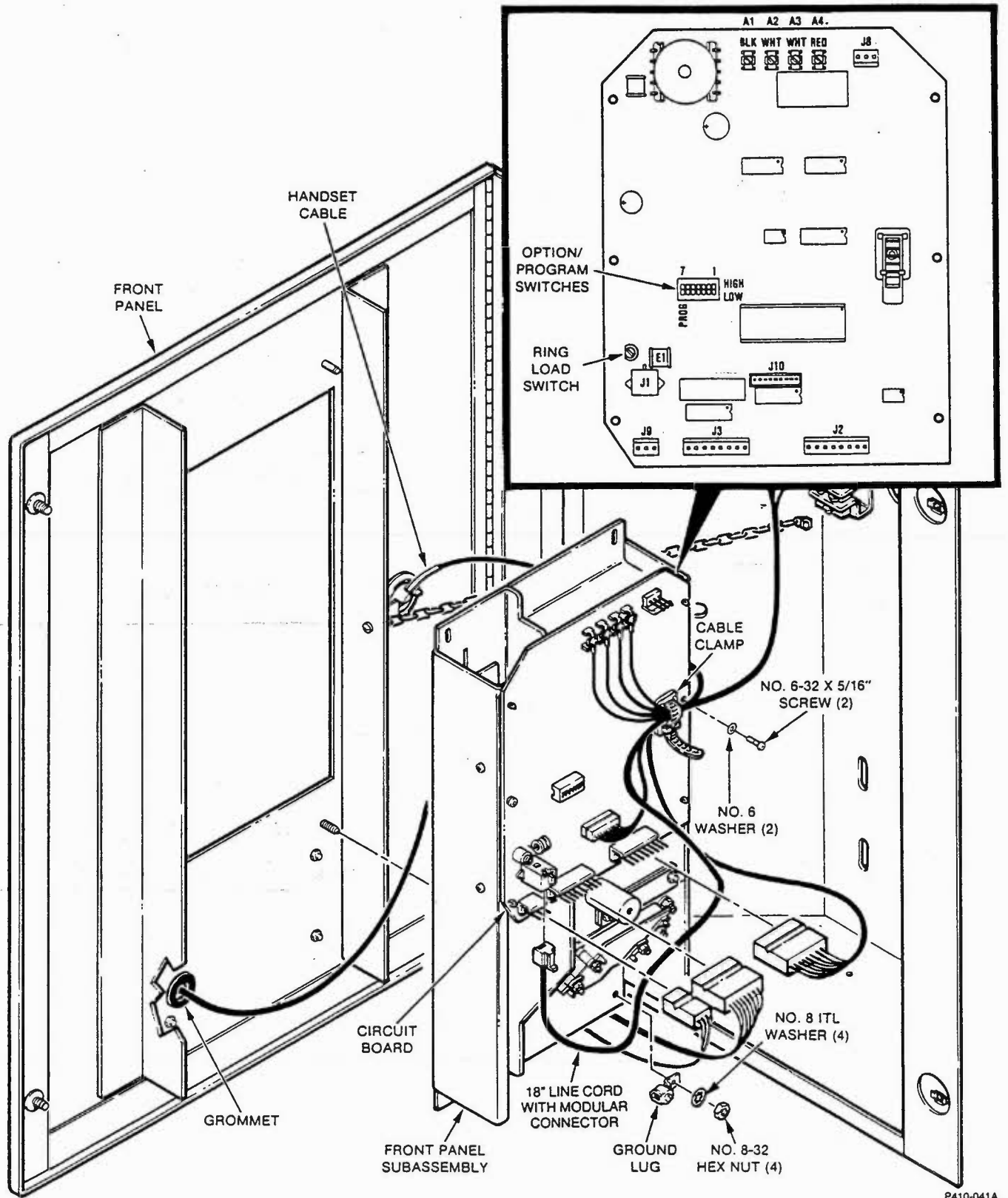


Fig. 17—Preparation of Housing for Chassis Installation



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Fig. 18—Chassis Installation

- Phone installed on a coin or ground start line
- Non-standard "Bong" tone (947/477 Hz tone pair followed by a 200 milisecond decaying 350/440 Hz tone pair with an initial level of -10dB standard)
- Inappropriate class mark on line
- Excessive loop current interruptions (greater than 350 miliseconds)
- Insufficient loop current (less than 18 miliamps into 600 ohms)
- C.O. interprets off-hook transient as a pulsed '1'
- Excessive noise on line (greater than 46dBrn or 40dBrnC)

**7.05** Problems which involve the call processor usually involve all the phones using that processor. Some of these problems are:

- Call processor not connected to proper line
- Software in call processor not compatible with phone
- Signaling tones levels too low or wrong frequency

**7.06** Problems which involve the phone usually occur at one phone only. The majority of the hardware based problems can be corrected by substitution or repair of one of the phone's subassemblies. Problems which occur because of improper program option selection can usually be corrected by reprogramming the phone.

**7.07** Fig. 19 and 20 are flow diagrams which provide guidance for trouble isolation. Fig. 19 is for an inoperative phone and Fig 20 is for ringing problems. The symbols used in these diagrams are identified in Table D. Equipment required to perform the test in the Troubleshooting diagrams is listed in Table E.

### C. Program Data Readout

**7.08** The Charge-Card Phone may be instructed to transmit DTMF tones corresponding to the contents of its memory. This capability is used when the procedures in the troubleshooting diagrams are being performed.

TABLE D

TROUBLESHOOTING CHART SYMBOLS


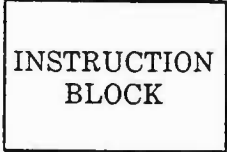

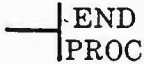
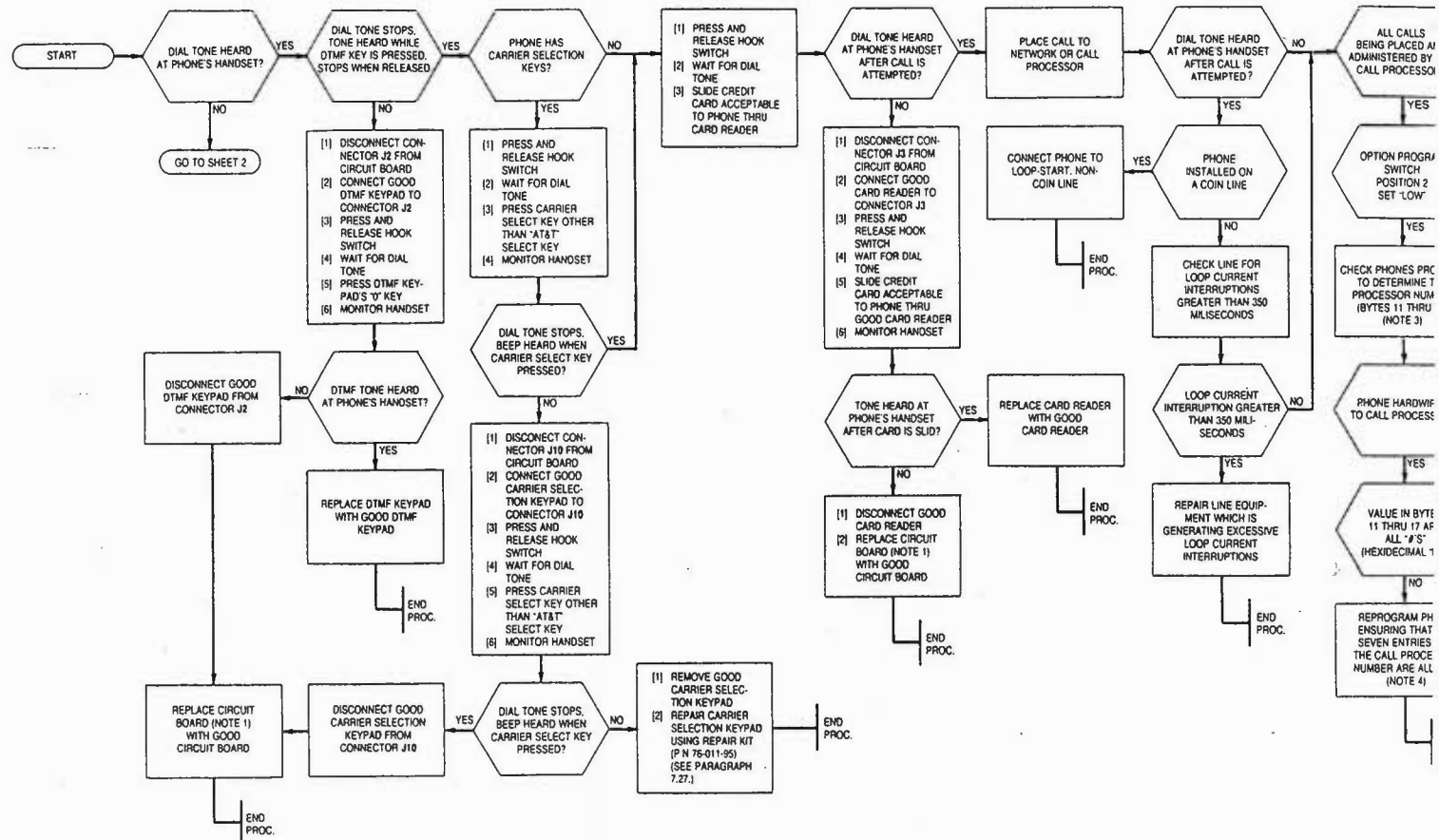
SYMBOL	FUNCTION
	A question will be asked or a situation described which will require a decision from the user. This decision will determine the flow of the troubleshooting procedure
	This block will give information or instructions pertinent to the performing of the troubleshooting procedure
	Start of troubleshooting procedure or a reference to the next figure to be used in performing present procedure
	End of Procedure

TABLE E

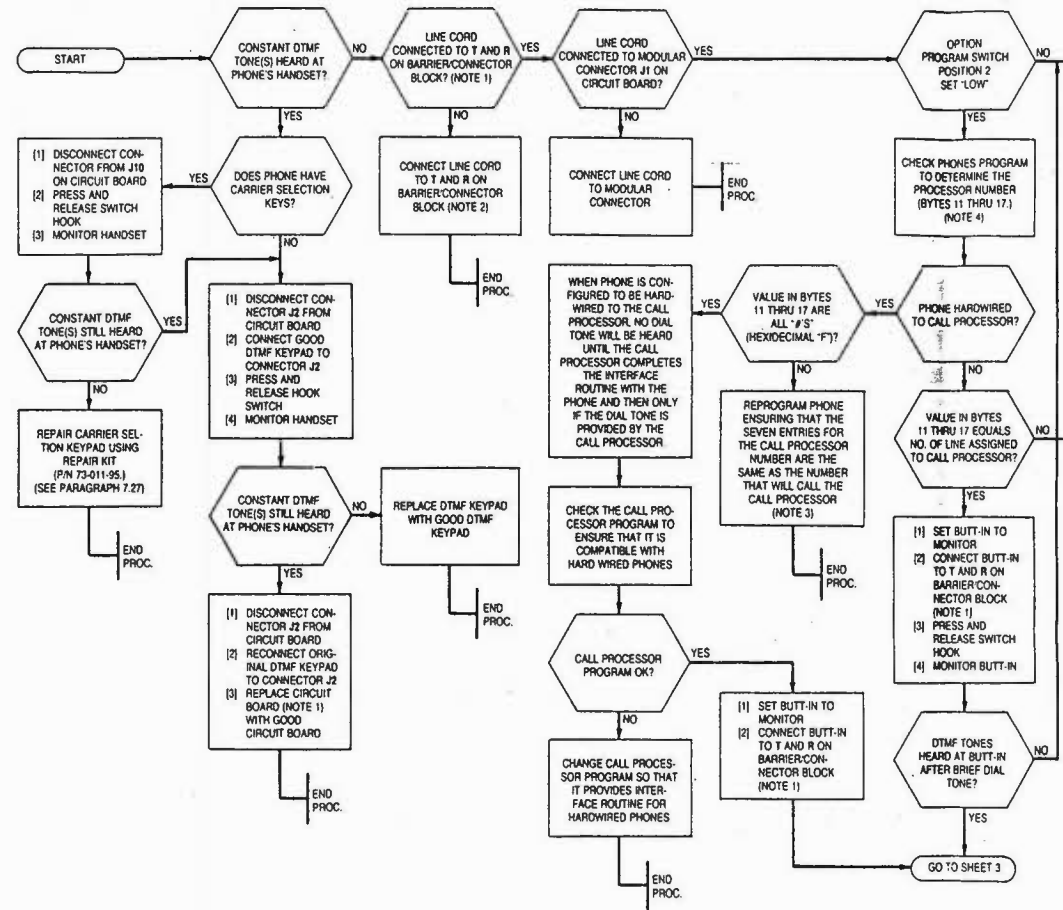
TEST EQUIPMENT

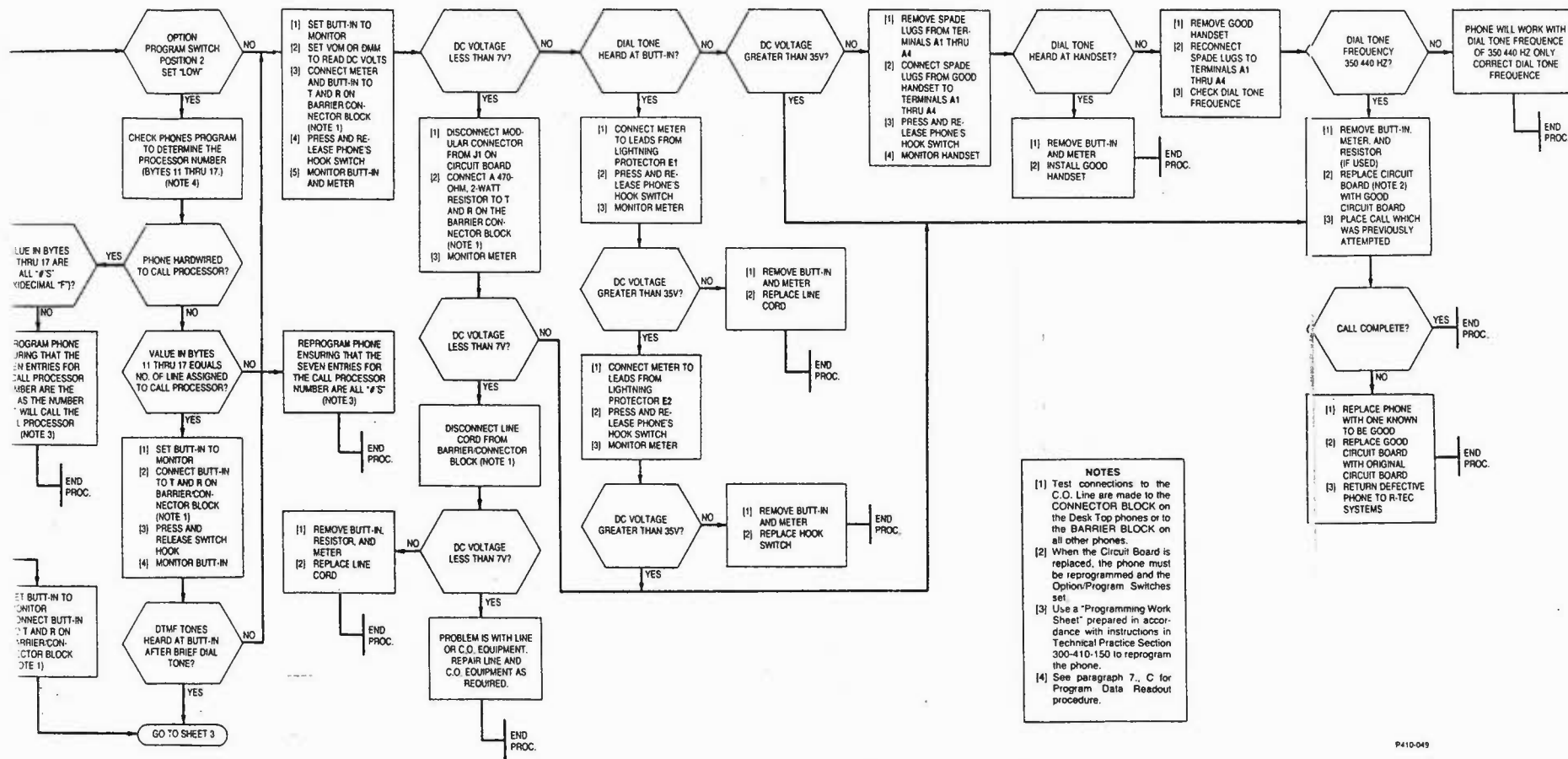
INSTRUMENT	FUNCTION
VOLT-OHM-METER (VOM) OR DIGITAL MULTI-METER (DTMM)	Measure DC voltage levels (CO battery voltage maximum required)
BUTT-IN SET	Monitor line
TERMINAL EQUIPMENT TESTER (Protel TEC-10-BELL or equivalent)	Display the option selections that have been programmed into a phone
470-OHM, 2-WATT RESISTOR	Used as dummy load for power test





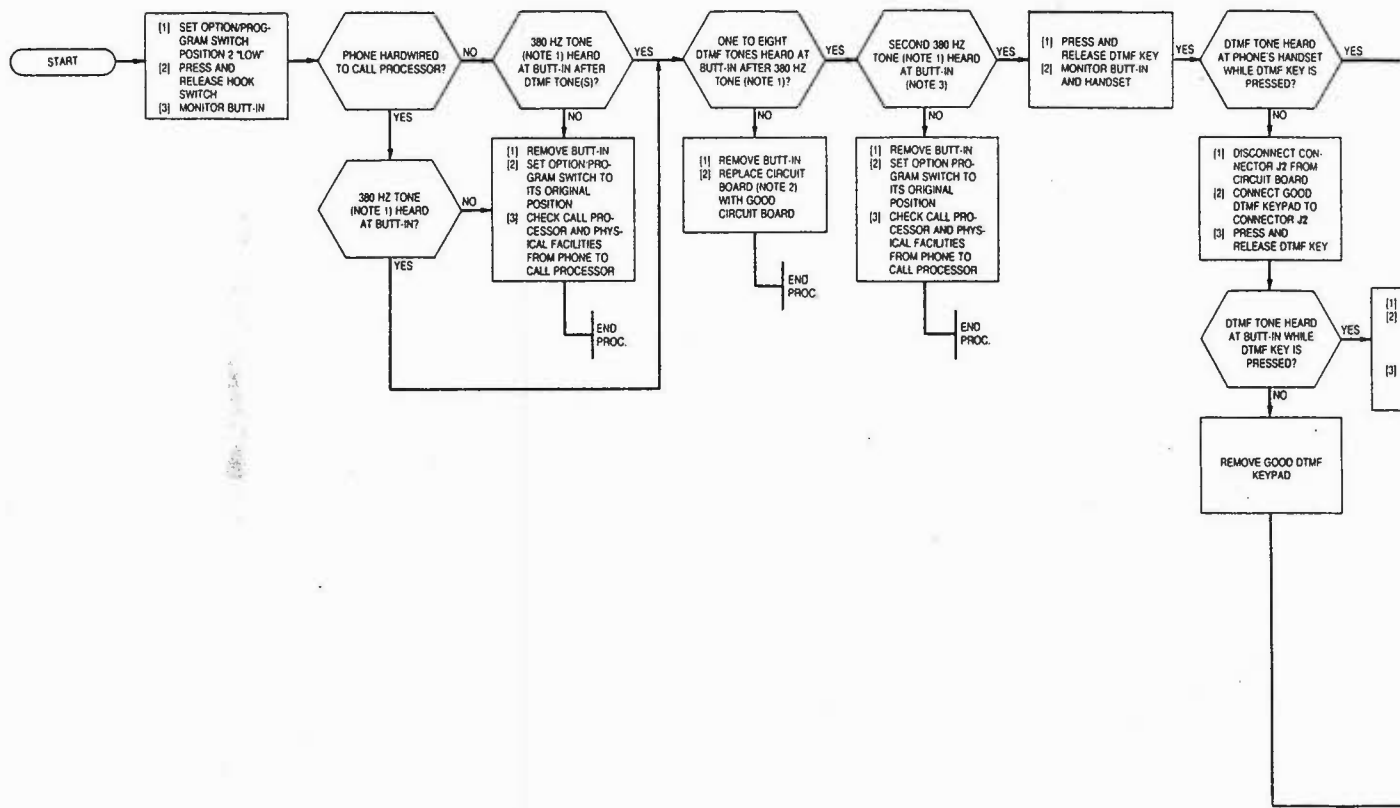


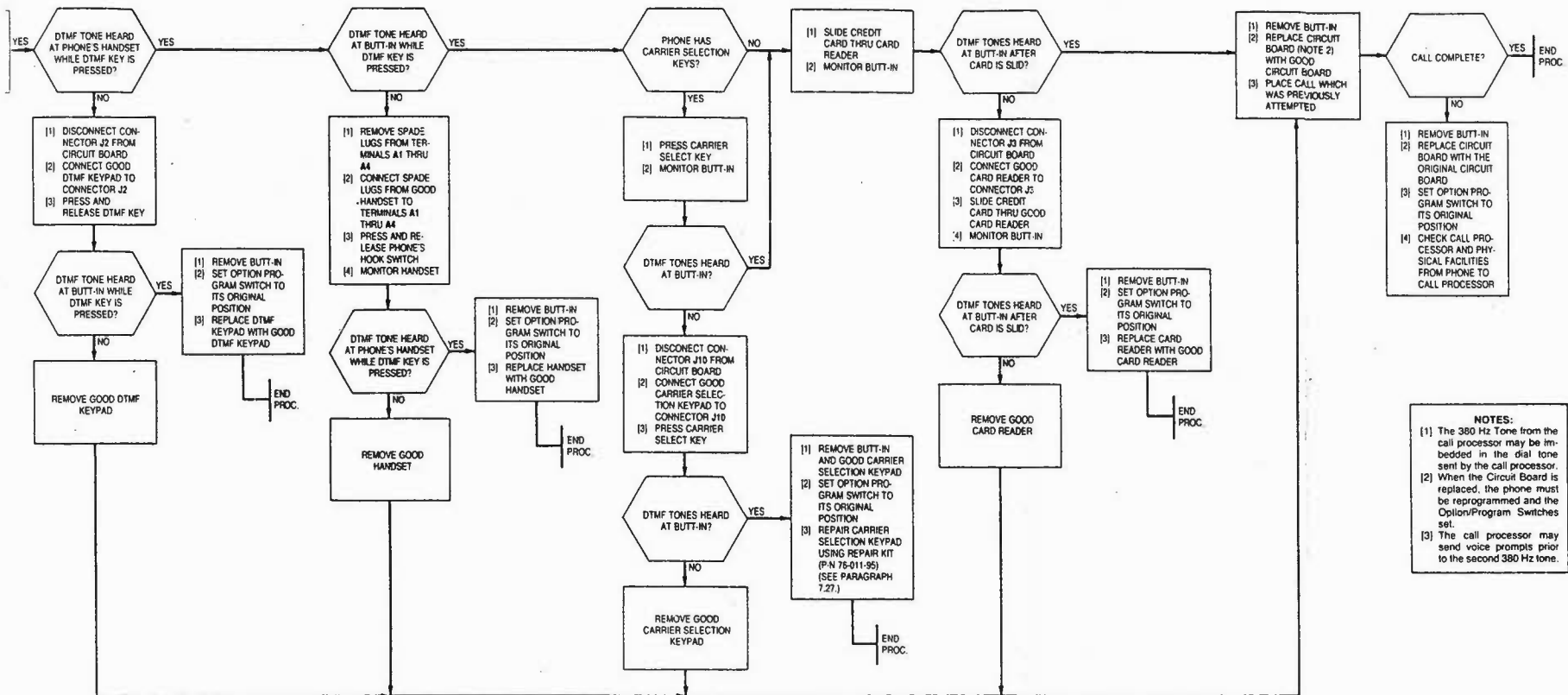




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Fig. 19—Charge-Card Phone Troubleshooting I Diagram (Sheet 2 of 4)

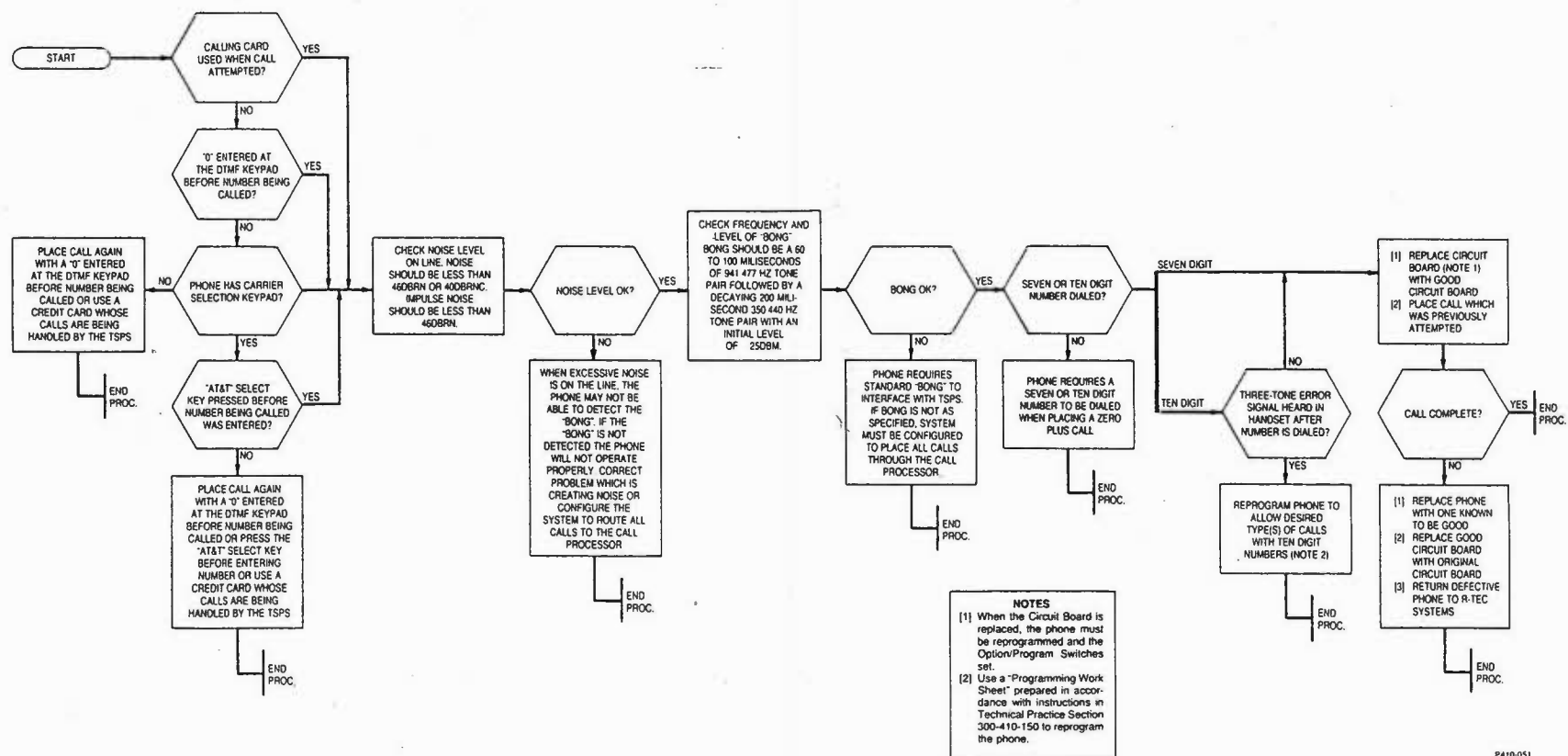




**NOTES:**  
 [1] The 380 Hz Tone from the call processor may be imbedded in the dial tone sent by the call processor.  
 [2] When the Circuit Board is replaced, the phone must be reprogrammed and the Option/Program Switches set.  
 [3] The call processor may send voice prompts prior to the second 380 Hz tone.

Fig. 19—Charge-Card Phone Troubleshooting Diagram (Sheet 3 of 4)

P410-050



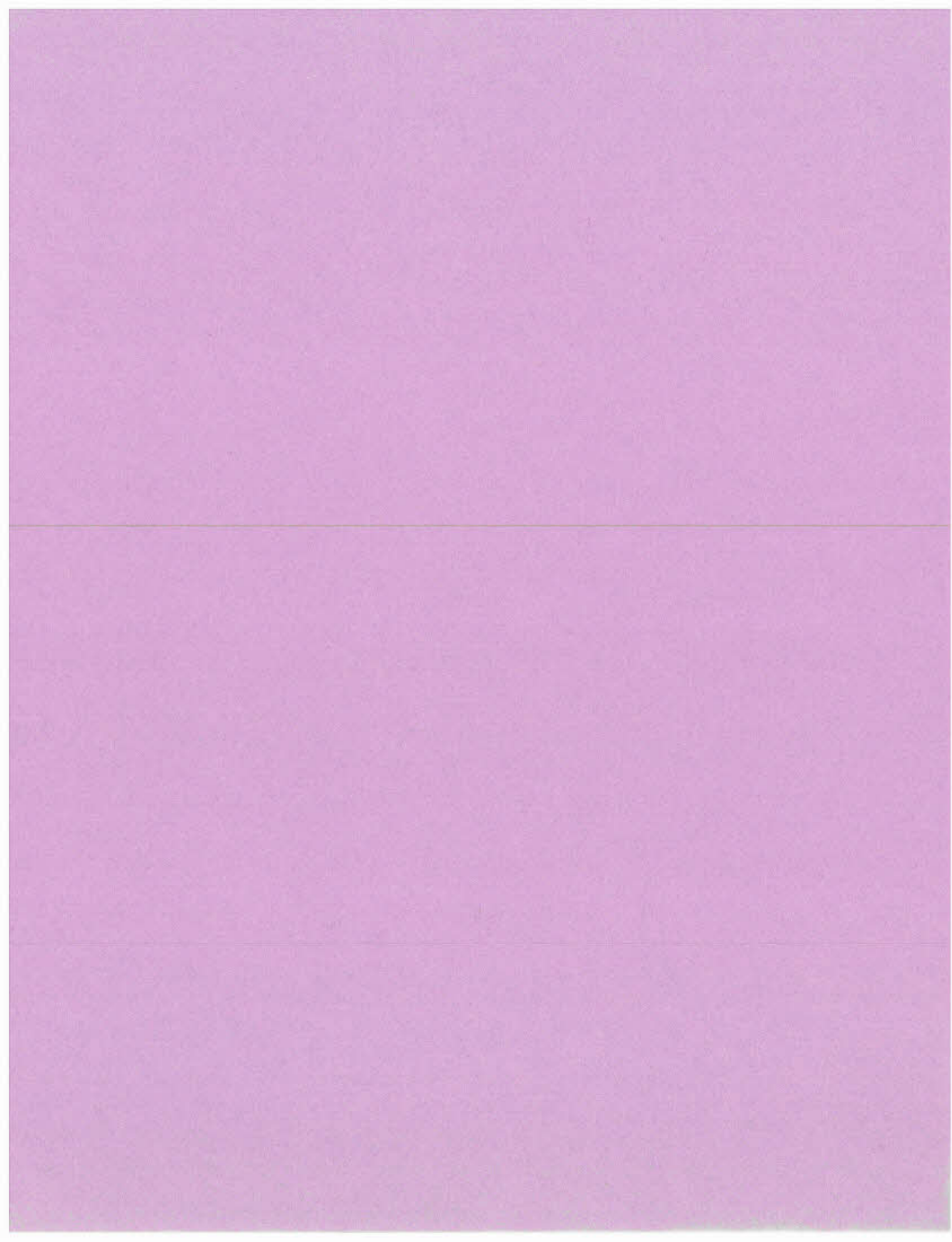
**NOTES**

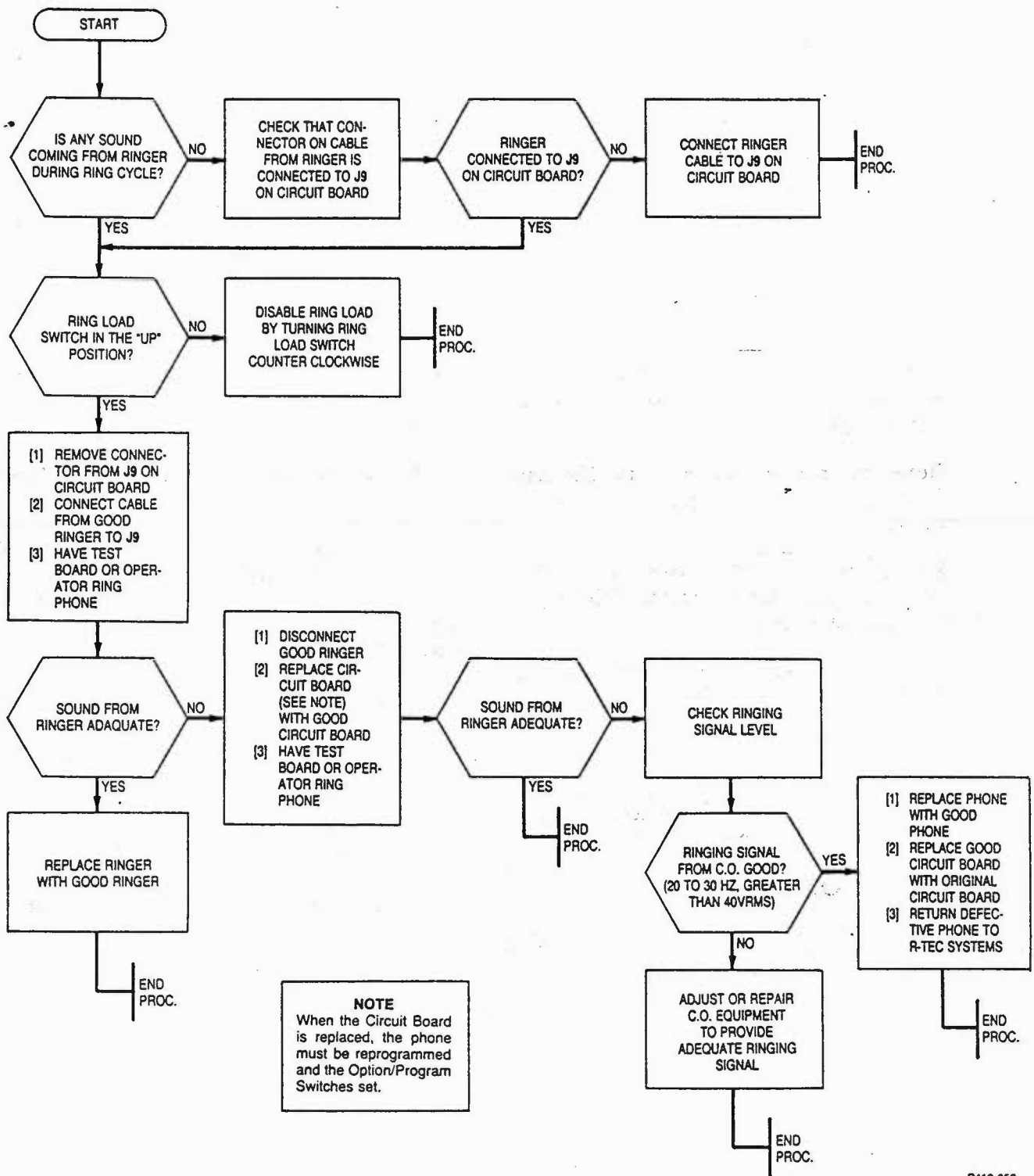
[1] When the Circuit Board is replaced, the phone must be reprogrammed and the Option/Program Switches set.

[2] Use a "Programming Work Sheet" prepared in accordance with instructions in Technical Practice Section 300-410-150 to reprogram the phone.

Fig. 19—Charge-Card Phone Troubleshooting Diagram (Sheet 4 of 4)

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P410-052

Fig. 20—Ringing Troubleshooting Diagram



7.09 The procedure to use this feature is as follows:

- (a) Gain access to the phone's Option/Program Switch.
- (b) Set switches SW1, SW2 and SW3 on a Protel TEC-10-BELL (Terminal Equipment Tester) or equivalent and connect it to the phone per Fig. 21. Turn on tester.
- (c) Set Position 7 of the phone's Option/Program Switch to the "PROG" ("LOW") position.
- (d) Lift the receiver from the phone and listen for dial tone.
- (e) Press the "\*" on the DTMF keypad. (The phone will transmit the contents of the first 32 bytes of program memory.)
- (f) Record the numbers shown on the Terminal Equipment Tester's display as bytes 1 through 32.
- (g) Press the "\*" on the DTMF keypad again. (The phone will transmit the contents of the last 32 bytes of program memory.)
- (h) Record the numbers shown on the Terminal Equipment Tester's display as bytes 33 through 64.

**Note:** The memory contents may be transmitted repeatedly by clearing the testers display (place switch SW3 momentarily in the middle position) and repeating steps (e) through (h).

- (i) Set Position 7 of the Option/Program Switch to the "HIGH" position.

**Caution:** *Securing the phone with Option/Program Switch Position 7 set LOW (PROG) will destroy the contents of memory which may cause loss of revenue.*

- (j) Disconnect the Terminal Equipment Tester and secure the phone.

7.10 The data received in bytes 1 through 22 will correspond to either phone's program in the following manner:

- (a) **Byte 1 (Work Sheet Entry 1):** When byte 25 is "8" through "F" ("AT&T" Select key implemented), byte 1 indicates the location of the "AT&T" Select Key. See the "AT&T" Selection Key Location Table (Table F) and Fig. 22 for location information.
- (b) **Bytes 2 and 3 (Work Sheet Entries 2 and 3):** PBX Access Number.
- (c) **Bytes 4 through 10 (Work Sheet Entries 4 through 10):** Phone Identification Number.
- (d) **Bytes 11 through 17 (Work Sheet Entries 11 through 17):** Processor Number.
- (e) **Bytes 18 through 21 (Work Sheet Entries 18 through 21):** Operating Company's Credit Card Number
- (f) **Byte 22 (Work Sheet Entry 22):** Time-Out Value.

7.11 The data in bytes 23 through 28 is in a "packed" format and translates into work sheet entries 23 through 46. See the Memory Translation Table (Table G) and the following example for conversion information.

**Example:** The values received for bytes 23 through 28 are "2", "E", "A", "5", "7", and "3" respectively. These values translate into the following option selections.

**Byte 23 = "2":**

Carrier Select Code Routing is to the call processor.

Two digits in the Carrier Select Code.

"#" is the special character used with the Carrier Select Code.

The special character ("#") follows the Carrier Select Code Number.

Carrier Select Code Format = "XX#"

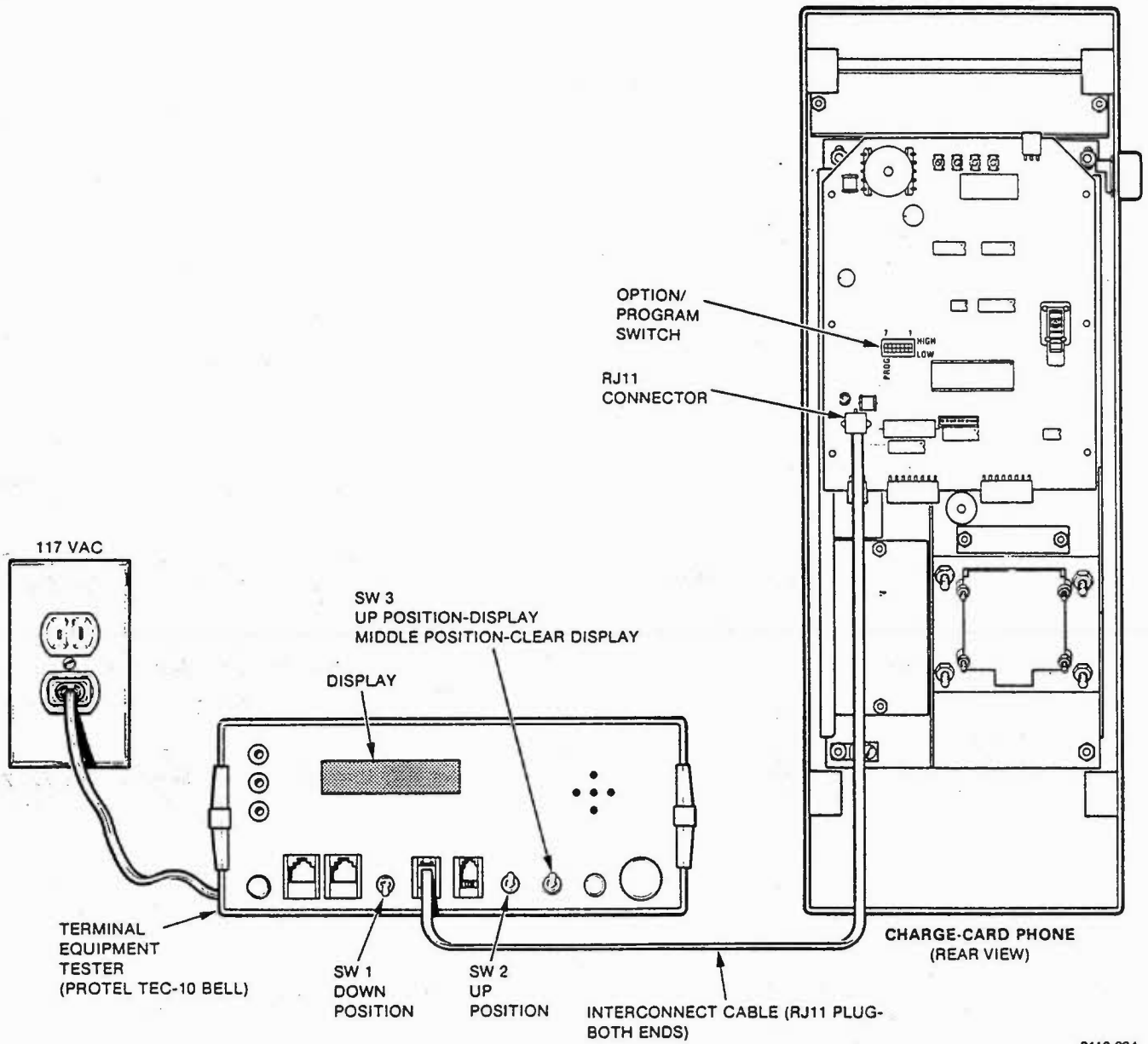
**Byte 24 = "E":**

Carrier Selection from the DTMF keypad is allowed.

"AT&T" calling card calls are routed through the TSPS.

Operating Company's calling card calls are routed through the TSPS.

Other Telcom's calling card calls are routed through the call processor.



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Fig. 21—Charge-Card Phone Data Readout Equipment Configuration

TABLE F

"AT&T" SELECTION KEY LOCATION

	BYTE 1 VALUE TRANSMITTED															
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
"AT&T" Select Key Location (Fig. 8)	H	A	E	J	B	F	K	C	G	L	(NOTE)				D	M

Note: "A", "B", "C", and "D" are not used as values for byte 1.

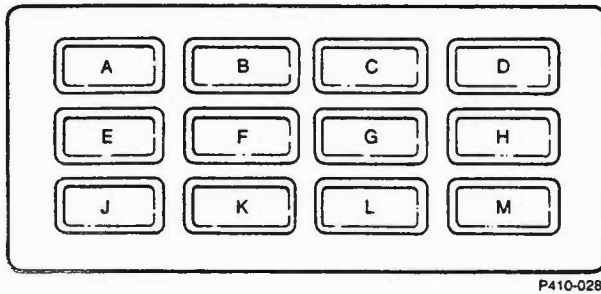


Fig. 22—Carrier Selection Keys Location

**Byte 25 = "A":**

- "AT&T" select key is being implemented.
- "800+" and "1+800+" calls will be denied.
- "950-WXXX" calls will be allowed.
- "10XXX" calls will be denied.

**Byte 26 = "5":**

- "555-XXXX" calls will be denied.
- "1+555-XXXX" calls will be allowed.
- "NPA+555-XXXX" calls will be denied.
- "1+NPA+555-XXXX" calls will be allowed.

**Byte 27 = "7":**

- "1-411" calls will be denied.
- "411" calls will be allowed.
- "611" calls will be allowed.
- "911" calls will be allowed.

**Byte 28 = "3":**

- "NPA+NXX-XXXX" calls will be denied.
- "1+NPA+NXX-XXXX" calls will be denied.
- "0+NPA+NXX-XXXX" calls will be allowed.
- "01X+" calls will be allowed.

7.12 The data received in bytes 29 through 64 will correspond to the Charge-Card Phone with Carrier Selection Keys' program in the following manner:

- (a) **Byte 29 through 31 (Work Sheet Entries 47, 48, and 49):** Carrier Select Code for Carrier Selection Key "A"
- (b) **Byte 32 through 34 (Work Sheet Entries 50, 51, and 52):** Carrier Select Code for Carrier Selection Key "B"
- (c) **Byte 35 through 37 (Work Sheet Entries 53, 54, and 55):** Carrier Select Code for Carrier Selection Key "C"

(d) **Byte 38 through 40 (Work Sheet Entries 56, 57, and 58):** Carrier Select Code for Carrier Selection Key "D"

(e) **Byte 41 through 43 (Work Sheet Entries 59, 60, and 61):** Carrier Select Code for Carrier Selection Key "E"

(f) **Byte 44 through 46 (Work Sheet Entries 62, 63, and 64):** Carrier Select Code for Carrier Selection Key "F"

(g) **Byte 47 through 49 (Work Sheet Entries 65, 66, and 67):** Carrier Select Code for Carrier Selection Key "G"

(h) **Byte 50 through 52 (Work Sheet Entries 68, 69, and 70):** Carrier Select Code for Carrier Selection Key "H"

(i) **Byte 53 through 55 (Work Sheet Entries 71, 72, and 73):** Carrier Select Code for Carrier Selection Key "J"

(j) **Byte 56 through 58 (Work Sheet Entries 74, 75, and 76):** Carrier Select Code for Carrier Selection Key "K"

(k) **Byte 59 through 61 (Work Sheet Entries 77, 78, and 79):** Carrier Select Code for Carrier Selection Key "L"

(l) **Byte 62 through 64 (Work Sheet Entries 80, 81, and 82):** Carrier Select Code for Carrier Selection Key "M"

**D. Corrective Maintenance**

7.13 The recommended procedure for repairing a Charge-Card Phone with Carrier Selection Keys is by subassembly repair (Carrier Select Keypad), subassembly replacement or phone replacement. Table I in paragraph 10. ORDERING INFORMATION lists spare parts, repair kits, and subassemblies available from R-TEC Systems.

**Wall Mount and Panel Mount Phones Subassembly Replacement**

7.14 **Circuit Board Subassembly Replacement:** Replace the Circuit Board Subassembly per Fig. 23 and the following instructions.

**TABLE G**  
**MEMORY TRANSLATION TABLE**

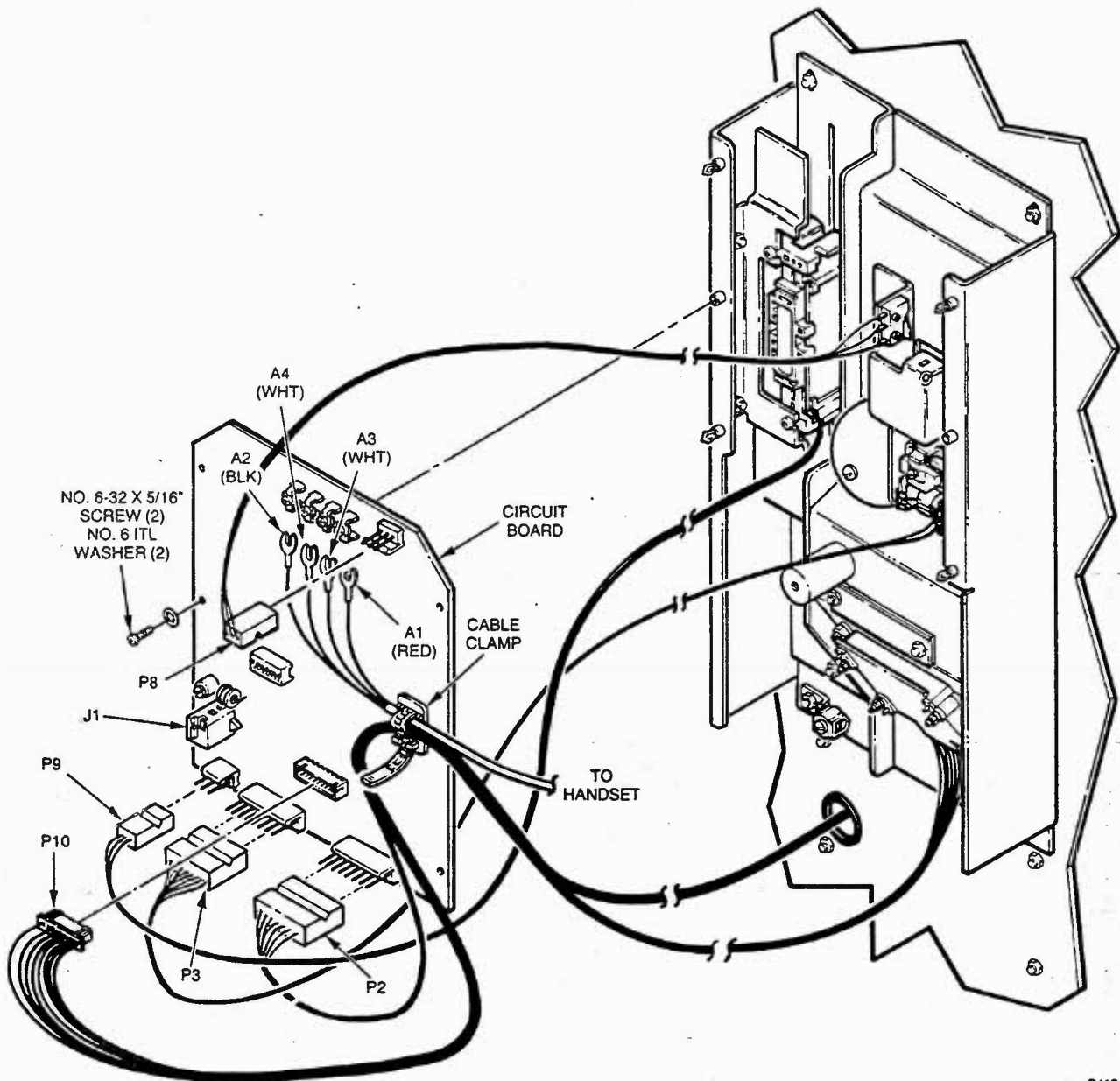
DESCRIPTION [WORK SHEET ENTRY NO.]		BYTE VALUE TRANSMITTED															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
B Y T E 2 3	Carrier Select Code Routing [23]	C	C	C	C	C	C	C	C	0	0	0	0	0	0	0	
	No. Digits in Carrier Select Code (Note 2) [24]	2	2	2	2	3	3	3	3	2	2	2	2	3	3	3	
	Character Used With Carrier Select Code [25]	*	*	#	#	*	*	#	#	*	*	#	#	*	*	#	
	Character Used As A Prefix or Suffix [26]	S	P	S	P	S	P	S	P	S	P	S	P	S	P	S	
B Y T E 2 4	Carrier Selection From DTMF Keypad [27]	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	
	"AT&T" Calling Card Call Routing [28]	C	C	C	C	T	T	T	T	C	C	C	C	T	T	T	
	Operating Co.'s Calling Card Call Routing [29]	C	C	T	T	C	C	T	T	C	C	T	T	C	C	T	
	Other Telcom's Calling Card Call Routing [30]	C	T	C	T	C	T	C	T	C	T	C	T	C	T	C	
B Y T E 2 5	"AT&T" Select Key to be Allowed [31]	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	
	"800 + " AND "1 + 800" Calls Allowed [32]	N	N	N	N	Y	Y	Y	Y	N	N	N	N	Y	Y	Y	
	"950-WXXX" Calls Allowed [33]	N	N	Y	Y	N	N	Y	Y	N	N	Y	Y	N	N	Y	
	"10XXX" Calls Allowed [34]	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	
B Y T E 2 6	"555-XXXX" Calls Allowed [35]	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	
	"1 + 555-XXXX" Calls Allowed [36]	N	N	N	N	Y	Y	Y	Y	N	N	N	N	Y	Y	Y	
	"NPA + 555-XXXX" Calls Allowed [37]	N	N	Y	Y	N	N	Y	Y	N	N	Y	Y	N	N	Y	
	"1 + NPA + 555-XXXX" Calls Allowed [38]	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	
B Y T E 2 7	"1-411" Calls Allowed [39]	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	
	"411" Calls Allowed [40]	N	N	N	N	Y	Y	Y	Y	N	N	N	N	Y	Y	Y	
	"611" Calls Allowed [41]	N	N	Y	Y	N	N	Y	Y	N	N	Y	Y	N	N	Y	
	"911" Calls Allowed [42]	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	
B Y T E 2 8	"NPA + NXX-XXXX" Calls Allowed [43]	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	
	"1 + NPA + NXX-XXXX" Calls Allowed [44]	N	N	N	N	Y	Y	Y	Y	N	N	N	N	Y	Y	Y	
	"0 + NPA + NXX-XXXX" Calls Allowed [45]	N	N	Y	Y	N	N	Y	Y	N	N	Y	Y	N	N	Y	
	"01X + " Calls Allowed [46]	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	

**Note:** 1. "C" = Call Processor, "T" = TSPS, "O" = Central Office

"P" = Prefix, "S" = Suffix

"Y" = Yes, "N" = No

2. When Carrier Selection from the DTMF Keypad is not allowed (Byte 24 equals "0" through "7"), the Number of Digits in Carrier Select Code will not affect phone operation.



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**Fig. 23—Circuit Board Subassembly Replacement (Wall Mount and Panel Mount Phones)**

- (1) Remove power by unplugging Modular Connector from J1.
- (2) Unplug Connectors P2, P3, P8, P9, and P10.
- (3) Disconnect Terminals A1, A2, A3, and A4 by loosening screws and sliding out lugs.
- (4) Open the Cable Clamp and loosen the cables it secures.
- (5) Remove the two No. 6 x 5/16-inch screws and two No. 6 ITL lockwashers from the midpoint of the circuit board.
- (6) Remove the Circuit Board Subassembly from the phone by pulling it free of the Plastic Stand-offs.
- (7) Prepare the replacement Circuit Board for installation by removing the paper backing from the Cable Clamp included with Circuit Board and placing the Cable Clamp on the Circuit Board.

- (8) Install the replacement Circuit Board Subassembly by reversing the procedure in steps 1 through 6.

**7.15 DTMF Keypad Subassembly Replacement:** Replace the DTMF Keypad Subassembly per Fig. 23, Fig. 24, and the following instructions.

- (1) Remove power by unplugging Modular Connector from J1.
- (2) Unplug Connector P2.
- (3) Open the Cable Clamp and remove the DTMF Keypad Cable from it.
- (4) Remove the four No. 4-40 Hex Nuts and four No. 4 ITL Washers which secure the DTMF Keypad Subassembly.
- (5) Remove DTMF Keypad Subassembly.
- (6) Replace the DTMF Keypad Subassembly with one known to be good by reversing procedure in steps 1 through 5.

**7.16 Hook Switch Subassembly Replacement:** Replace the Hook Switch Subassembly per Fig. 24 and the following instructions:

- (1) Remove the Circuit Board Subassembly by using instructions in paragraph 7.14, steps 1 through 6.
- (2) Remove two No. 2-56 x 7/16-inch screws, two No. 2-56 Hex Nuts, and two No. 2 ITL Washers which secure the Hook Switch Subassembly.
- (3) Remove the Hook Switch Subassembly.
- (4) Replace the Hook Switch Subassembly with one known to be good by reversing procedure in steps 1 through 3.

**7.17 Ringer Subassembly Replacement:** Replace Ringer Subassembly per Fig. 24 and the following instructions.

- (1) Remove the Circuit Board Subassembly by using instructions in paragraph 7.14, steps 1 through 6.

NO. 2-56 X 7/16" SCREW (2)  
NO. 2 ITL WASHER (2)  
NO. 2-56 HEX NUT (2)

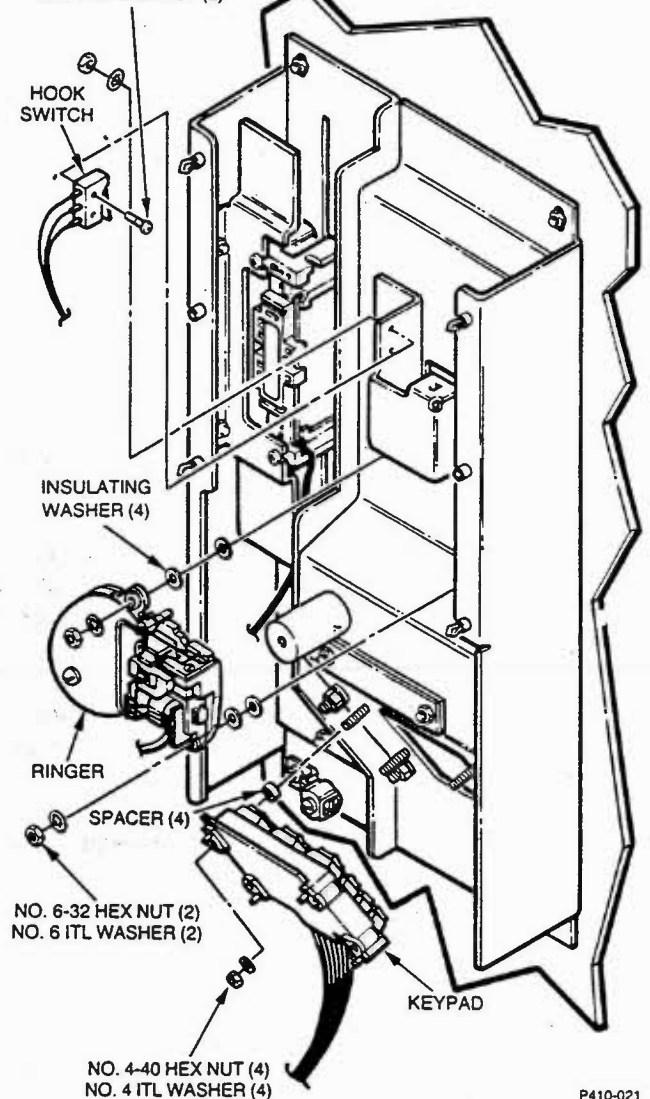


Fig. 24—DTMF Keypad Subassembly, Hook Switch Subassembly, and Ringer Subassembly Replacement (Wall Mount and Panel Mount Phones)

- (2) Remove two No. 6-32 Hex Nuts and two No. 6 ITL Washers which secure the Ringer Subassembly.
- (3) Remove the Ringer Subassembly and four Insulating Washers.
- (4) Replace the Ringer Subassembly with one known to be good by reversing procedure in steps 1 through 3.

**7.18 Handset Subassembly Replacement:** Replace the Handset Subassembly per Fig. 23, Fig. 25, and the following instructions.

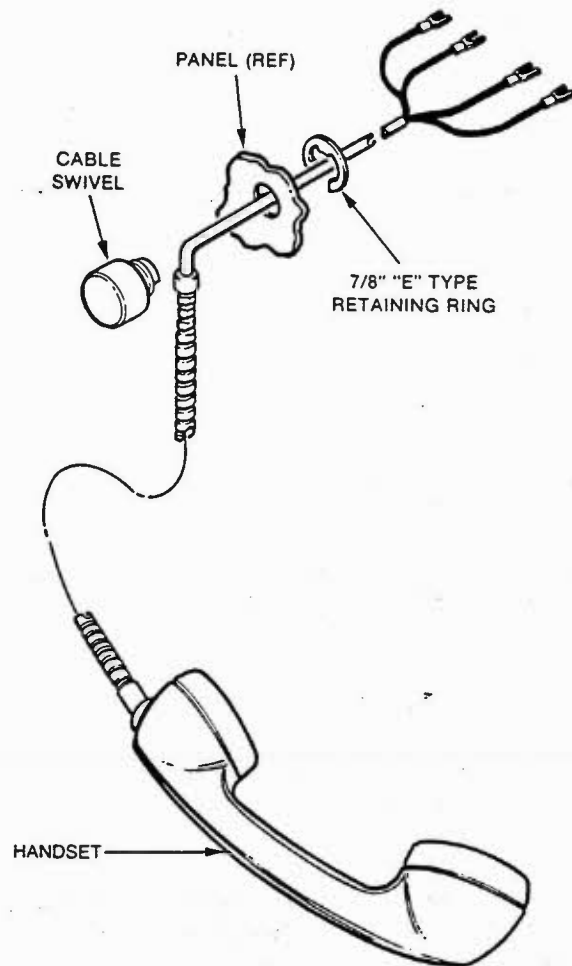
- (1) Remove power by unplugging Modular Connector from J1.
- (2) Disconnect Terminals A1, A2, A3, and A4 by loosening screws and sliding out lugs.
- (3) Open the Cable Clamp and remove the Handset Cable from it.
- (4) Remove the 7/8-inch Retaining Ring.
- (5) Remove the Handset Subassembly and Swivel from the phone and remove the Swivel from the Handset cord (slide cable inward from Swivel.)
- (6) Replace the Handset Subassembly using the Swivel from the original Handset and a good Handset by reversing procedure in steps 1 through 5.

**7.19 Card Reader Subassembly Replacement:** Replace the Card Reader Subassembly per Fig. 26 and the following instructions.

- (1) Remove the Circuit Board Subassembly by using instructions in paragraph 7.14, steps 1 through 6.
- (2) Loosen the two screws which secure the Card Reader Subassembly until it is free.
- (3) Slide Card Reader Subassembly to the right and remove.
- (4) Replace the Card Reader Subassembly with one known to be good by reversing procedure in steps 1 through 3.

**7.20 Carrier Select Keypad Subassembly Replacement:** Replace the Carrier Select Keypad per Fig. 23, Fig. 27, and the following instructions.

- (1) Remove power by unplugging Modular Connector from J1.
- (2) Unplug Connector P10.
- (3) Open the Cable Clamp and loosen the cable from connector P10 to the Carrier Select Keypad.



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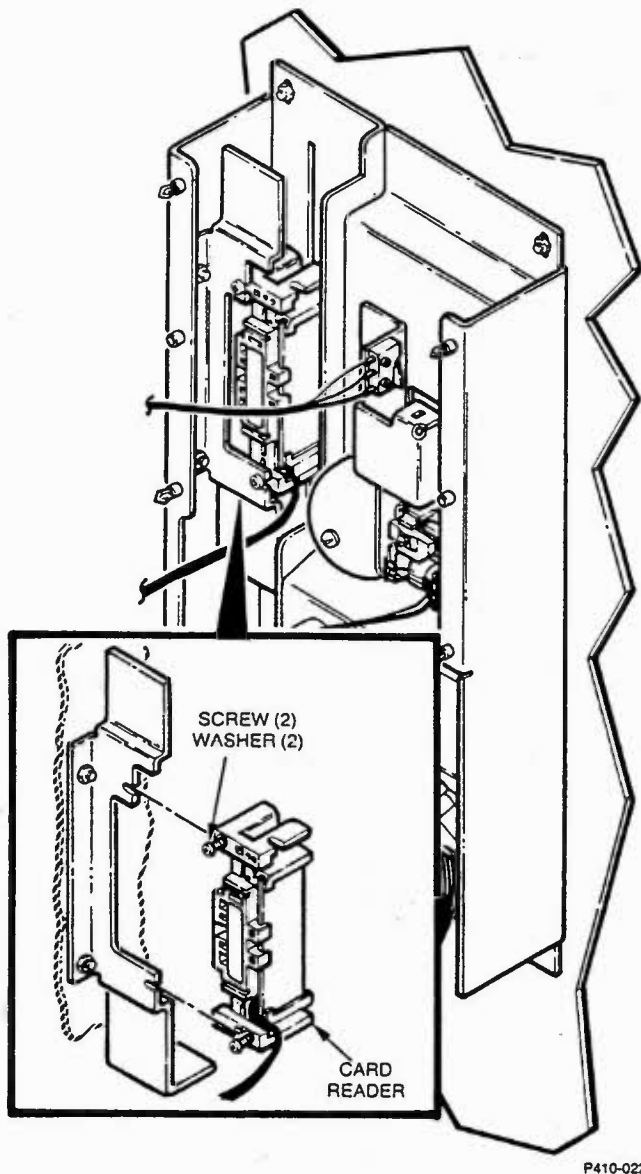
**Fig. 25—Handset Subassembly Replacement  
(Wall Mount and Panel Mount Phones)**

- (4) Remove the four No. 6-32 Hex Nuts, the four No. 6 ITL Washers, and the four No. 6 Flat Washers which secure the Carrier Selection Keypad subassembly to the phone.
- (5) Carefully guide the cable and connector P10 through the access hole while removing the Carrier Select Keypad Subassembly from the phone.
- (6) Replace Carrier Select Keypad Subassembly with one known to be good by reversing procedure in steps 1 through 5.

#### Desk Top Phone Subassembly Replacement

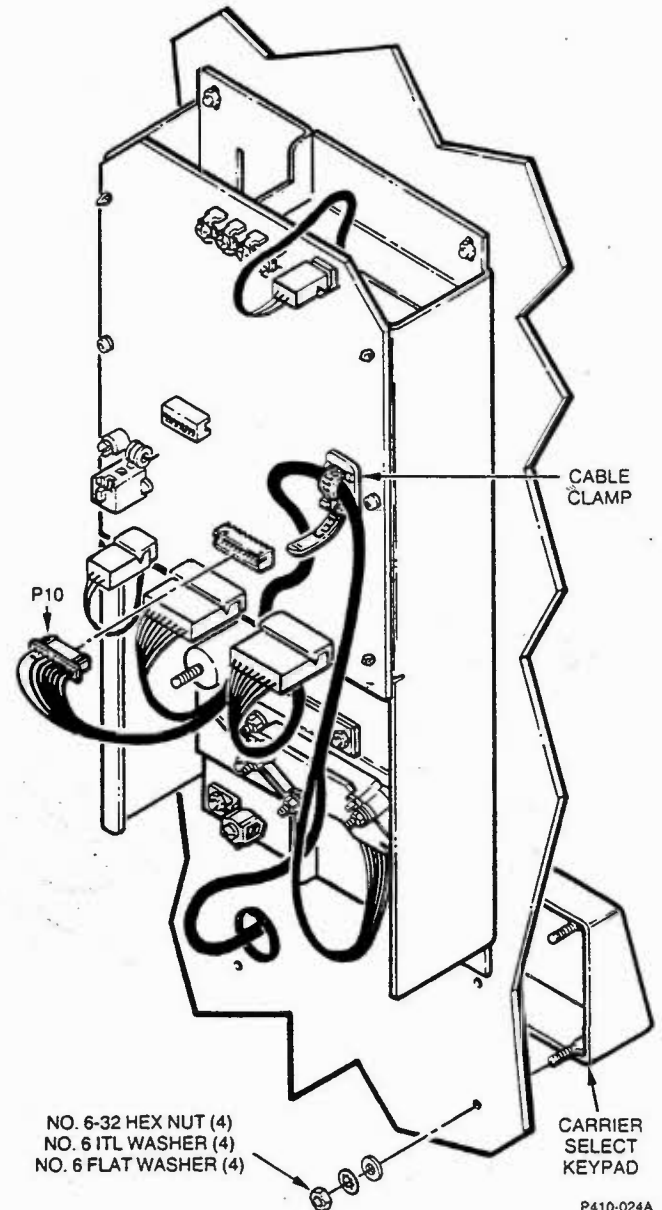
**7.21 Ringer Subassembly Replacement:** Replace Ringer Subassembly per Fig. 28 and the following instructions.





**Fig. 26—Card Reader Subassembly Replacement  
(Wall Mount and Panel Mount Phones)**

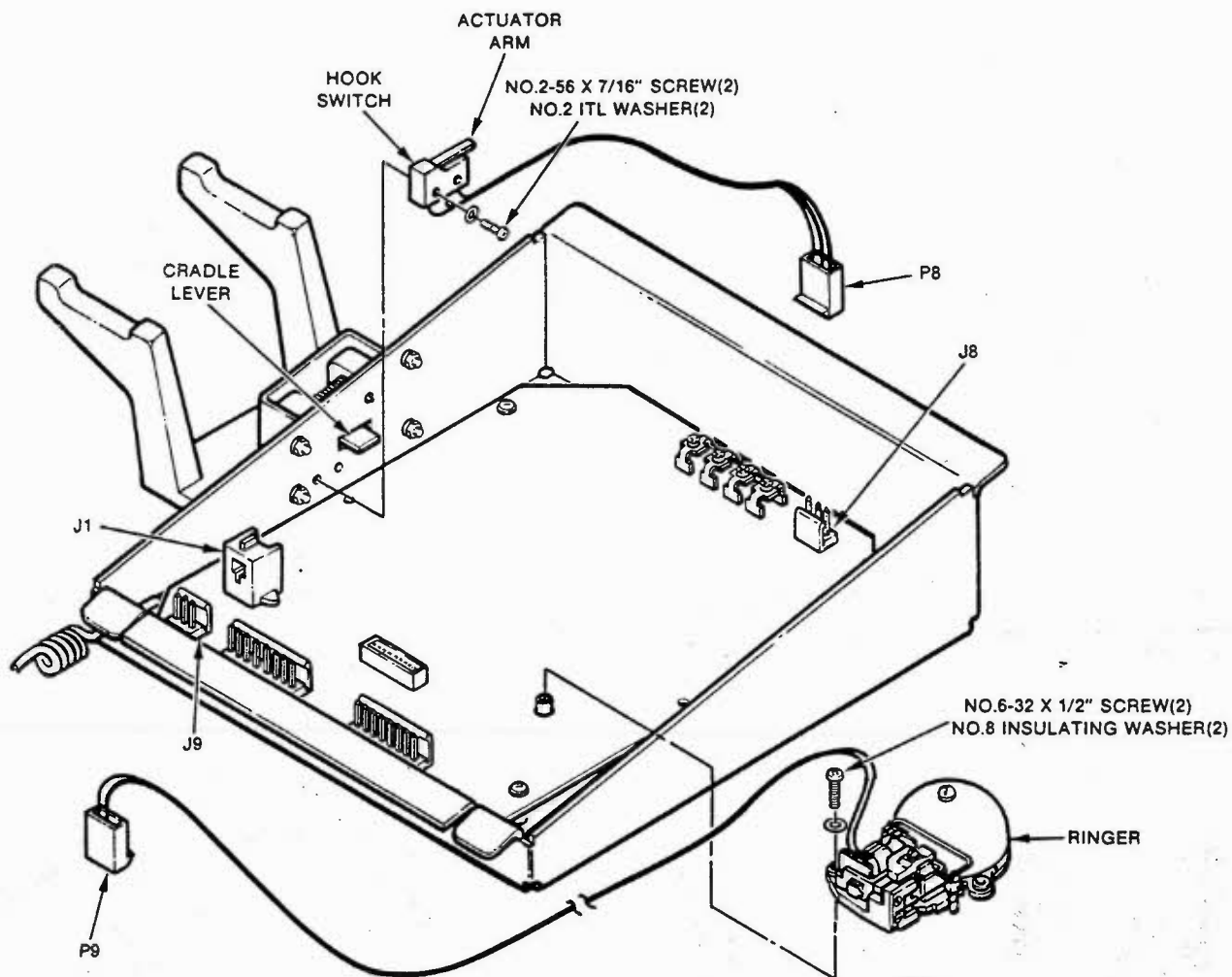
- (1) Remove power by unplugging Modular Connector from J1.
- (2) Unplug Connector P9.
- (3) Remove two No. 6-32 Hex Nuts, and two Insulating Washers which secure the Ringer Subassembly.
- (4) Remove the Ringer Subassembly.
- (5) Replace the Ringer Subassembly with one known to be good by reversing procedure in steps 1 through 4.



**Fig. 27—Carrier Select Keypad Subassembly Replacement  
(Wall Mount and Panel Mount Phones)**

**7.22 Hook Switch Subassembly Replacement:**  
Replace the Hook Switch Subassembly per Fig. 28 and the following instructions:

- (1) Remove power by unplugging Modular Connector from J1.
- (2) Unplug Connector P8.



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Fig. 28—Ringer Subassembly and Hook Switch Subassembly Replacement (Desk Top Phones)

(3) Remove two No. 2-56 x 7/16-inch screws, and two No. 2 ITL Washers which secure the Hook Switch Subassembly.

(4) Remove the Hook Switch Subassembly.

(5) Replace the Hook Switch Subassembly with one known to be good by reversing procedure in steps 1 through 4.

**Caution:** The Hook Switch Actuator Arm must be under the Cradle Lever for proper operation.

**7.23 Circuit Board Subassembly Replacement:** Replace the Circuit Board Subassembly per Fig. 29 and the following instructions.

(1) Remove power by unplugging Modular Connector from J1.

(2) Remove the Ringer Subassembly by using instructions in paragraph 3.38, steps 1 through 4.

(3) Unplug Connectors from J2, J3, J8, and J10 (if used).

(4) Disconnect Terminals A1, A2, A3, and A4 by loosening screws and sliding out lugs.

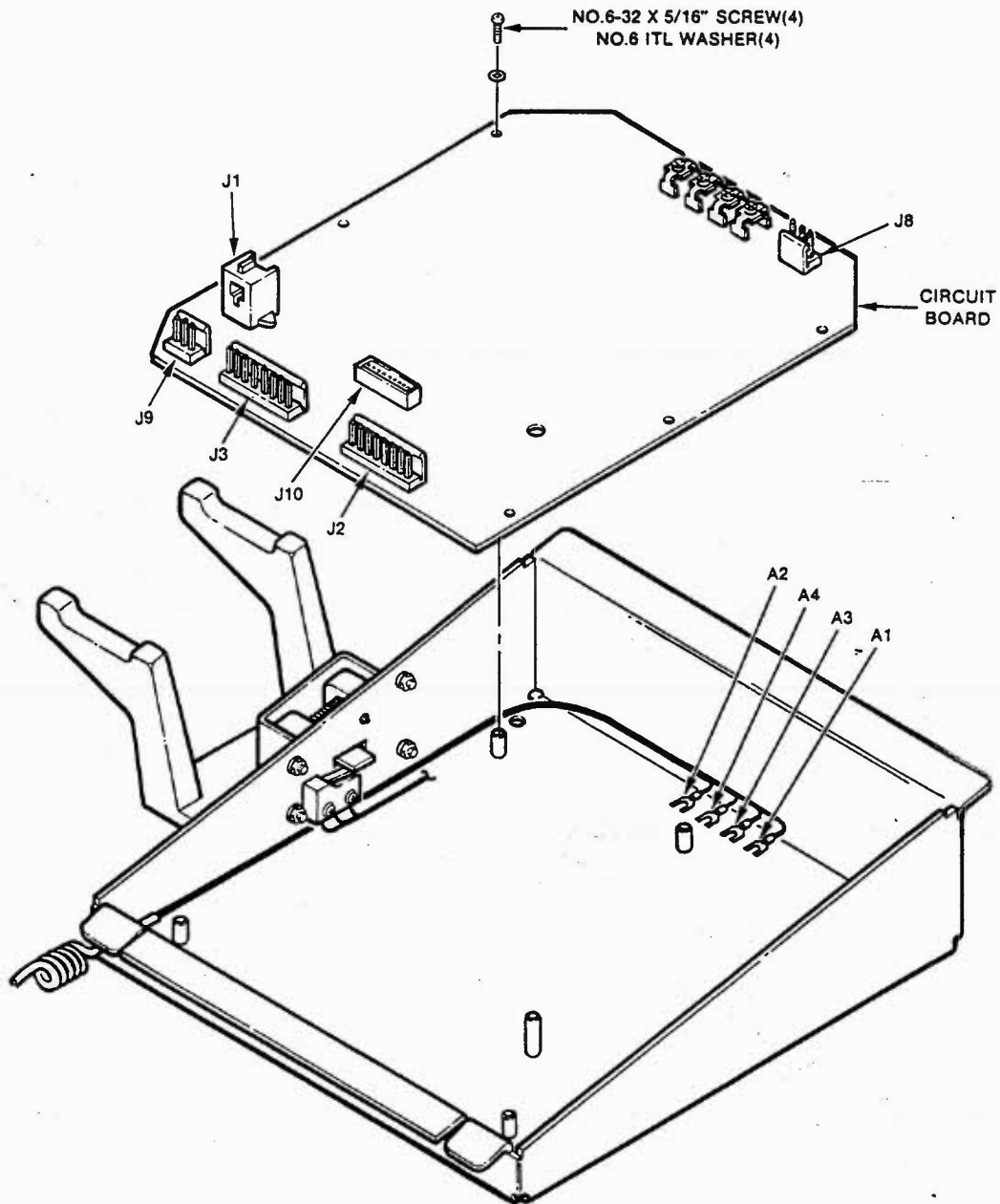


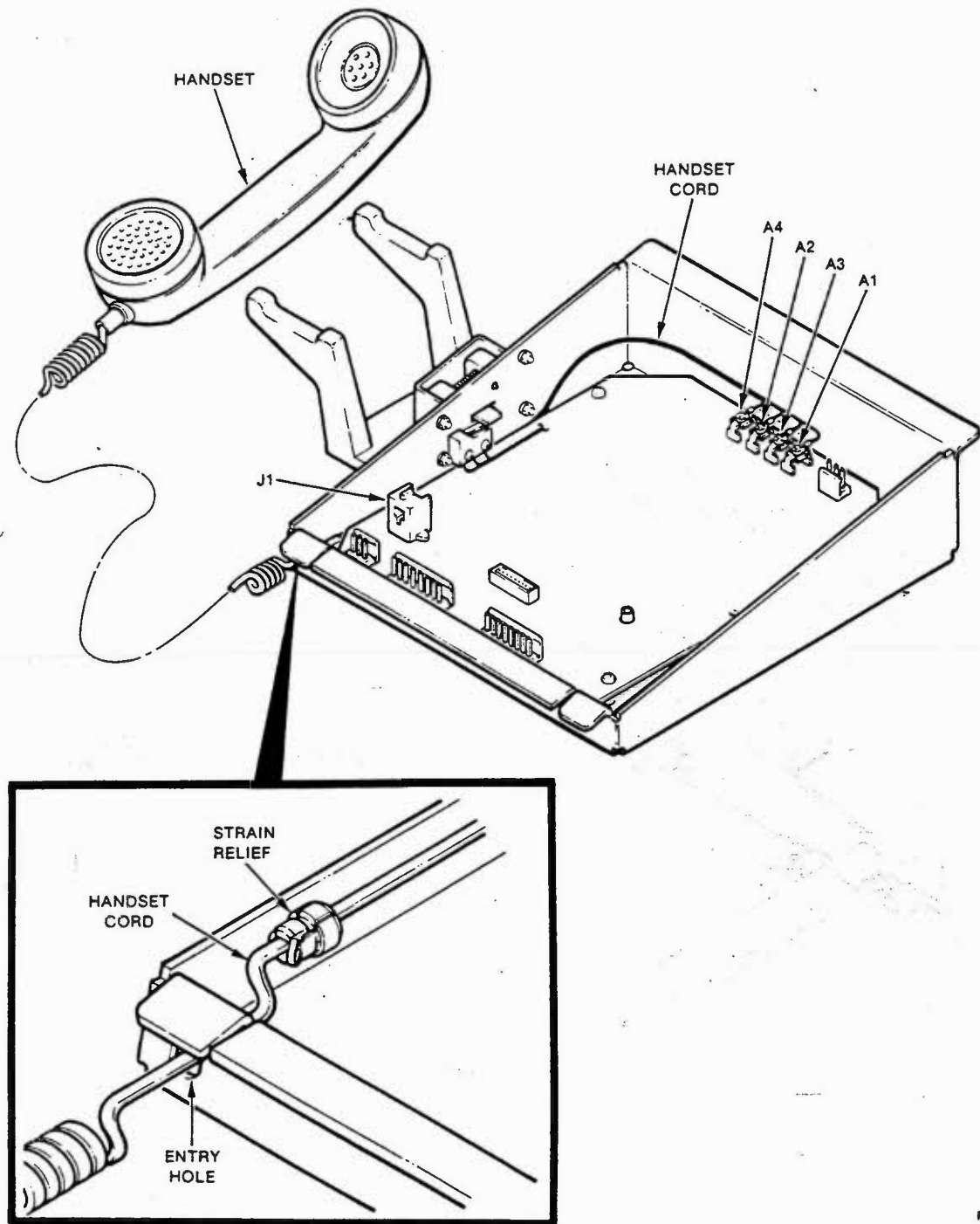
Fig. 29—Circuit Board Subassembly Replacement (Desk Top Phones)

P410-064

- (5) Remove four No. 6 x 5/16-inch screws and four No. 6 ITL lockwashers from the circuit board.
- (6) Remove the Circuit Board Subassembly from the phone.
- (7) Install a replacement Circuit Board Subassembly by reversing procedure in steps 1 through 6. The Cable Clamp included with replacement Circuit Board Subassemblies is not used with Desk Model Phones and may be discarded.

**7.24 Handset Subassembly Replacement:** Replace the Handset Subassembly per Fig. 30 and the following instructions.

- (1) Remove power by unplugging Modular Connector from J1.
- (2) Disconnect Terminals A1, A2, A3, and A4 by loosening screws and sliding out lugs.



P410-065

Fig. 30—Handset Subassembly Replacement (Desk Top Phones)

- (3) Using a medium size needle nose pliers, compress the Strain Relief and slide it free of the Entry Hole.
- (4) Open the Strain Relief and remove it from the Handset Cord.
- (5) Remove the Handset Subassembly from the phone.
- (6) Replace the Handset Subassembly with one known to be good by reversing procedures in steps 1 through 5.

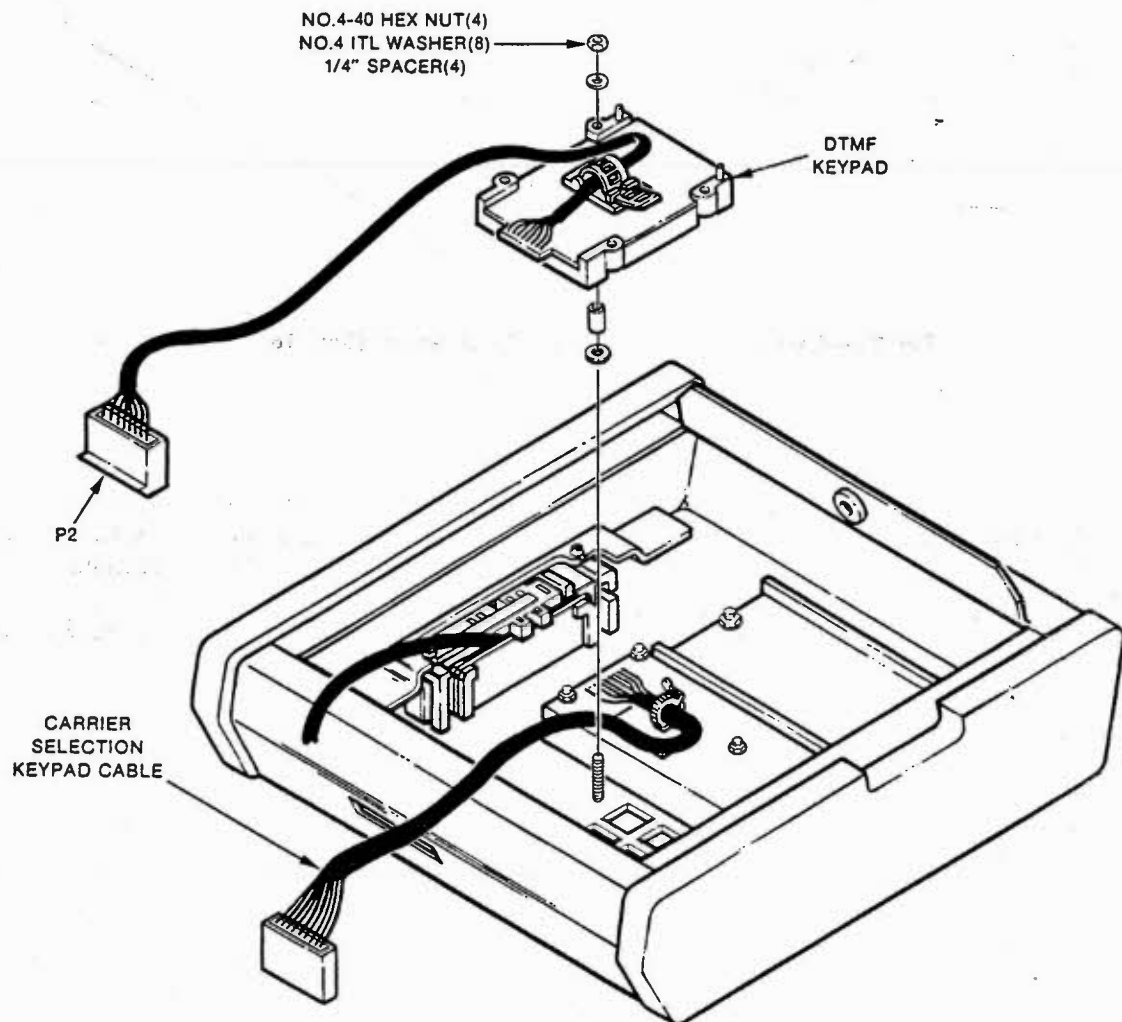
**7.25 DTMF Keypad Subassembly Replacement:**  
Replace the DTMF Keypad Subassembly per Fig. 31 and the following instructions.

- (1) Remove power by unplugging Modular Connector from J1.
- (2) Unplug Connector P2.
- (3) If the phone has Carrier Selection Keys, open the Cable Clamp and remove the Carrier Selection Keypad Cable from it.
- (4) Remove the four No. 4-40 Hex Nuts and four No. 4 ITL Washers which secure the DTMF Keypad Subassembly.

- (5) Remove the DTMF Keypad Subassembly.
- (6) Replace the DTMF Keypad Subassembly with one known to be good by reversing procedure in steps 1 through 5.

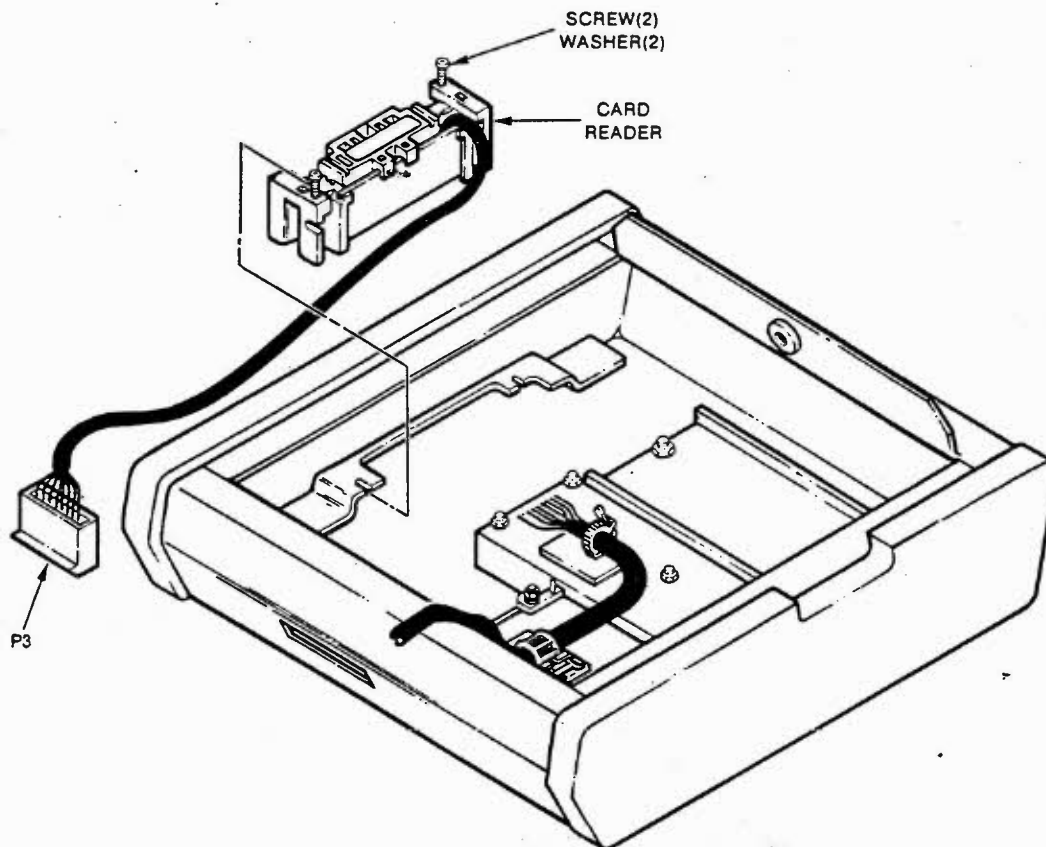
**7.26 Card Reader Subassembly Replacement:**  
Replace the Card Reader Subassembly per Fig. 32 and the following instructions.

- (1) Remove power by unplugging Modular Connector from J1.
- (2) Unplug Connector P3.



P410-066

Fig. 31—DTMF Keypad Subassembly Replacement (Desk Top Phones)



P410-067

Fig. 32—Card Reader Subassembly Replacement (Desk Top Phones)

- (3) Loosen the two screws which secure the Card Reader Subassembly.
- (4) Slide Card Reader Subassembly to the right and remove.
- (5) Replace the Card Reader Subassembly with one known to be good by reversing procedure in steps 1 through 4.

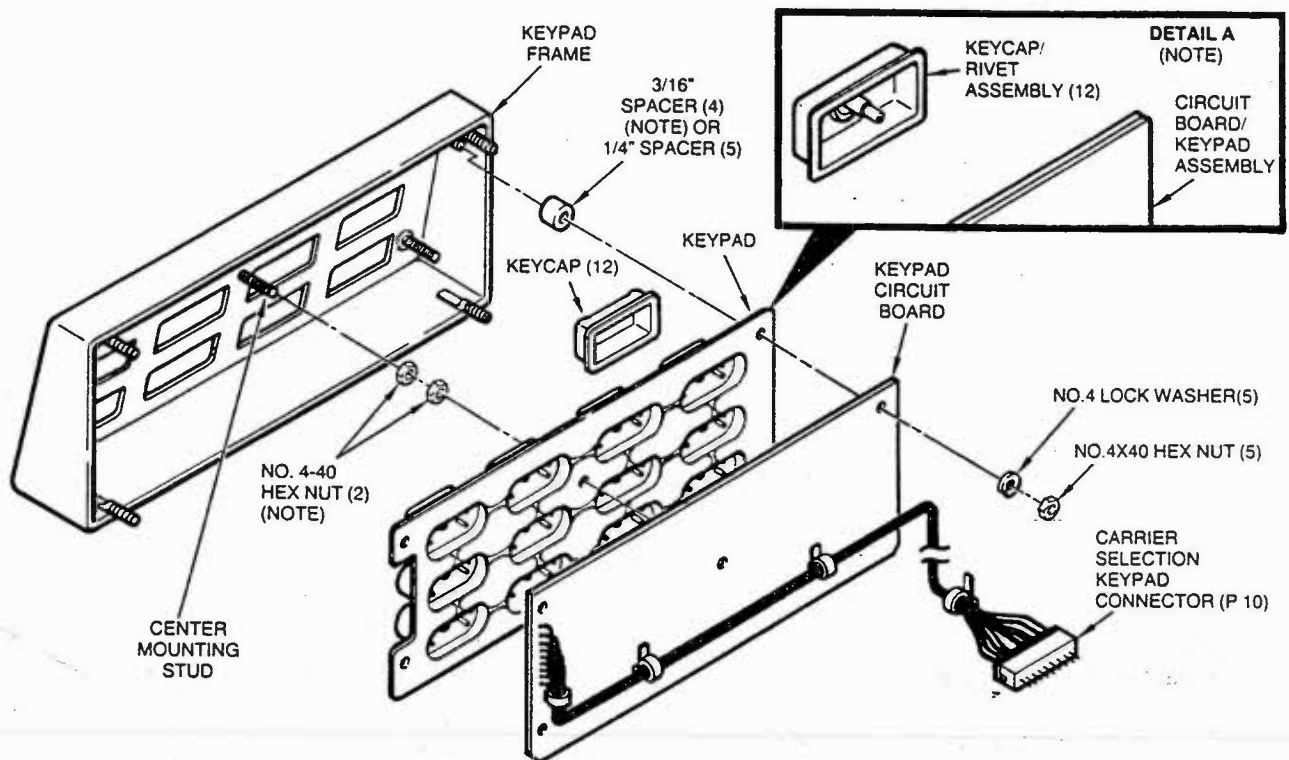
#### Carrier Selection Keypad Repair

**7.27** The Carrier Selection Keypad can be repaired on any Charge-Card Phone by using a Carrier Selection Keypad Repair Kit (R-TEC Systems no. 76-011-95).

**Caution:** Care must be taken while handling the Keypad and Circuit Board to ensure that no contaminants get on the gold foil of the Circuit Board or the contacts on the Keypad.

**7.28 Panel Mount Phone, Wall Mount Phone, or Chassis Assembly:** Install repair kit per Fig. 33 and the following instructions.

- (1) Remove power by unplugging Modular Connector from J1.
- (2) Unplug Connector P10.
- (3) Open the Cable Clamp and remove the Carrier Selection Keypad cable from it.
- (4) Remove the four No. 6-32 Hex Nuts, the four No. 6 ITL Washers, and the four No. 6 Flat Washers which secure the Carrier Selection Keypad subassembly to the phone.
- (5) Carefully guide the cable and connector P10 through the access hole while removing the Carrier Selection Keypad subassembly from the phone.



**NOTE:** The parts shown in Detail A along with the Two 4-40 Hex Nuts and Five 3/16-inch Spacers are used on old configurations only. Discard these parts when installing repair kit.

P410-068

**Fig. 33—Carrier Selection Keypad Repair Kit Installation (Panel Mount Phone, Wall Mount Phone, or Chassis Assembly)**

- (6) Remove five No. 4-40 Hex Nuts and five No. 4 Lockwashers and the Keypad Circuit Board.
- (7) If Circuit Board and Keypad are fastened together (early models only, see Detail A), perform the following:
  - (a) Remove and discard the twelve Keypad/Rivet Assemblies and the Circuit Board/Keypad Assembly.
  - (b) Remove the two No. 4-40 Hex Nuts on the Center Mounting Stud and the four 3/16-inch Spacers. Discard Spacers and Nuts.
- (8) Place twelve new Keycaps on the Keypad.
- (9) Place five 1/4-inch Spacers on the mounting studs if the old spacers were removed.
- (10) Place Keypad with Keycaps over the five mounting studs.
- (11) Place new Circuit Board over the five mounting studs.
- (12) Secure the assembled parts using five No. 4 Washers and five No. 4-40 Hex Nuts.
 

*Note:* New hardware (nuts, washers, and spacers) is provided in the repair kit which may not be required in all circumstances.
- (13) Install the repaired Carrier Selection Keypad by reversing the procedure in steps 1 through 5.
- (14) Install Carrier Identification Labels and Keycap Covers using the instructions in paragraph 4.13.

**7.29 Desk Top Phone:** Install repair kit per Fig. 34 and the following instructions.

- (1) Remove power by unplugging Modular Connector from Circuit Board.
- (2) Unplug Connector P10 from Circuit Board.
- (3) Open the Cable Clamp and remove the Carrier Selection Keypad cable from it.
- (4) Remove five No. 4-40 Hex Nuts and the five No. 4 ITL Washers which secure the Keypad Circuit Board to the Cover Assembly.
- (5) Remove and discard the Circuit Board, the Keypad, and the twelve Keycaps.
- (6) Place twelve new Keycaps on the Keypad.
- (7) Place new Keypad with Keycaps over the five mounting studs and spacers.
- (8) Place new Circuit Board over the five mounting studs.
- (9) Secure the assembled parts using five No. 4 ITL Washers and five No. 4-40 Hex Nuts.

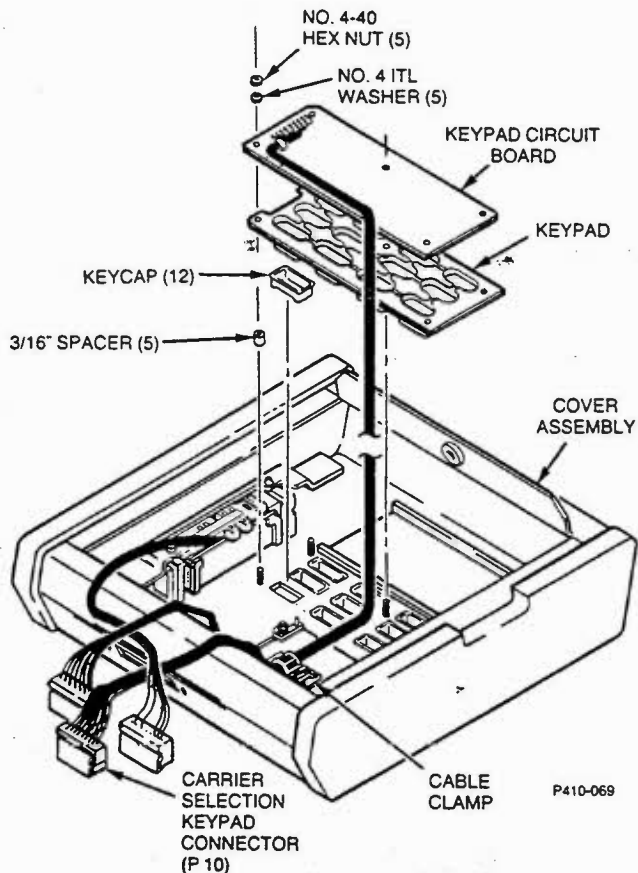
**Note:** New hardware (nuts, washers, and spacers) are provided in the repair kit which may not be required in all circumstances.

- (10) Finish the installation by reversing the procedure in steps 1, 2, and 3.
- (11) Install Carrier Identification Labels and Keycap Covers using the instructions in paragraph 4.13.

## 8. REPAIR AND REPLACEMENT

**8.01** Any Charge-Card Phone which is found to be defective should be sent directly to R-TEC Systems. Within the warranty period, a defective phone will be repaired or replaced at no charge. If the phone is out of warranty, repair or replacement will be done for a fixed charge.

**8.02 Repair Return Procedure:** Any Charge-Card Phone may be returned using the following procedures.



**Fig. 34—Carrier Selection Keypad Repair Kit Installation (Desk top Phones)**

- (1) Contact R-TEC Systems Repair Service Center and request a Material Return Authorization (MRA) number.
- (2) Pack the phone carefully, using original shipping container if available. Include the MRA number on the packing slip and ship prepaid to:

R-TEC Systems  
Attn: Repair Service Center, MRA No.  
1005 Pamela Drive  
Euless, Texas 76040.

**8.03 Emergency Replacement Procedure:** For an out-of-service requiring replacement of a Charge-Card Phone, call R-TEC Systems Repair Service Center at (817) 540-8202. R-TEC Systems will take your order and issue a Material Return Authorization (MRA) number. The replacement phone will normally be shipped within 24 hours. The customer will be billed list price plus 25% for emergency service. The MRA number is to be included on the packing slip for the phone that is returned.



8.04 If the defective phone is returned a credit will be issued in accordance with the following schedule.

- (a) List price plus 25% emergency service charge for a phone replaced while in warranty.
- (b) List price plus 25% emergency service charge minus repair expense for a phone not in warranty.

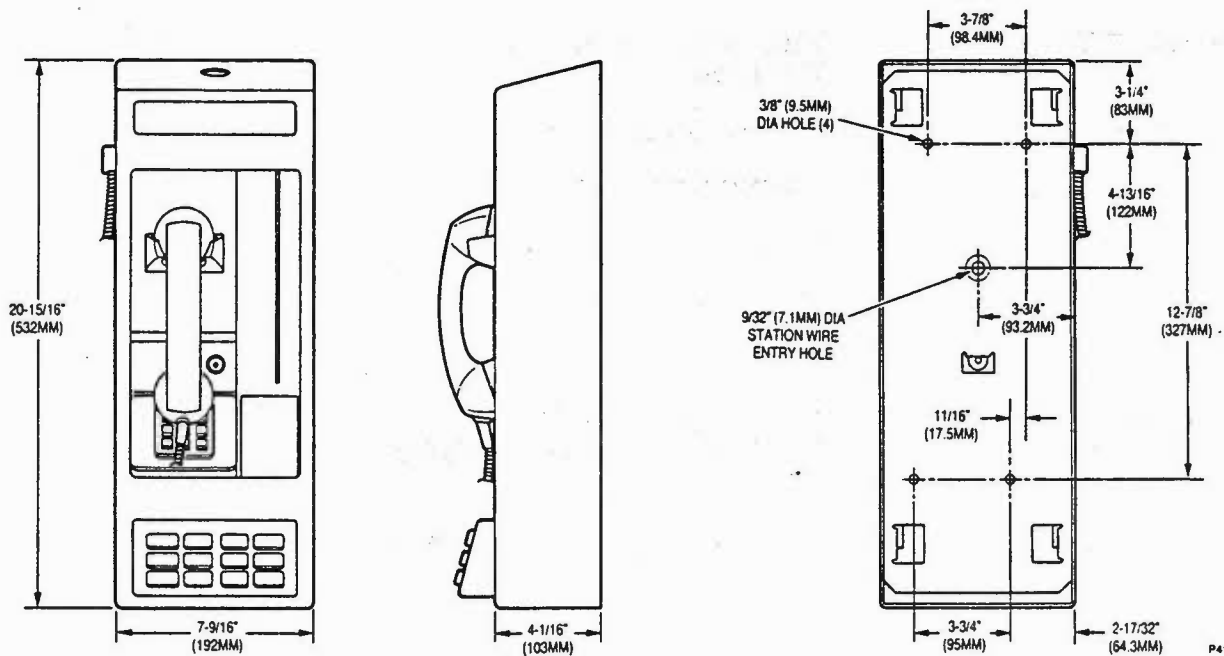
9. SPECIFICATIONS

9.01 Specifications for the standard Charge-Card Phone or the Charge-Card Phone with Carrier

Selection Keys are listed in Table H. Fig. 35 through Fig. 38 contain typical phone mechanical dimensions. Fig. 39 contains the mechanical dimensions for the instruction cards, number card and carrier identification labels.

10. ORDERING INFORMATION

10.01 Table I through Table L contain a list of Charge-Card Phone descriptions and part numbers. Table M and N contain a description and part numbers of Charge-Card Phone spare parts. Table O contains descriptions and part numbers for accessories.



P410-017A

Fig. 35—Typical Wall Mount Phone Mechanical Dimensions

**TABLE H**  
**SPECIFICATIONS**

SPECIFICATION	DESCRIPTION
Input Power	The phone operates from the normal C.O. loop current. The minimum operating current is 18ma. On short loops, the current is limited to approximately 40ma. Operation is limited to loop start non-coin line use.
Impedance	600 ohms
ERL	4.0dB minimum, 200 to 3200Hz 12dB minimum, 500 to 2500Hz
Transmission	Conforms to E.I.A. RS-470
Signaling	DTMF low frequency group - $12 \pm 2$ dBm DTMF high frequency group - $10 \pm 1$ dBm
Hearing Aid Compatibility	Meets the requirements of proposed E.I.A. standard RS504
Card Reader	Manually operated unit which reads track 2 of ABA standard card
Speed Range	4.5 to 55 inches per second
Life	1,000,000 card passes
Ringer Equivalent	With out ringer = .5B With ringer = 1.2A
Voltage-Current	Conforms to FCC Part 68
FCC Registration No.	DS36XC-70797-TE-T
E.M.I.	Conforms to FCC Part 15 Class B
Vibration-Shock	Conforms to FCC Part 68
Environmental	
Outdoor Models	Covered environment - 20 to 140 degrees F (- 29 to 60 degrees C)
All Others	Sheltered environment 32 to 122 degrees F (0 to 50 degrees C) 20% to 90% relative humidity (non condensing)
Reliability	
Outdoor Models	Estimated FIT rate: 19,408.5 (Failure-In Time) Estimated MTBF: 51,523.8 hours (Mean-Time-Between-Failure)
All Others	Estimated FIT rate: 12,939 (Failure-In-Time) Estimated MTBF: 77,289 hours (Mean-Time-Between-Failure)
	<b>Note:</b> Reliability calculations made in accordance with Bell Systems Publication IP10425, Method III.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

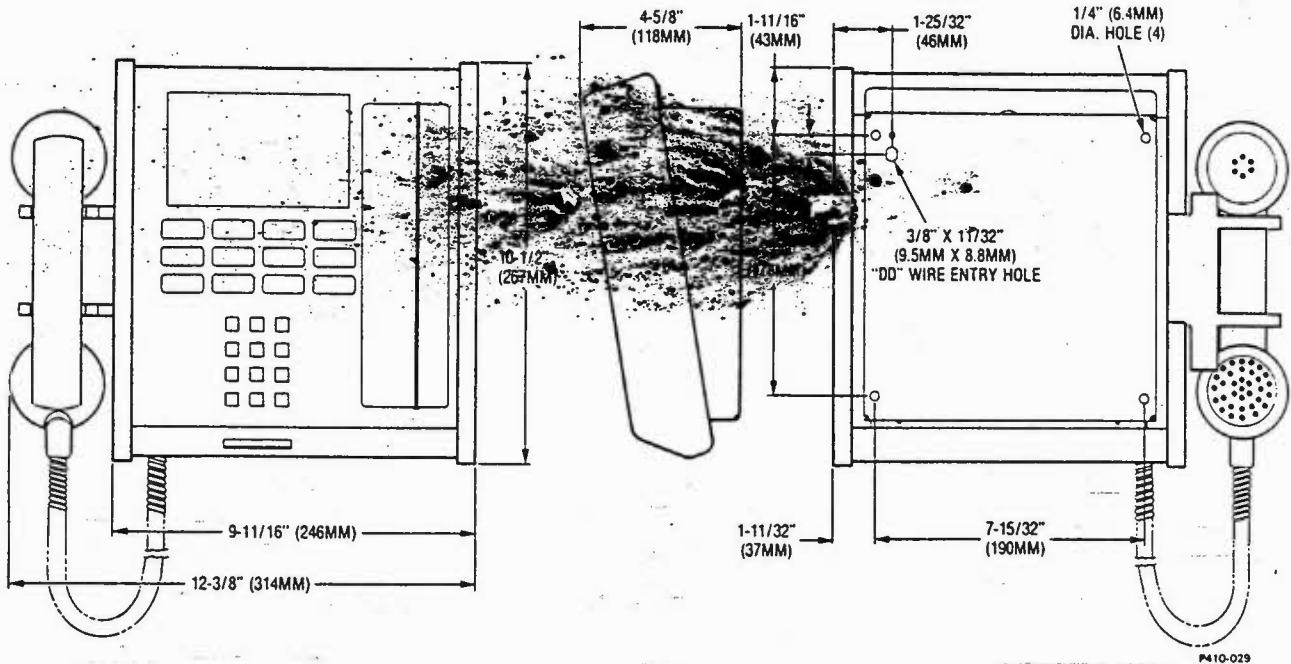


Fig. 36—Typical Desk Top Phone Mechanical Dimensions

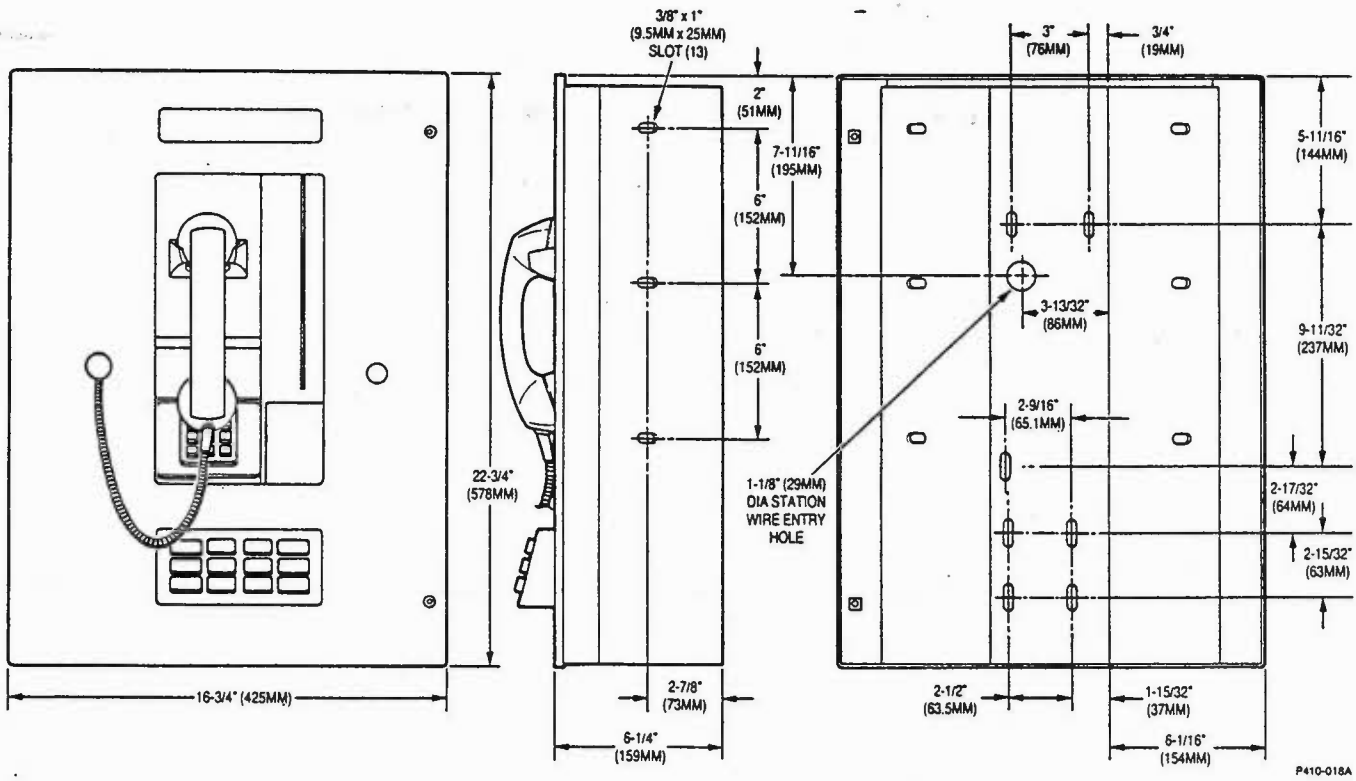
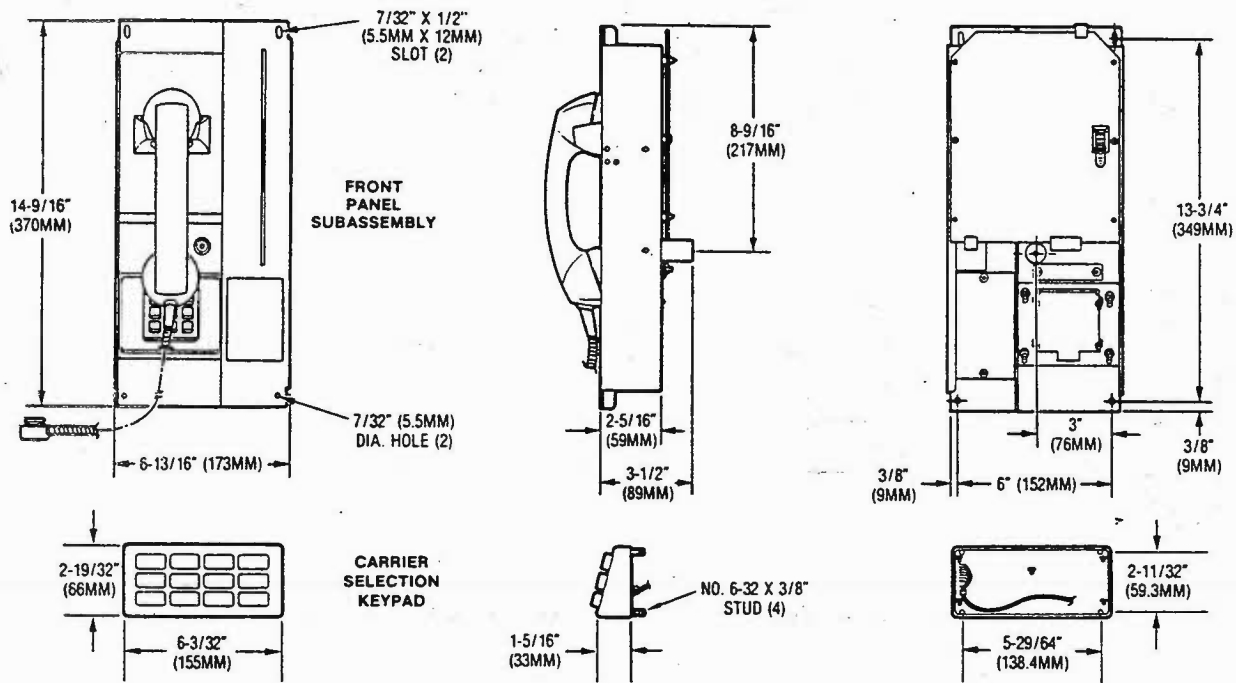


Fig. 37—Typical Panel Mount Phone Mechanical Dimensions



P410-012A

Fig. 38—Typical Chassis Assembly Mechanical Dimensions

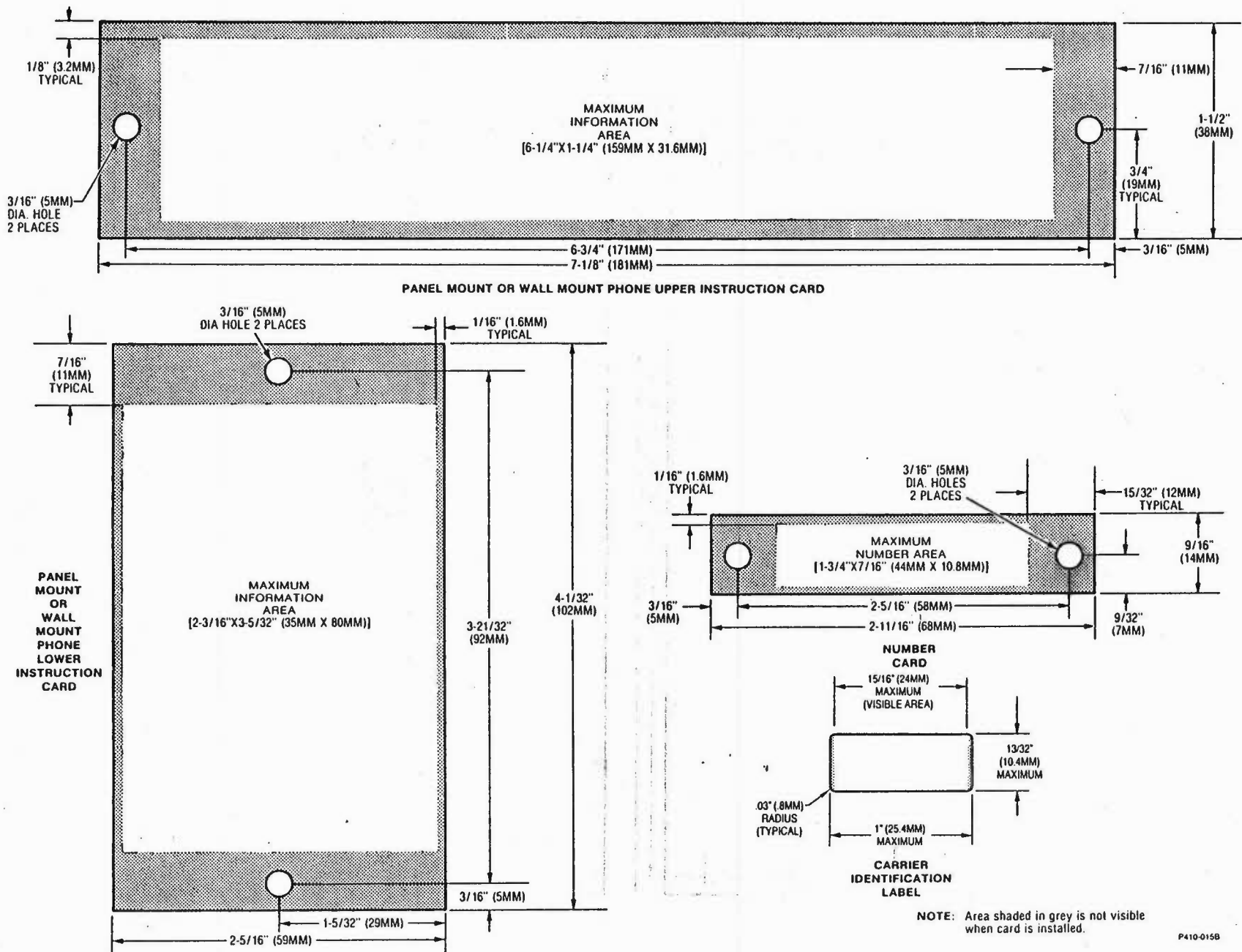
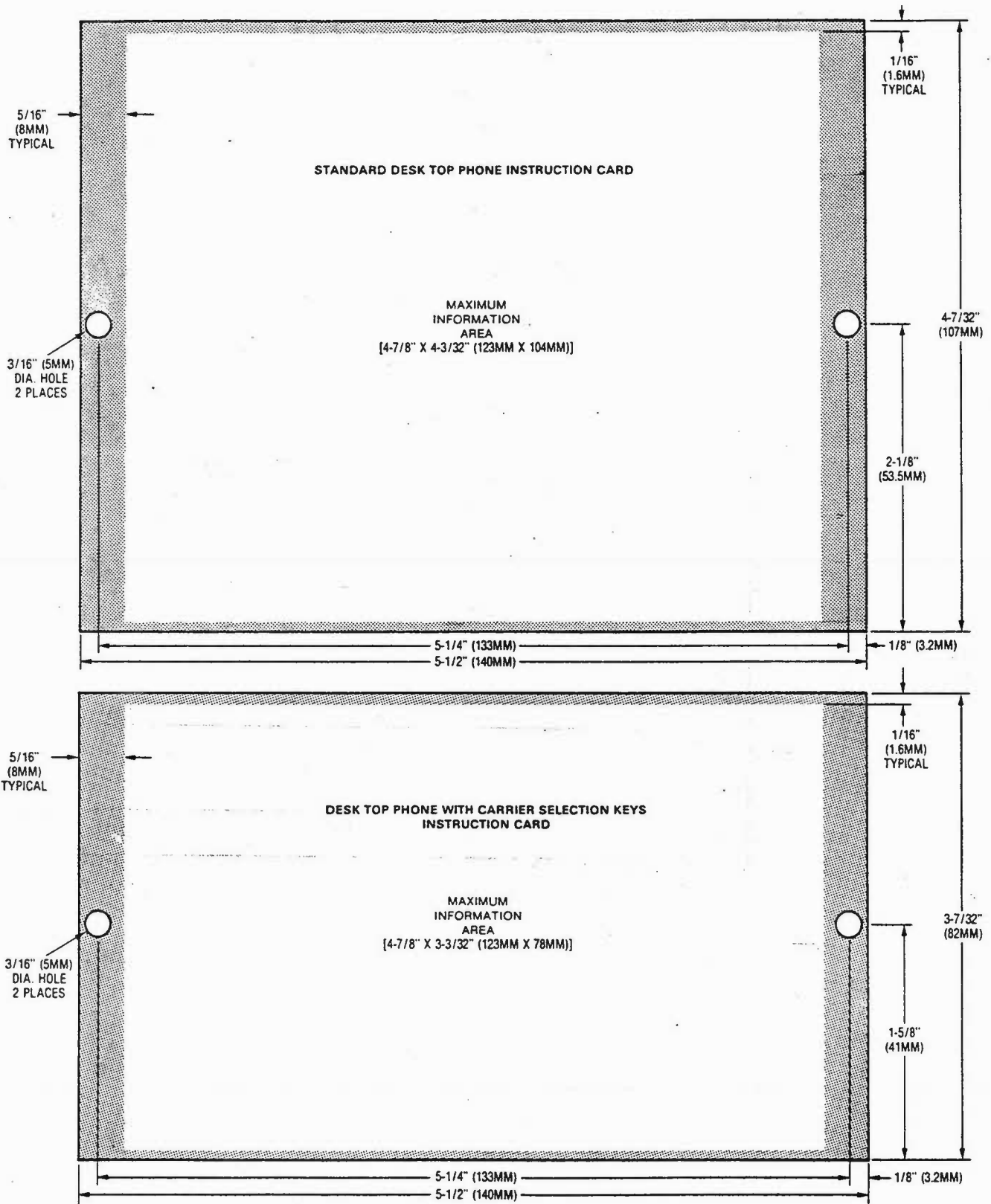


Fig. 39—Instruction Cards, Number Card, and Carrier Identification Label Mechanical Dimensions (Sheet 1 of 2)



NOTE: Area shaded in grey is not visible when card is installed.

P410-023

Fig. 39—Instruction Cards, Number Card, and Carrier Identification Label Mechanical Dimensions (Sheet 2 of 2)

TABLE I

**STANDARD CHARGE-CARD PHONE  
ORDERING INFORMATION**

PART NO.	DESCRIPTION
76-011-35	Wall Mount Phone with Dark Blue Cover and Light Blue Chassis
76-011-45	Wall Mount Phone with Light Brown Cover and Dark Brown Chassis
76-011-52	Stainless Steel Wall Mount Phone (Outdoor Model)
76-011-97	Desk Top Phone

TABLE K

**STANDARD CHASSIS ASSEMBLY  
ORDERING INFORMATION**

PART NO.	DESCRIPTION
76-011-37	Light Blue Chassis Assembly with Black Handset
76-011-47	Dark Brown Chassis Assembly with Brown Handset
76-011-57	Black Chassis Assembly with Black Handset

TABLE J

**CHARGE-CARD PHONE WITH CARRIER SELECTION KEYS  
ORDERING INFORMATION**

PART NO.	DESCRIPTION
76-011-18	Wall Mount Phone with Dark Blue Cover and Light Blue Chassis
76-011-28	Wall Mount Phone with Light Brown Cover and Dark Brown Chassis
76-011-38	Wall Mount Phone with Gray Cover and Black Chassis
76-011-19	Panel Mount Phone with Light Blue Chassis
76-011-29	Panel Mount Phone with Dark Brown Chassis
76-011-39	Panel Mount Phone with Black Chassis
76-011-53	Stainless Steel Wall Mount Phone (Outdoor Model)
76-011-99	Desk Top Phone

TABLE L

**CHASSIS ASSEMBLY WITH CARRIER SELECTION KEYS  
ORDERING INFORMATION**

PART NO.	DESCRIPTION
76-011-20	Light Blue Chassis Assembly with Black Handset
76-011-30	Dark Brown Chassis Assembly with Brown Handset
76-011-40	Black Chassis Assembly with Black Handset

TABLE M

DESK PHONE SPARE PARTS  
ORDERING INFORMATION

PART NO.	DESCRIPTION
72-49-145	Phone Number Cover
72-49-151	Instruction Card Cover (Phone with Carrier Selection Keys)
72-49-152	Instruction Card Cover (Standard Phone)
72-84-601	Handset Subassembly (Brown with nine foot coiled cord)
76-011-09	Ringer Subassembly
76-011-10	Circuit Board with Processor (Replaces 76-011-03)
76-011-93	Package of 100 Replacement Keycap Covers and 5 keycap Removal Tools
76-011-95	Carrier Selection Keypad Repair Kit
78-14-004	DTMF Keypad Subassembly
78-14-012	Card Reader Subassembly (Replaces 78-14-006)
78-14-013	Hookswitch Subassembly (Replaces 78-14-008)

TABLE N

WALL OR PANEL MOUNT PHONE SPARE PARTS  
ORDERING INFORMATION

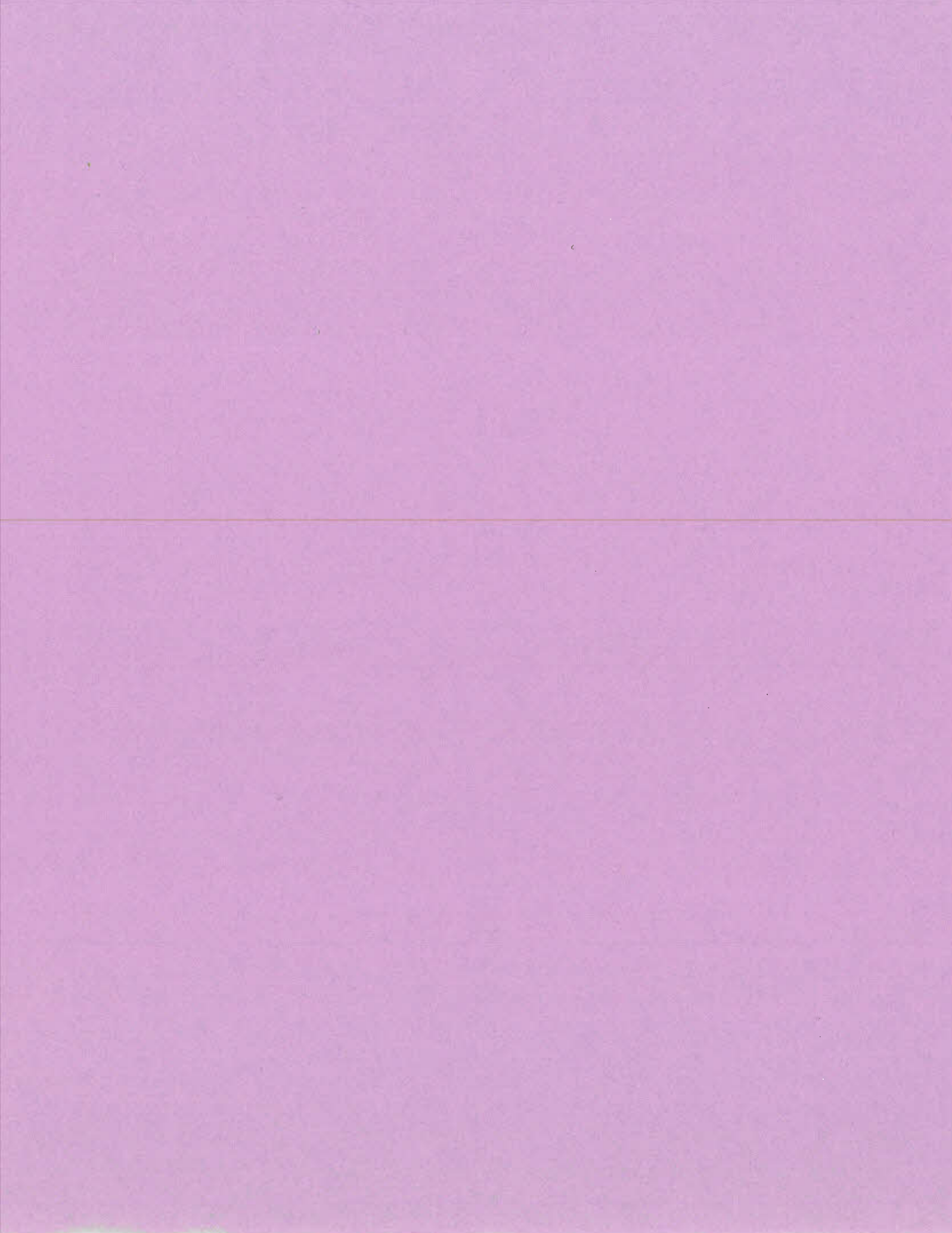
PART NO.	DESCRIPTION
72-49-145	Phone Number Cover
72-49-150	Instruction Card Cover (Chassis)
72-49-191	Instruction Card Cover (Cover/Panel)
72-84-605	Handset Subassembly (Black with armored cord)
72-84-606	Handset Subassembly (Brown with armored cord)
76-011-09	Ringer Subassembly
76-011-10	Circuit Board with Processor (Replaces 76-011-03)
76-011-43	Circuit Board with Processor (Outdoor Model)
76-011-93	Package of 100 Replacement Keycap Covers and 5 Keycap Removal Tools
76-011-95	Carrier Selection Keypad Repair Kit
78-14-007	DTMF Keypad Subassembly
78-14-012	Card Reader Subassembly (Replaces 78-14-006)
78-14-013	Hookswitch Subassembly (Replaces 78-14-008)
78-57-390	Lock Mounting Hardware Kit

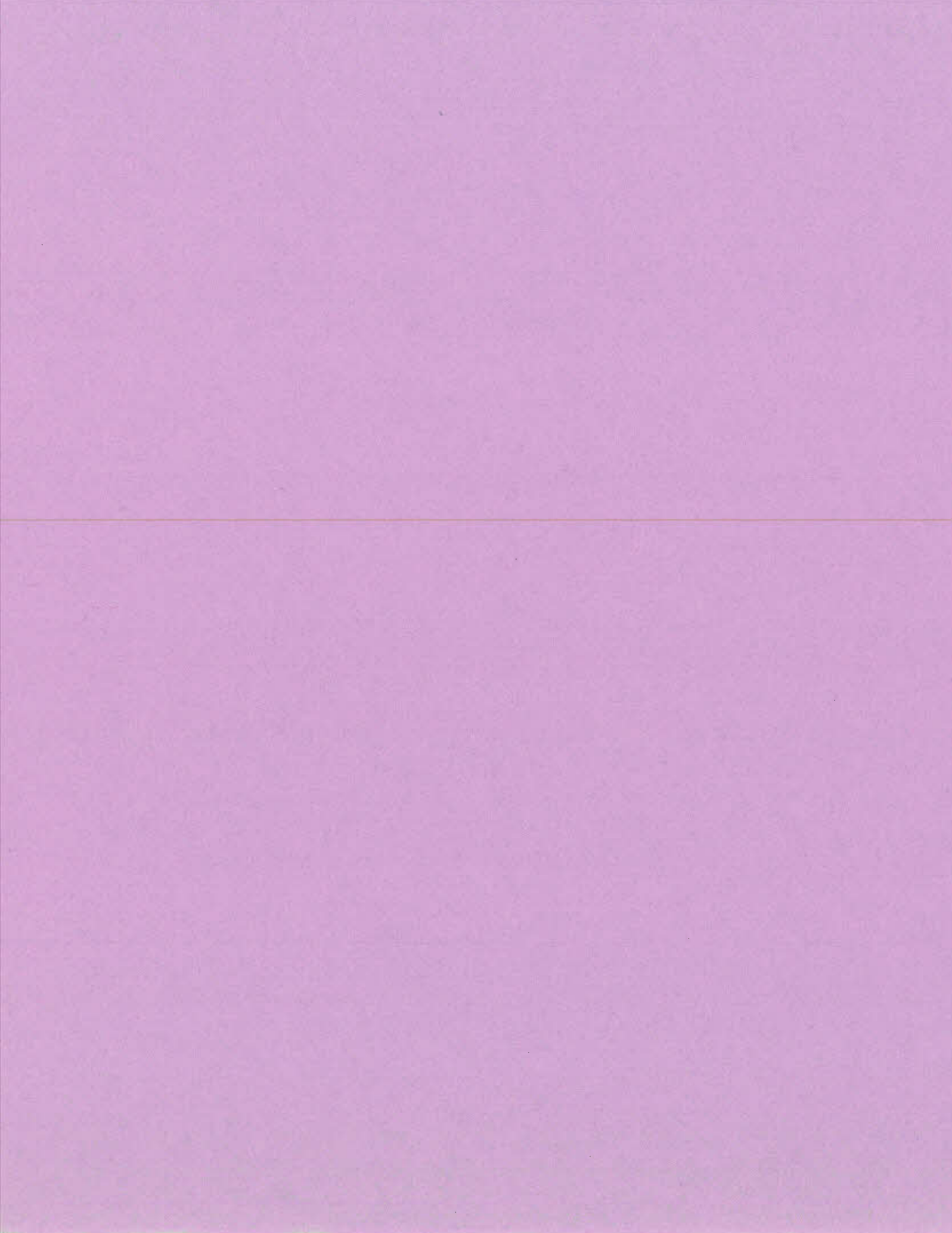
TABLE O

## ACCESSORIES

PART NO.	DESCRIPTION
76-011-04	Lock Plug Bracket
76-011-08	Security Screw T-Handle Wrench
76-011-11	Head Cleaning Card







## CHARGE-CARD PHONE DESCRIPTION, OPTION PLANNING AND APPLICATION CONSIDERATIONS

### 1. GENERAL

**1.001** This addendum supplements Section 300-410-150, Issue 1. Place this pink sheet ahead of Page 1 of the section. Place the attached Appendix 1 at the back of the section.

**1.002** This addendum is issued for the following reasons:

- (a) To add Outdoor Model Charge-Card Phones
- (b) To add Appendix 1 which includes information required by users of firmware 46-005-51 (Mod B Charge-Card Phones)
- (c) To add Carrier Selection Keypad Repair Kit
- (d) To add Keycap Covers

### 2. CHANGES TO SECTION

**2.001** On Page 1, add "10. APPENDIX" to the end of the Table of Contents.

**2.002** On Page 1, at the end of paragraph 1.01 add the following:

Appendix 1 includes information concerning Charge-Card Phones with firmware 46-005-51 (Mod B Phones). The appendix should be used in conjunction with this section only by users of Mod B Phones.

**2.003** On Page 2, add the following paragraph:

**2.03.1 Outdoor Model Phones:** Environmentally hardened Charge-Card Phones are available as Wall Mount Phones with or without Carrier Selection Keypad. These phones are of stainless steel construction with a brushed satin finish. They may be used in an indoor or covered outdoor environment.

**2.004** On Page 9, paragraph 5.01, replace the first sentence with the following:

**5.01** Charge-Card phones may be operated in a charge-a-call phone application.

**2.005** On Page 26, change the "Environmental" and "Reliability" specifications in Table C to the following:

SPECIFICATION	DESCRIPTION
Environmental	
Outdoor Models	Covered environment -20 to 140 degrees F (-29 to 60 degrees C)
All Others	Sheltered environment 32 to 122 degrees F (0 to 50 degrees C) 20% to 90% relative humidity (non condensing)
Reliability	
Outdoor Models	Estimated FIT rate: 19,408.5 (Failure-In Time) Estimated MTBF: 51,523.8 hours (Mean-Time-Failure)
All Others	Estimated FIT rate: 12,939 (Failure-In Time) Estimated MTBF: 77,289 hours (Mean-Time-Failure)

**2.006** On Page 26, add the following to Table D:

PART NO.	DESCRIPTION
76-011-52	Stainless Steel Wall Mount Phone (Outdoor Model)

**2.007** On Page 26, add the following to Table E:

PART NO.	DESCRIPTION
76-011-53	Stainless Steel Wall Mount Phone (Outdoor Model)

2.008 On Page 26, add the following to Table G:

PART NO.	DESCRIPTION
76-011-43	Circuit Board with Processor (Outdoor Model)
76-011-93	Package of 100 Replacement Keycap Covers and 5 Keycap Removal Tools
76-011-95	Carrier Selection Keypad Repair Kit
78-57-390	Lock Mounting Hardware Kit

## CHARGE-CARD PHONE (MOD B) DESCRIPTION, OPTION PLANNING AND APPLICATION CONSIDERATIONS

### 1. GENERAL

**1.01** This appendix provides information concerning the Charge-Card Phone or Charge-Card Phone with Carrier Selection Keys with R-TEC Systems' Universal Program — Mod B (firmware 46-005-51). Included is a description of the difference between phones with firmware 46-005-51 and phones with firmware 46-005-50, Rev B and subsequent. Use this appendix in conjunction with Section 300-410-150 for Mod B Charge-Card Phones. Additional information can be obtained from Section 300-410-350.

**1.02** For additional literature or assistance in ordering, contact your local R-TEC Systems sales representative or R-TEC Systems Customer Service Department, 2100 Reliance Parkway, Bedford, Texas 76021, (817) 540-8278. For technical assistance contact R-TEC Systems Technical Service Department at (817) 540-8217.

### 2. DESCRIPTION

**2.01** The 46-005-51 firmware differs from the standard firmware in the following manner:

- (a) Up to eleven digit numbers may be used for the Call Processor Number
- (b) Any DTMF keypad character may be used in the Call Processor Number
- (c) Special Access Character (SAC) option has been added
- (d) "00+" and "00-" call restriction added

**2.02** These enhancements required that the memory of the phone be reorganized and that certain features be eliminated so that the memory capacity not be exceeded. Features which were removed are:

- (a) Programmable Time-Out
- (b) PBX Access Number
- (c) Distinctive recognition of one type Telcom Card.

**2.03** The Model Description, Circuit Description, and Option/Program Switch settings for the Mod B Phone are identical to the phones with 46-005-50 firmware.

### PROGRAMMABLE OPTIONS

**2.04** Programmable options which are the same for the Mod B Phone and the phones with 46-005-50 firmware will be indicated by the comment "No Change".

**2.05** "AT&T" Select Key: (No Change)

**2.06** *PBX Access Number:* Mod B Phones will not operate properly when they are located behind a PBX.

**2.07** *Special Access Character (SAC):* This character is used in applications which require a special switch between the serving C.O. and the call processor. When this option is selected and a call is placed requiring the call processor, the phone will output the Processor Number and wait for a new dial tone (from the special switch). When this second dial tone is received, the phone will output the SAC before going into its call processor interface routine. The special switch is accessed by the serving C.O. upon receipt of the Processor Number. The SAC may be any digit, "\*" or "#".

**2.08** *Phone Identification Number:* (No Change)

**2.09** *Processor Number:* This number specifies the characters which will be transmitted by the phone to access the call processor. It may be any combination of digits, "#s" and "s" up to eleven characters; if less than eleven characters, "#s" must be used after the last character to fill in the eleven memory locations. For hardwired applications requiring no Local Processor Number, "#s" must be used in all eleven locations.

**2.10** *Number of Characters In Processor Number:* This number specifies how many of the characters in the Processor Number memory locations will be sent by the phone to access the call processor or special switch. If the desired number is nine or less,



the appropriate digit is used. If the desired number is ten or eleven, "\*" and "#" are used respectively.

**2.11 Operating Company's Credit-Card Number:**

The Mod B Phone does not recognize the identity of a specific operating company's credit card.

**2.12 Time-Out Value:** The Mod B Phone will respond immediately when a long distance carrier other than "AT&T" is selected before a credit card is read. The option of waiting a programmable amount of time for a card to be read before responding has been omitted from this firmware.

**2.13 Carrier Select Code Routing, Carrier Select Code Format, DTMF Keypad Long Distance Carrier Selection:** (No Change)

**2.14 Calling-Card Call Routing:** The phone will classify all Telcom credit cards as an AT&T calling card or Other Telcom calling card. Other Telcom calling cards must conform to American National Standards Institute (ANSI) standards X4.13-1983 and X4.16-1983. The phone must be programmed to determine the routing of calls being charged to each of these types of cards. The options for this routing are to send the call to the TSPS or to the call processor.

**2.15** If the card data is to be sent to the TSPS the phone forces a Zero-Plus call by prefixing the number being called with a zero if required. If the user enters the call as a One-Plus call the phone will change it to a Zero-Plus call before sending it to the TSPS. The phone transmits the card data to the TSPS in the AT&T format.

**2.16** If the card data is to be sent to the call processor, the phone calls the processor and sends all card data which includes the identification code of the issuing company. The call processor must then determine how to handle the call.

**2.17 Call Restrictions:** The phone may be programmed to allow or deny the following type calls from being placed through the central office and TSPS (when required). These restrictions DO NOT APPLY to calls being placed through the call processor or through a long distance carrier dialed up with a "950-WXXX" or "10XXX" number (if these types of calls are allowed). The following type calls may be restricted individually unless otherwise specified.

- (a) Calls with a "00+" or "00-" prefix

- (b) A WATS LINE call with an "800" or "1+800" prefix (must be allowed or denied as a group).

- (c) A LONG DISTANCE call with a "950-WXXX" or "10XXX" number.

- (d) A LOCAL INFORMATION call with a "555-XXXX", "1+555-XXXX", "1+411", or "411" number.

- (e) A LONG DISTANCE INFORMATION call with a "NPA+555-XXXX" or "1+NPA+555-XXXX" number.

- (f) A SERVICE call with the "611" number.

- (g) An EMERGENCY call with the "911" number.

- (h) A TOLL call with a "NPA+NXX-XXXX", "1+NPA+NXX-XXXX", or "0+NPA+NXX-XXXX" number. ("0+NPA+NXX-XXXX" can be denied only if Zero-Plus calls are routed to TSPS.)

**2.18 Carrier Select Code:** (No Change)

### 3. OPERATION

**3.01** The operation of the Mod B Phone is identical to phones with firmware 46-005-50 with their programmable time-out set to zero.

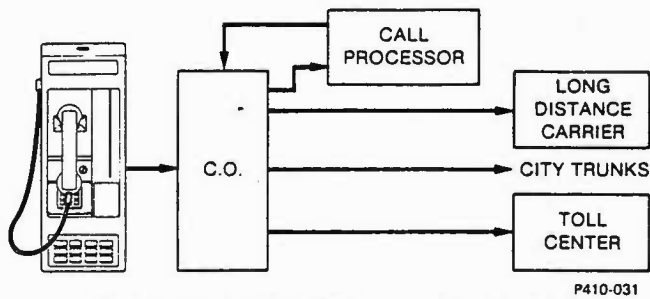
### 4. COMPATIBILITY

**4.01** The compatibility of the Mod B Phone is identical to phones with firmware 46-005-50.

### 5. APPLICATIONS

**5.01** The Mod B Phones may be operated in a charge-a-call phone application. These phones are totally powered by loop current. The lines connected to the call processor may be physical pairs or subscriber carrier or any combination of either.

**5.02 C.O. Equipment and Dial Up Call Processor Application (Fig. 1):** For applications in which the C.O. switch will be placing charge-a-call or no-charge-service calls. The call processor is connected to lines which can be accessed by the Mod B Phones by being called with a one to eleven character number consisting of digits, "s", or "#s".



**Fig. 1—Dial Up Call Processor Application**

**5.03** In this type application the phone determines if the call processor is required to place the call. When a call requires call processor intervention, the phone will call the processor using the Processor Number. Calls not requiring the call processor will be routed through the C.O. in the normal manner. Zero-Plus calls will be sent to the TSPS or C.O.

**5.04** This configuration allows traffic considerations to be used to determine the number of phones assigned to each call processor.

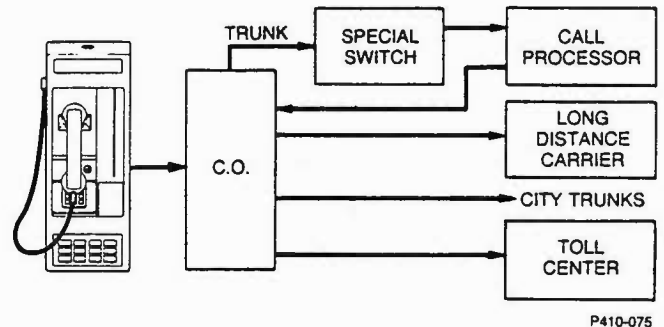
**5.05 *Dedicated Dial Up Call Processor Application (Fig. 1):*** This type configuration is to be used for applications in which the call processor will place all calls and is accessed by the Mod B Phone through the serving C.O. The phone outputs a one to eleven character number consisting of digits, “\*’s”, or “#’s” to accomplish the access. Traffic considerations and physical configuration for this type application are identical to the previous application.

**5.06** The call processor must determine all call restrictions when this configuration is used.

**5.07 *C.O. Equipment, Special Switch, and Call Processor Application (Fig. 2):*** This application is to be used when a special switch is required to accumulate traffic and billing data. The phone may be optioned to have the special switch route all calls or to have the C.O. switch route charge-a-call and no-charge-service calls.

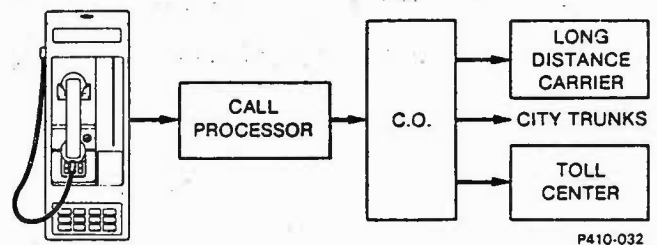
**5.08** In this application the phone determines if the call processor is required to place the call. When a call requires call processor intervention, the C.O. switch connects the line from the Mod B Phone to one of the special trunks going to the special switch. The special switch will then output a dial tone to the phone. Upon receipt of this second dial tone the phone will output the Special Access Character before going into its Call Processor interface routine. Calls not requiring the call processor will be routed through the C.O. or TSPS in the normal manner. The traffic con-

siderations for this type application are the same as the previous applications.



**Fig. 2—Special Switch Application**

**5.09 *Dedicated Hardwired Call Processor Application (Fig. 3):*** The call processor may be connected directly to the phones with lines that are not connected to any C.O. line equipment. When this configuration is used, the call processor must place all calls and the maximum number of phones per call processor is equal to the number of processor ports.



**Fig. 3—Hardwired Call Processor Application**

**5.10** The call processor must determine all call restrictions when this configuration is used.

**5.11 *Direct Toll Center Access Application (Fig. 4):*** A Mod B Phone may be used without a call processor on any C.O. line if that C.O. accesses a trunk to a toll center which is able to administer and place charge-a-call and calling card calls. Service calls not requiring access to the toll center are handled by the C.O. equipment in a conventional manner. Programmable options may be used to deny or allow specific types of calls at the phone.

**5.12** When this configuration is used, the C.O. equipment must provide termination for calls which require call processor administration (commercial credit-card calls). The phone's program does not have provisions for denying calls which require call processor administration. For additional information contact R-TEC Systems Technical Service Department at (817) 540-8217.

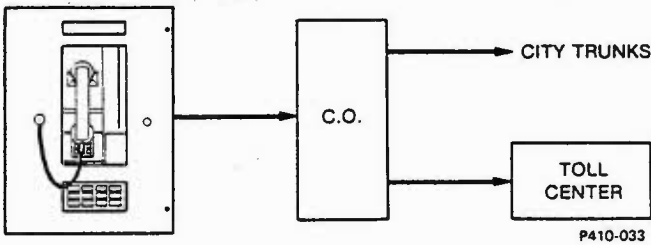


Fig. 4—Direct Toll Center Access Application

## 6. OPTION PLANNING

### NEW INSTALLATION

**6.01** Setting the Option/Program Switch and programming a phone prior to installation can be done by connecting the phone to a line with standard C.O. battery voltage applied. The procedure to program the phone in the C.O. is identical to programming the phone in the field.

**Note:** The electrically erasable memory (EEROM) in all Charge-Card Phones retains the data entered after power is removed.

**6.02** It is recommended that a "Programming Work Sheet" be prepared prior to installing a phone. The work sheet for the standard Mod B Charge-Card Phone is shown in Fig. 5. The work sheet for the Mod B Charge-Card Phone with Carrier Selection Keys is shown in Fig. 6. Both work sheets include the information required for setting the switches and programming the phone. Prepare a "Programming Work Sheet" by filling in the block in the upper right hand corner, checking the New Installation block and performing the following instructions.

**6.03** In the following instructions, the paragraphs that apply only to the standard phone will be suffixed with an "A". Paragraphs that apply only to the phone with carrier selection keys will be suffixed with a "B". Paragraphs that apply to both phones will not have an alpha suffix. When the symbol "?" is used in the instructions it indicates that the character is to be determined by the engineer when filling out the form.

**Note:** The boxes referenced in paragraphs 6.07A through 6.24 are located on the back of either "Programming Work Sheet".

**6.04** Mark the box for Position 1 of the Option/Program Switch by performing either (a) or (b).

- (a) Mark the "LOW" box for applications where an operator will handle Zero-Plus calls.
- (b) Mark the "HIGH" box for applications where the TSPS will place and administer Zero-Plus calls (ACCS tone required for card data send).

**6.05** Mark the box for Position 2 of the Option/Program Switch by performing either (a) or (b).

- (a) Mark the "HIGH" box for applications where the C.O. equipment will place calls not requiring call processor assistance or administration.
- (b) Mark the "LOW" box for applications where the call processor will place and administer all calls.

**6.06** Mark the box for Position 4 of the Option/Program Switch by performing either (a) or (b).

- (a) Mark the "HIGH" box for applications requiring a 4dB receive level boost.
- (b) Mark the "LOW" box for standard receive level applications.

**6.07A** Write "0" in box 1.

**6.07B** If you desire to select one of the Carrier Select Keys as the "AT&T" key, write the letter (A through M) identifying the appropriate key (see Fig. 7) in box 1. If an "AT&T" key is not desired write "0" in box 1.

**6.08** If a Special Access Character is required by the call processor, write "1" in box 2. Otherwise, write "0" in box 2 (reference paragraph 2.07.)

**6.09** If box 2 contains a "1", enter the character to be used as the Special Access Character (a digit, "\*", or "#") in box 3. If box 2 contains a "0", enter "0" in box 3.

**6.10** Write the Phone Identification Number or "#s" in boxes 4 through 10.

**6.11** Write the local Processor Number or "#s" in boxes 11 through 21 (reference paragraph 2.07.)



# PROGRAMMING WORK SHEET

## Standard Mod B Charge-Card Phone

NEW INSTALLATION

EXISTING INSTALLATION

Location: _____
Phone Number: _____
Date Programmed: _____ By _____

This work sheet provides instructions to the installer for setting the Option/Program Switches and entering programmable options on a standard Charge-Card Phone. (Reference Appendix 300-410-150 for instructions on filling out this form.)

### NEW INSTALLATION

**Step 1.** Gain access to the Option/Program Switch by removing the Cover (Wall Mount or Desk Top Phone).

**Caution:** Failure to observe the sequence in the following steps will result in erroneous entries.

**Step 2.** Set positions 1, 2, 4, and 7 of the Option/ Program Switch settings per the following:

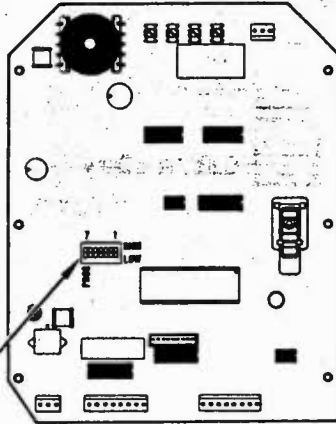
Switch Position 1  
 HIGH  LOW

Switch Position 2  
 HIGH  LOW

Switch Position 4  
 HIGH  LOW

Switch Position 7  
 LOW (PROG)

OPTION/  
PROGRAM  
SWITCHES



**Step 3.** Remove the Handset from Cradle.

**Step 4.** Call a local number which will maintain an uninterrupted line during programming.

**Step 5.** Press the “#” key on the DTMF Keypad.

**Note:** The boxes referred to in the following steps are located on the other side of this work sheet.

**Step 6.** Enter characters in boxes 1 through 46 by pressing the appropriate DTMF key.

**Caution:** Failure to set the Option/Program Switch position 7 for Standard Operation (“HIGH” position) may cause loss of revenue.

**Step 7.** Set position 7 of the Option/Program Switch to the “HIGH” position.

**STEP 8.** Wait two seconds and return the Handset to the Cradle.

**STEP 9.** Replace and secure Cover (Wall Mount Phone) or secure Front Panel (Panel Mount Phone).

### EXISTING INSTALLATION

For updates, the entries in step 2 and boxes 1 through 46 will be written only for the items requiring entry. Start at step 1 and continue until the last new item has been entered. Complete the update by performing steps 7, 8, and 9.

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Fig. 5—Standard Mod B Charge-Card Phone Programming Work Sheet (Sheet 1 of 2)

<input type="text" value="1"/>	No Option, Must Enter 0										
<input type="text" value="2"/>	SAC Character Yes/No										
<input type="text" value="3"/>	SAC Character										
<input type="text" value="4"/>	<input type="text" value="5"/>	<input type="text" value="6"/>	<input type="text" value="7"/>	<input type="text" value="8"/>	<input type="text" value="9"/>	<input type="text" value="10"/>	Phone Identification Number				
<input type="text" value="11"/>	<input type="text" value="12"/>	<input type="text" value="13"/>	<input type="text" value="14"/>	<input type="text" value="15"/>	<input type="text" value="16"/>	<input type="text" value="17"/>	<input type="text" value="18"/>	<input type="text" value="19"/>	<input type="text" value="20"/>	<input type="text" value="21"/>	Processor Number
<input type="text" value="22"/>	Number of Processor Number Characters to Send										
<input type="text" value="23"/>	Carrier Select Code Routing		<input type="text" value="24"/>	Carrier Select Code Number of Digits		<input type="text" value="25"/>	Carrier Select Code Special Character		<input type="text" value="26"/>	Special Character Suffix/Prefix	
<input type="text" value="27"/>	DTMF Keypad Carrier Selection		<input type="text" value="28"/>	AT&T Calling Cd Routing		<input type="text" value="29"/>	Other Telcom's Calling Cd Routing		<input type="text" value="30"/>	"00+" or "00-" Calls Allow/Deny	
<input type="text" value="31"/>	No Option, Must Enter 0		<input type="text" value="32"/>	"800+" & "1+800+" Calls Allow/Deny		<input type="text" value="33"/>	"950-WXXX" Calls Allow/Deny		<input type="text" value="34"/>	"10XXX" Calls Allow/Deny	
<input type="text" value="35"/>	"555-XXXX" Calls Allow/Deny		<input type="text" value="36"/>	"1+555-XXXX" Calls Allow/Deny		<input type="text" value="37"/>	"NPA+555-XXXX" Calls Allow/Deny		<input type="text" value="38"/>	"1+NPA+555-XXXX" Calls Allow/Deny	
<input type="text" value="39"/>	"1+411" Calls Allow/Deny		<input type="text" value="40"/>	"411" Calls Allow/Deny		<input type="text" value="41"/>	"611" Calls Allow/Deny		<input type="text" value="42"/>	"911" Calls Allow/Deny	
<input type="text" value="43"/>	"NPA+NXX-XXXX" Calls Allow/Deny		<input type="text" value="44"/>	"1+NPA+NXX-XXXX" Calls Allow/Deny		<input type="text" value="45"/>	"0+NPA+NXX-XXXX" Calls Allow/Deny		<input type="text" value="46"/>	"01X+ " Calls Allow/Deny	

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Fig. 5—Standard Mod B Charge-Card Phone Programming Work Sheet (Sheet 2 of 2)

# PROGRAMMING WORK SHEET

## Mod B Charge-Card Phone with Carrier Selection Keys

PROGRAM CARRIER SELECTION KEYS WITH PROGRAMMING CARD   
NEW INSTALLATION  EXISTING INSTALLATION

Location: _____
Phone Number: _____
Date Programmed: _____ By: _____

This work sheet provides instructions to the installer for setting the Option/Program Switches and entering programmable options on a Charge-Card Phone with Carrier Selection Keys. (Reference Appendix 300-410-150 for instructions on filling out this form.)

### NEW INSTALLATION

**Step 1.** Gain access to the Option/Program Switch by removing the Cover (Wall Mount or Desk Top Phone) or by opening the Front Panel (Panel Mount Phone).

**Caution:** Failure to observe the sequence in the following steps will result in erroneous entries.

**Step 2.** Set positions 1, 2, 4, and 7 of the Option/Program Switch settings per the following:

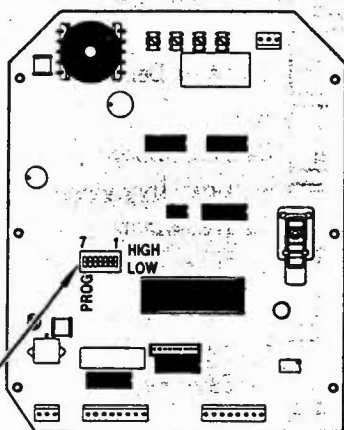
Switch Position 1  
 HIGH  LOW

Switch Position 2  
 HIGH  LOW

Switch Position 4  
 HIGH  LOW

Switch Position 7  
 LOW (PROG)

OPTION/  
PROGRAM  
SWITCHES



**Step 3.** Remove the Handset from Cradle.

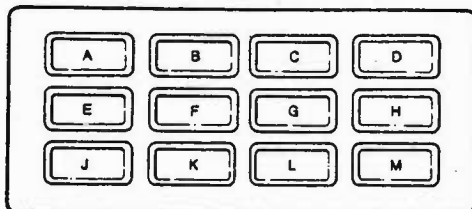
**Step 4.** Call a local number which will maintain an uninterrupted line during programming.

**Step 5.** Press the “#” key on the DTMF Keypad.

**Note:** The boxes referred to in the following steps are located on the other side of this work sheet.

**Step 6.** If box 1 contains a letter (A through M), press the Carrier Selection Key identified in the following figure with that letter.

If box 1 contains a zero, press the zero key on the DTMF keypad.



**Step 7.** Enter characters in boxes 2 through 46 by pressing the appropriate DTMF key.

**Step 8A.** Finishing Data entry using a programming card

**Caution:** Do NOT make any entries at the DTMF Keypad after passing a card through the card reader. Any entries made will result in improper phone operation.

Monitor the Handset receiver while passing a programming card through card reader. If a “beep” is heard, data entry is complete, proceed to step 9.

If no “beep” is heard, pass the programming card through the card reader several more times. If a “beep” is heard, data entry is complete, proceed to step 9. If still no “beep” is heard, the programming card, phone, or installation may be faulty. Perform steps 9, and 10 and refer to Section 300-410-501 for troubleshooting procedures.

**Step 8B.** Finishing Data entry using DTMF Keypad  
Enter characters in boxes 47 through 82 by pressing the appropriate key of the DTMF keypad.

**Caution:** Failure to set the Option/Program Switch position 7 for Standard Operation (“HIGH” position) may cause loss of revenue.

**Step 9.** Set position 7 of the Option/Program Switch to the “HIGH” position.

**STEP 10.** Wait two seconds and return the Handset to the Cradle.

**STEP 11.** Replace and secure Cover (Wall Mount Phone) or secure Front Panel (Panel Mount Phone).

### EXISTING INSTALLATION

For updates, the entries in step 2 and boxes 1 through 82 will be written only for the items requiring entry.

If all entries are blank and a programming card is to be used for updating, perform steps 1 through 5, 8A, 9, 10, and 11.

If all boxes are blank except box 1, perform steps 1 through 6, 9, 10 and 11.

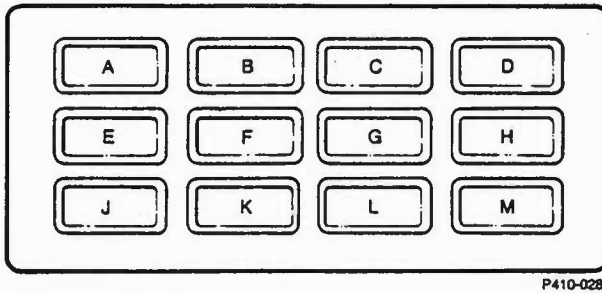
If any other combination of boxes has an entry written in it, start at step 1 and continue until the last new item has been entered. Complete the update by performing steps 9, 10, and 11.

Fig. 6—Mod B Charge-Card Phone with Carrier Selection Keys Programming Work Sheet (Sheet 1 of 2) <sup>P410-073</sup>

1	"AT&T" Select Key													
2	SAC Character Yes/No													
3	SAC Character													
4	5	6	7	8	9	10	Phone Identification Number							
11	12	13	14	15	16	17	18	19	20	21	Processor Number			
22	Number of Processor Number Characters to Send													
23	Carrier Select Code Routing			24	Carrier Select Code Number of Digits			25	Carrier Select Code Special Character			26	Special Character Suffix/Prefix	
27	DTMF Keypad Carrier Selection			28	AT&T Calling Cd Routing			29	Other Telecom's Calling Cd Routing			30	"00+" or "00-" Calls Allow/Deny	
31	"AT&T" Select Key Allow/Deny			32	"800+" & "1+800+" Calls Allow/Deny			33	"950-WXXX" Calls Allow/Deny			34	"10XXX" Calls Allow/Deny	
35	"555-XXXX" Calls Allow/Deny			36	"1+555-XXXX" Calls Allow/Deny			37	"NPA+555-XXXX" Calls Allow/Deny			38	"1+NPA+555-XXXX" Calls Allow/Deny	
39	"1+411" Calls Allow/Deny			40	"411" Calls Allow/Deny			41	"611" Calls Allow/Deny			42	"911" Calls Allow/Deny	
43	"NPA+NXX-XXXX" Calls Allow/Deny			44	"1+NPA+NXX-XXXX" Calls Allow/Deny			45	"0+NPA+NXX-XXXX" Calls Allow/Deny			46	"01X+" Calls Allow/Deny	
47	1st Digit Cxr Select Key A			48	2nd Digit Cxr Select Key A			49	3rd Digit Cxr Select Key A					
50	1st Digit Cxr Select Key B			51	2nd Digit Cxr Select Key B			52	3rd Digit Cxr Select Key B					
53	1st Digit Cxr Select Key C			54	2nd Digit Cxr Select Key C			55	3rd Digit Cxr Select Key C					
56	1st Digit Cxr Select Key D			57	2nd Digit Cxr Select Key D			58	3rd Digit Cxr Select Key D					
59	1st Digit Cxr Select Key E			60	2nd Digit Cxr Select Key E			61	3rd Digit Cxr Select Key E					
62	1st Digit Cxr Select Key F			63	2nd Digit Cxr Select Key F			64	3rd Digit Cxr Select Key F					
65	1st Digit Cxr Select Key G			66	2nd Digit Cxr Select Key G			67	3rd Digit Cxr Select Key G					
68	1st Digit Cxr Select Key H			69	2nd Digit Cxr Select Key H			70	3rd Digit Cxr Select Key H					
71	1st Digit Cxr Select Key J			72	2nd Digit Cxr Select Key J			73	3rd Digit Cxr Select Key J					
74	1st Digit Cxr Select Key K			75	2nd Digit Cxr Select Key K			76	3rd Digit Cxr Select Key K					
77	1st Digit Cxr Select Key L			78	2nd Digit Cxr Select Key L			79	3rd Digit Cxr Select Key L					
80	1st Digit Cxr Select Key M			81	2nd Digit Cxr Select Key M			82	3rd Digit Cxr Select Key M					

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Fig. 6—Mod B Charge-Card Phone with Carrier Selection Keys Programming Work Sheet (Sheet 2 of 2)



P410-028

Fig. 7—Carrier Selection Keys Location Identification

6.12 Select the number of characters in the Processor Number to be sent by the phone by performing (a), (b), or (c).

- (a) Zero through nine characters to be sent . . . . . write the desired number in box 22
- (b) Ten characters to be sent . . . . . write "\*" in box 22
- (c) Eleven characters to be sent . . . . . write "#" in box 22

6.13 If "Step 2" indicates to set Option/Program Switch Position 2 "LOW", write "\*" in boxes 23 through 46 and proceed to paragraph 6.23A or 6.23B.

6.14 If the C.O. equipment is to access the long distance carrier write "1" in box 23. If the call processor is to access the long distance carrier write "0" in box 23.

6.15 If long distance carrier selection is to be allowed from the DTMF keypad, select the number of digits to be entered by the user after the "#" entry by writing "2" or "3" in box 24 and "1" in box 27. If long distance carrier selection is to be denied from the DTMF keypad, write "0" in box 24 and box 27.

6.16 Write which character ("\*" or "#") is to be used as either the prefix or suffix to the Carrier Access Code sent by the phone in box 25.

6.17 Select whether the special character ("\*" or "#") will be a prefix or suffix to the Carrier Select Code sent by the phone by performing either (a) or (b).

- (a) Phone will prefix Carrier Select Code with an "\*" or "#" . . . . . write "1" in box 26

- (b) Phone will suffix Carrier Select Code with an "\*" or "#" . . . . . write "0" in box 26

6.18 Select whether the card data for the AT&T calling card is to be sent to the TSPS or call processor by performing (a) or (b). (Reference paragraphs 2.13 through 2.16.)

- (a) TSPS . . . . . write "1" in box 28
- (b) Call Processor . . . . . write "0" in box 28

6.19 Select whether the card data for Other Telecom's calling card is to be sent to the TSPS or call processor by performing (a) or (b). (Reference paragraphs 2.13 through 2.16.)

- (a) TSPS . . . . . write "1" in box 29
- (b) Call Processor . . . . . write "0" in box 29

6.20 If "00+" and "00-" calls are to be allowed enter "1" in box 30. If "00+" and "00-" calls are to be denied enter "0" in box 30.

6.21 If box 1 contains a letter (A through M) write "1" in box 31. (An "AT&T Select Key" has been assigned) If box 1 contains a "0", write "0" in box 31.

6.22 Determine call restrictions for calls being placed through the central office and TSPS (when required). These restrictions DO NOT APPLY to calls being placed through the call processor or through a long distance carrier dialed up with a "950-WXXX" or "10XXX" number (if these types of calls are allowed). Write "0" to deny or "1" to allow in the box prefixing the number under consideration (boxes 32 through 46).

6.23A The "Programming Work Sheet" for a standard Charge-Card Phone is now complete.

6.23B If a program card is to be used to enter the Carrier Select Codes, the "Programming Work Sheet", mark the box by "PROGRAM CARRIER SELECTION KEYS WITH PROGRAMMING CARD"; otherwise, write the Carrier Select Codes for the twelve carrier select keys in boxes 47 through 82 using numbers or "\*"s". Refer to Fig. 7 to determine the key position to alpha identification relationship.

**Caution:** If carrier select routing is through the C.O., all boxes from 47 through 82 inclusively must have a character written in them.

**An unused Carrier Selection Key must be programmed with a number that will terminate the call. "0 0 0" or a speed dial code for the call processor are possible numbers which may be used. Failure to properly program unused keys may allow toll calls to be placed without any call processor, TSPS, or operator interaction which may cause loss of revenue.**

**Note:** When the Carrier Select Code is less than three digits, "\*"s must be used after the last digit to fill out to three places.

- (d) **Bytes 4 through 10:** Phone Identification Number.
- (e) **Bytes 11 through 21:** Processor Number.
- (f) **Byte 22:** Number of Processor Number characters to be sent by phone.

**7.03** The data in bytes 23 through 28 is in a "packed" format. See the Memory Translation Table (Table B) and the following example for conversion information.

**Example:** The values received for bytes 23 through 28 are "2", "E", "A", "5", "7", and "3" respectively. These values translate into the following option selections.

**Byte 23 = "2":** Carrier Select Code Routing is to the call processor.  
Two digits in the Carrier Select Code.  
"#" is the special character used with the Carrier Select Code.  
The special character ("#") follows the Carrier Select Code Number.

Carrier Select Code Format = "XX#"

**Byte 24 = "E":** Carrier Selection from the DTMF keypad is allowed.  
"AT&T" calling card calls are routed through the TSPS.  
Other Telcom's calling card calls are routed through the call processor.  
"00+" and "00-" calls will be denied.

**Byte 25 = "A":** "AT&T" select key is being implemented.  
"800+" and "1+800+" calls will be denied.  
"950-WXXX" calls will be allowed.  
"10XXX" calls will be denied.

**EXISTING INSTALLATION UPDATE**

**6.24** Instructions for updating the Mod B Phones are the same as for phones with 46-005-50 firmware.

**7. PROGRAM DATA READOUT**

**7.01** Instructions for performing a Data Readout on the Mod B Phones are the same as for phones with 46-005-50 firmware.

**7.02** The data received in bytes 1 through 22 will correspond to either phone's program in the following manner:

- (a) **Byte 1:** When byte 25 is "8" through "F" ("AT&T" Select key implemented), byte 1 indicates the location of the "AT&T" Select Key. (Reference Table A and Fig. 7.)
- (b) **Byte 2:** When byte 2 is "1", a Special Access Character will be used. When byte 2 is "0", a Special Access Character will not be used.
- (c) **Byte 3:** Special Access Character.

**TABLE A**

**"AT&T" SELECTION KEY LOCATION**

	BYTE 1 VALUE TRANSMITTED															
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
"AT&T" Select Key Location (Fig. 8)	H	A	E	J	B	F	K	C	G	L	(NOTE)				D	M

**Note:** "A", "B", "C", and "D" are not used as values for byte 1.

**TABLE B**  
**MEMORY TRANSLATION TABLE**

	DESCRIPTION [WORK SHEET ENTRY NO.]	BYTE VALUE TRANSMITTED															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
B Y T E 2 3	Carrier Select Code Routing [23]	C	C	C	C	C	C	C	C	O	O	O	O	O	O	O	
	No. Digits in Carrier Select Code (Note 2) [24]	2	2	2	2	3	3	3	3	2	2	2	2	3	3	3	
	Character Used With Carrier Select Code [25]	*	*	#	#	*	*	#	#	*	*	#	#	*	*	#	
	Character Used As A Prefix or Suffix [26]	S	P	S	P	S	P	S	P	S	P	S	P	S	P		
B Y T E 2 4	Carrier Selection From DTMF Keypad [27]	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y		
	"AT&T" Calling Card Call Routing [28]	C	C	C	C	T	T	T	T	C	C	C	C	T	T		
	Other Telcom's Calling Card Call Routing [29]	C	C	T	T	C	C	T	T	C	C	T	T	C	C		
	"00+" and "00-" Calls Allowed [30]	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y		
B Y T E 2 5	"AT&T" Select Key to be Allowed [31]	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y		
	"800+" AND "1+800" Calls Allowed [32]	N	N	N	N	Y	Y	Y	Y	N	N	N	N	Y	Y		
	"950-WXXX" Calls Allowed [33]	N	N	Y	Y	N	N	Y	Y	N	N	Y	Y	N	N		
	"10XXX" Calls Allowed [34]	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y		
B Y T E 2 6	"555-XXXX" Calls Allowed [35]	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y		
	"1+555-XXXX" Calls Allowed [36]	N	N	N	N	Y	Y	Y	Y	N	N	N	N	Y	Y		
	"NPA+555-XXXX" Calls Allowed [37]	N	N	Y	Y	N	N	Y	Y	N	N	Y	Y	N	N		
	"1+NPA+555-XXXX" Calls Allowed [38]	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y		
B Y T E 2 7	"1-411" Calls Allowed [39]	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y		
	"411" Calls Allowed [40]	N	N	N	N	Y	Y	Y	Y	N	N	N	N	Y	Y		
	"611" Calls Allowed [41]	N	N	Y	Y	N	N	Y	Y	N	N	Y	Y	N	N		
	"911" Calls Allowed [42]	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y		
B Y T E 2 8	"NPA+NXX-XXXX" Calls Allowed [43]	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y		
	"1+NPA+NXX-XXXX" Calls Allowed [44]	N	N	N	N	Y	Y	Y	Y	N	N	N	N	Y	Y		
	"0+NPA+NXX-XXXX" Calls Allowed [45]	N	N	Y	Y	N	N	Y	Y	N	N	Y	Y	N	N		
	"01X+" Calls Allowed [46]	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y		

**Note:** 1. "C" = Call Processor, "T" = TSPS, "O" = Central Office

"P" = Prefix, "S" = Suffix

"Y" = Yes, "N" = No

2. When Carrier Selection from the DTMF Keypad is not allowed (Byte 24 equals "0" through "7"), the Number of Digits in Carrier Select Code will not affect phone operation.

**Byte 26 = "5":** "555-XXXX" calls will be denied.  
 "1+555-XXXX" calls will be allowed.  
 "NPA+555-XXXX" calls will be denied.  
 "1+NPA+555-XXXX" calls will be allowed.

**Byte 27 = "7":** "1-411" calls will be denied.  
 "411" calls will be allowed.  
 "611" calls will be allowed.  
 "911" calls will be allowed.

**Byte 28 = "3":** "NPA+NXX-XXXX" calls will be denied.  
 "1+NPA+NXX-XXXX" calls will be denied.  
 "0+NPA+NXX-XXXX" calls will be allowed.  
 "01X+" calls will be allowed.

**7.04** The information indicated by the remaining memory (bytes 29 through 64) is the same for the Mod B Phones as for the phones with firmware 46-005-50.

## 8. SPECIFICATIONS

**8.01** The specifications of the Mod B Phones are identical to phones with firmware 46-005-50.

## 9. ORDERING INFORMATION

**9.01** Table C through Table F contain a list of Mod B Charge-Card Phone descriptions and part numbers. Spare parts and accessories are identical to phones with firmware 46-005-50 with the exception of the Circuit Board with Processor which is Part Number B6-011-10 for the indoor phones and B6-011-43 for the outdoor phones.

**TABLE C**

**STANDARD MOD B CHARGE-CARD PHONE  
ORDERING INFORMATION**

PART NO.	DESCRIPTION
B6-011-35	Wall Mount Phone with Dark Blue Cover and Light Blue Chassis
B6-011-45	Wall Mount Phone with Light Brown Cover and Dark Brown Chassis
B6-011-52	Stainless Steel Wall Mount Phone (Outdoor Model)
B6-011-97	Desk Top Phone

**TABLE D**

**MOD B CHARGE-CARD PHONE WITH  
CARRIER SELECTION KEYS ORDERING INFORMATION**

PART NO.	DESCRIPTION
B6-011-18	Wall Mount Phone with Dark Blue Cover and Light Blue Chassis
B6-011-28	Wall Mount Phone with Light Brown Cover and Dark Brown Chassis
B6-011-38	Wall Mount Phone with Gray Cover and Black Chassis
B6-011-19	Panel Mount Phone with Light Blue Chassis
B6-011-29	Panel Mount Phone with Dark Brown Chassis
B6-011-39	Panel Mount Phone with Black Chassis
B6-011-53	Stainless Steel Wall Mount Phone (Outdoor Model)
B6-011-99	Desk Top Phone

**TABLE E**

**MOD B STANDARD CHASSIS ASSEMBLY  
ORDERING INFORMATION**

PART NO.	DESCRIPTION
B6-011-37	Light Blue Chassis Assembly with Black Handset
B6-011-47	Dark Brown Chassis Assembly with Brown Handset

**TABLE F**

**MOD B CHASSIS ASSEMBLY WITH  
CARRIER SELECTION KEYS ORDERING INFORMATION**

PART NO.	DESCRIPTION
B6-011-20	Light Blue Chassis Assembly with Black Handset
B6-011-30	Dark Brown Chassis Assembly with Brown Handset
B6-011-40	Black Chassis Assembly with Black Handset



The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the success of any business and for the protection of the interests of all parties involved. The text outlines the various methods and systems that can be used to ensure the accuracy and reliability of financial data.

In addition, the document provides a detailed overview of the different types of financial statements that are commonly used in business. It explains the purpose and content of each statement, including the balance sheet, income statement, and cash flow statement. The text also discusses the importance of reconciling these statements and ensuring that they are consistent and accurate.

Finally, the document offers practical advice and tips for how to effectively manage financial records. It suggests using clear and concise language, organizing records in a logical and systematic way, and regularly reviewing and updating the information. The text concludes by emphasizing the importance of transparency and accountability in financial reporting and the role of accurate records in achieving these goals.

DS36XC.70797.TET  
73-17-725  
1-12-84A

## WALL MOUNT CHARGE-CARD PHONE

### 1. GENERAL

**1.01** This technical data sheet provides information concerning the installation of the Wall Mounted Charge-Card Phones. Additional information can be obtained from Technical Practice Sections 300-410-150 (Description, Option Planning and Application Considerations) and 300-410-350 (Installation and Maintenance).

**1.02** For additional literature or assistance in ordering, contact your local R-TEC Systems sales representative or R-TEC Systems Customer Service Department, 2100 Reliance Parkway, Bedford, Texas 76021, (817) 540-8278. For technical assistance contact R-TEC Systems Technical Service Department at (817) 540-8217.

### 2. DESCRIPTION

**2.01** The Wall Mount Charge-Card Phone (Fig. 1) is available with or without Carrier Selection Keys. When interfaced with compatible ancillary equipment, these phones provide charge-a-call, calling-card, and commercial credit-card service. The phone with carrier selection keys provides the user with long distance carrier selection by the pressing of a single key or by entering the carrier's code at the DTMF keypad. The standard phone provides long distance carrier selection by entering the carrier's code at the DTMF keypad.

**2.02** The setting of the option switches and programming of the phone determines the call restrictions, output format, and the interface with ancillary equipment. The phone is capable of transmitting credit-card data and other information using DTMF pulsing.

**2.03** The phones consist of a front cover assembly and a rear pan assembly. The front cover is secured to the rear pan with a flat-head security screw with provisions for the installation of lock assembly.

### 3. UNPACKING/INSPECTION/STORAGE

**3.01** Unpack each carton or crate and inspect the unit(s), including mounting hardware and connectors, for any visible signs of damage. Report any damage promptly to the freight carrier or, if insured separately, to the insurance company.

**3.02** Ensure each item has been received. In case of shortage, notify the freight carrier, insurance company, or R-TEC Systems Customer Service Department.

**3.03** If equipment is to be stored for any period of time, it is recommended that it be kept in the original shipping containers.

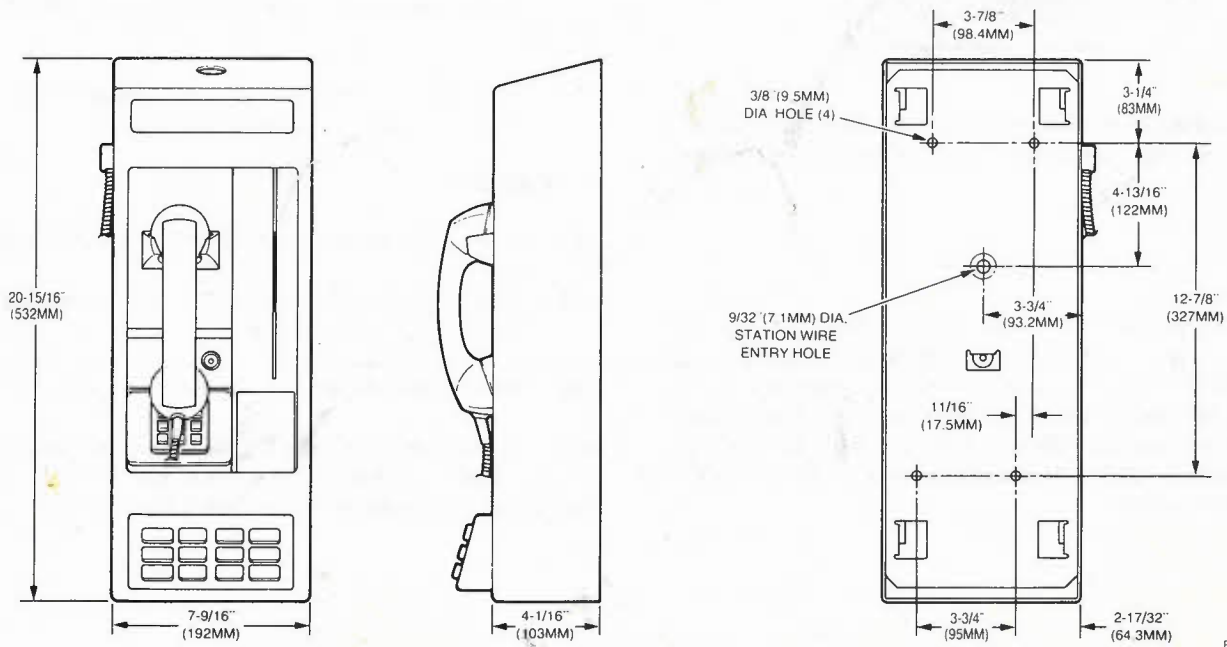
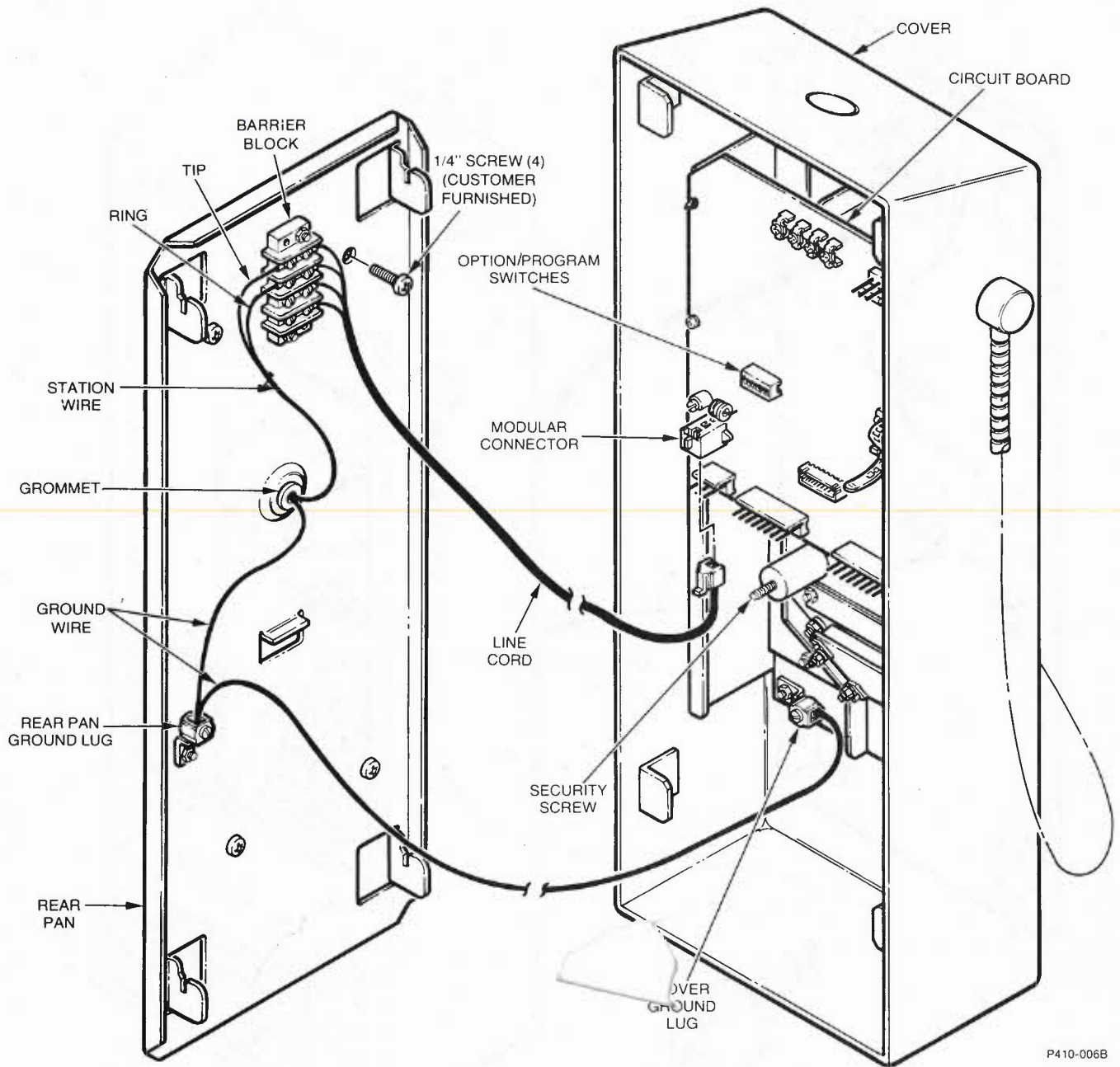


Fig. 1—Typical Wall Mount Charge-Card Phone

-216-245-4497



P410-006B

Fig. 3—Rear Pan Installation



73-17-724  
1-12-84A

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## WALL MOUNT CHARGE-CARD PHONE

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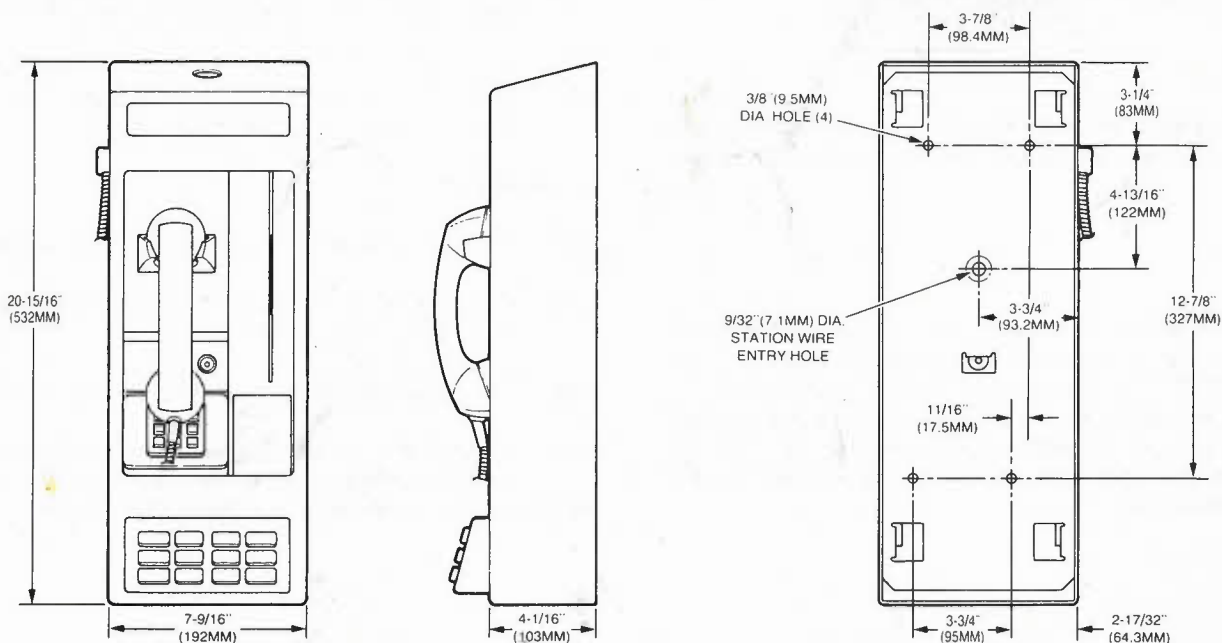
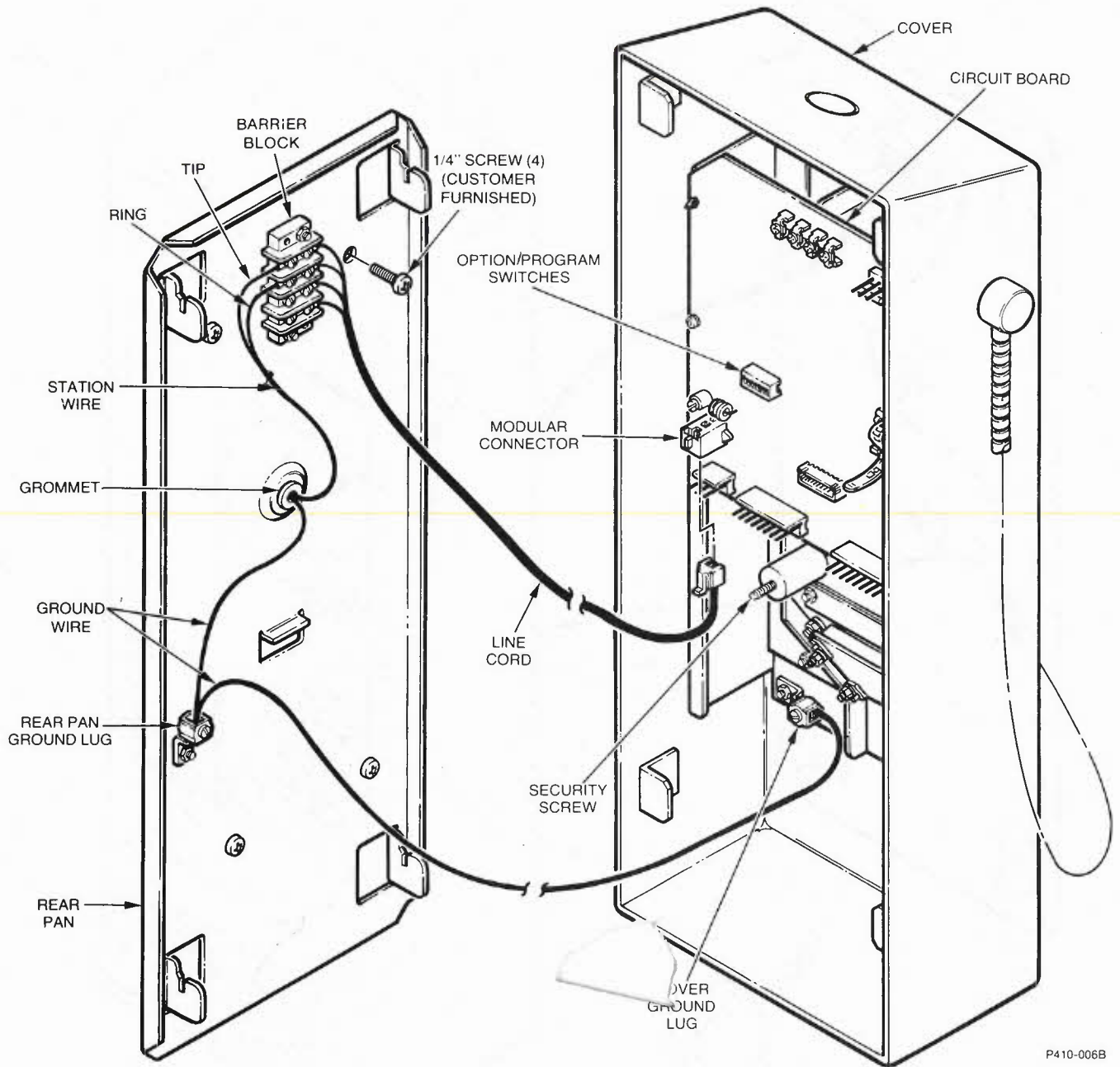


Fig. 1—Typical Wall Mount Charge-Card Phone

-216-245-4477



P410-006B

Fig. 3—Rear Pan Installation

73-17-725  
1-12-84A

DS36XC.70797.TE.T

## WALL MOUNT CHARGE-CARD PHONE

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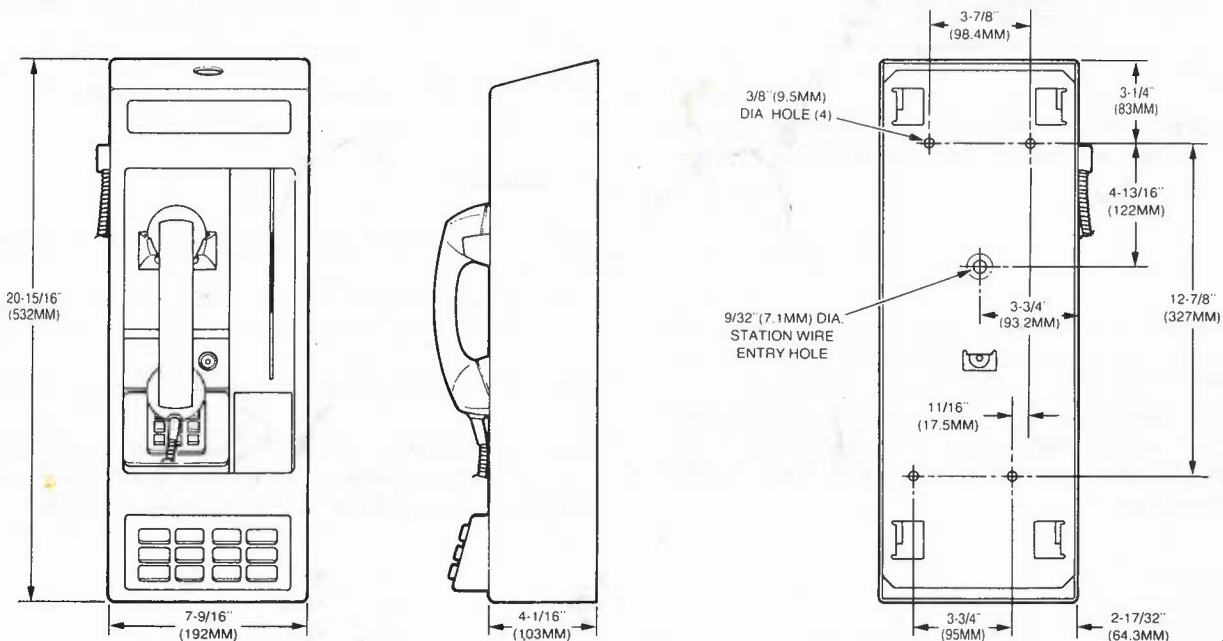


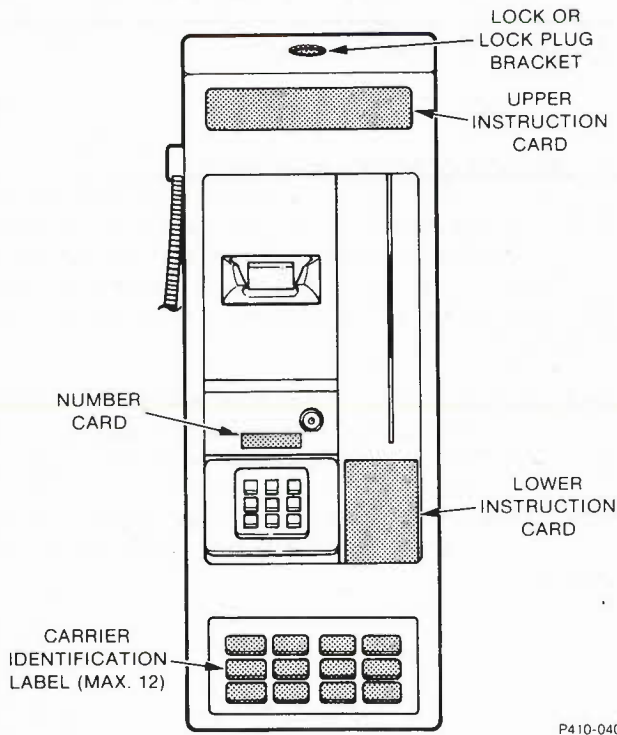
Fig. 1—Typical Wall Mount Charge-Card Phone

-216-245-4477



#### 4. INSTALLATION

**4.01** Check the phone to ensure that the Upper Instruction Card, Lower Instruction Card, Number Card, and either a Lock or Lock Plug Bracket have been installed (reference Fig. 2). If the phone has carrier selection keys, check that the Carrier Identification Labels are in place. If any of these items have not been done, use Section 300-410-350 (Installation and Maintenance) to install the required items.



P410-040

**Fig. 2—Instruction Cards, Number Card, Lock/Lock Plug Bracket, and Carrier Identification Labels Locations**

**4.02** Install the rear panel on any enclosure that will accept a box type coin or coinless telephone set, such as the WECO 1-type coin or 10A coinless telephone sets or on a flat vertical surface. If the phone is to be mounted above a horizontal surface such as a table or shelf allow 1/2-inch minimum clearance between lower edge of Rear Pan and horizontal surface.

**4.03** Run the Station Wire through the Grommet (Fig. 3) and attach to Four-Position Barrier Block. If additional grounding is required, route Ground Wire through Grommet and attach to Rear Pan and/or Cover Ground Lugs. Mount using four customer furnished 1/4-Inch Screws (Fig. 3).

**Note:** If the rear Pan is to be located such that the Station Wire or Ground Wire will be routed between the Rear Pan and enclosure or vertical surface use four customer furnished 1/4" spacers to provide Ground Wire and/or Station wire clearance.

**4.04** If the phone has a Lock installed, ensure that the lock is in the retracted position. Back the Security Screw (Fig. 3) out until it is flush with the internally threaded post.

**4.05** Hold the Cover close to the Rear Pan. Connect the Modular Connector on the Line Cord to the Circuit Board Subassembly (Fig. 3).

**4.06** If the phone was not programmed prior to installation, use the "Programming Work Sheet" to configure the phone.

**4.07** Set the Option/Program Switch Position 7 HIGH (reference Fig. 3).

**Caution:** Operating the phone with Option/Program Switch Position 7 set LOW may cause loss of revenue.

**4.08** Keep the Line Cord clear of the Latching Tabs and install Cover by pushing Cover back and down (Fig. 4).

**4.09** Tighten the Security Screw and engage the Lock Assembly (if used) to secure Cover.

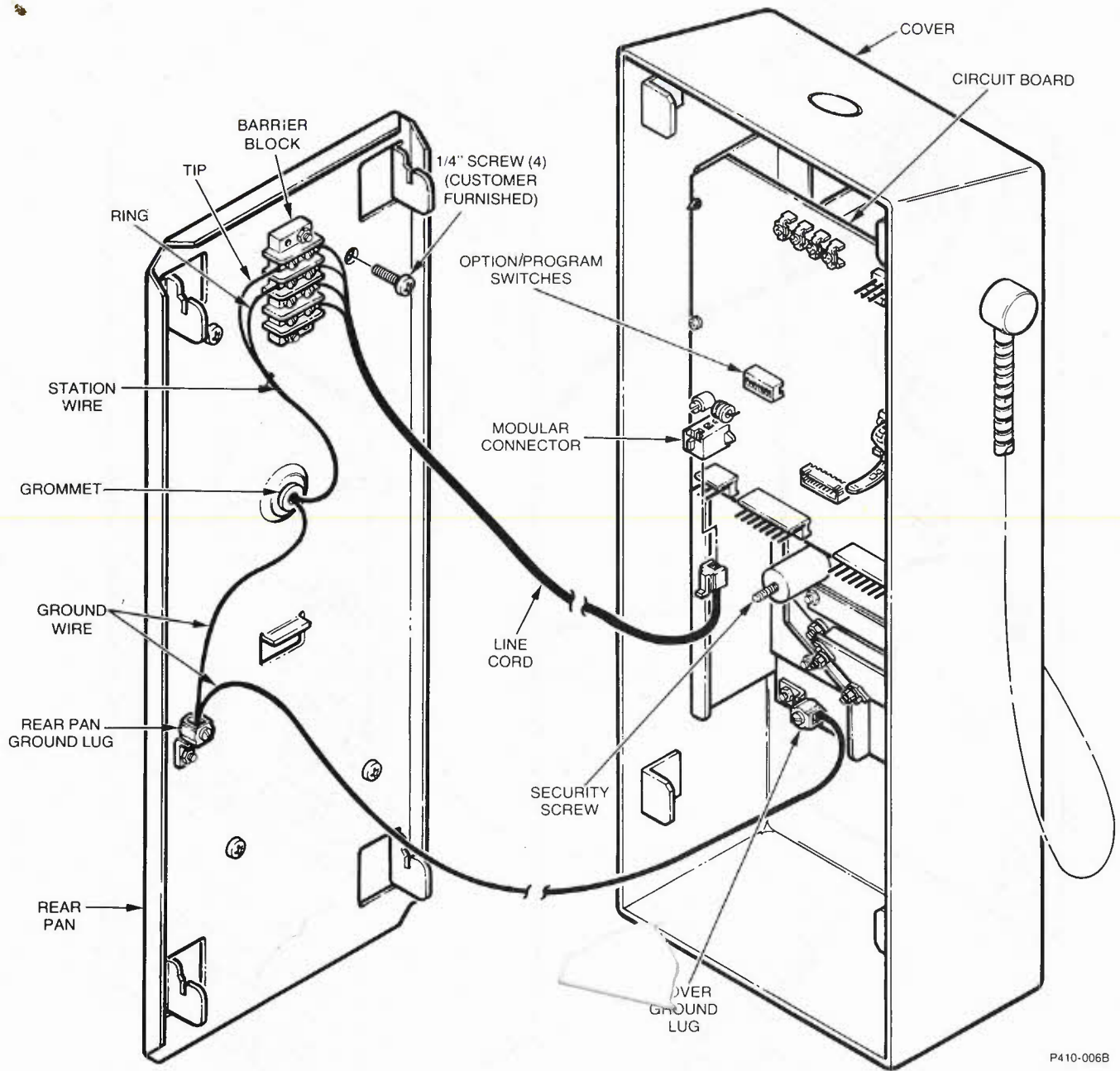
#### 5. TURN-UP

**5.01** Come off-hook and listen for dial tone and side tone.

**5.02** Check the proper operation of the call restrictions to verify program retention.

**5.03** Place a charge-card call to verify normal operation.

**5.04** If the phone is configured to receive incoming calls, verify incoming call completion and number assignment by having operator or test board ring the line.



P410-006B

Fig. 3—Rear Pan Installation



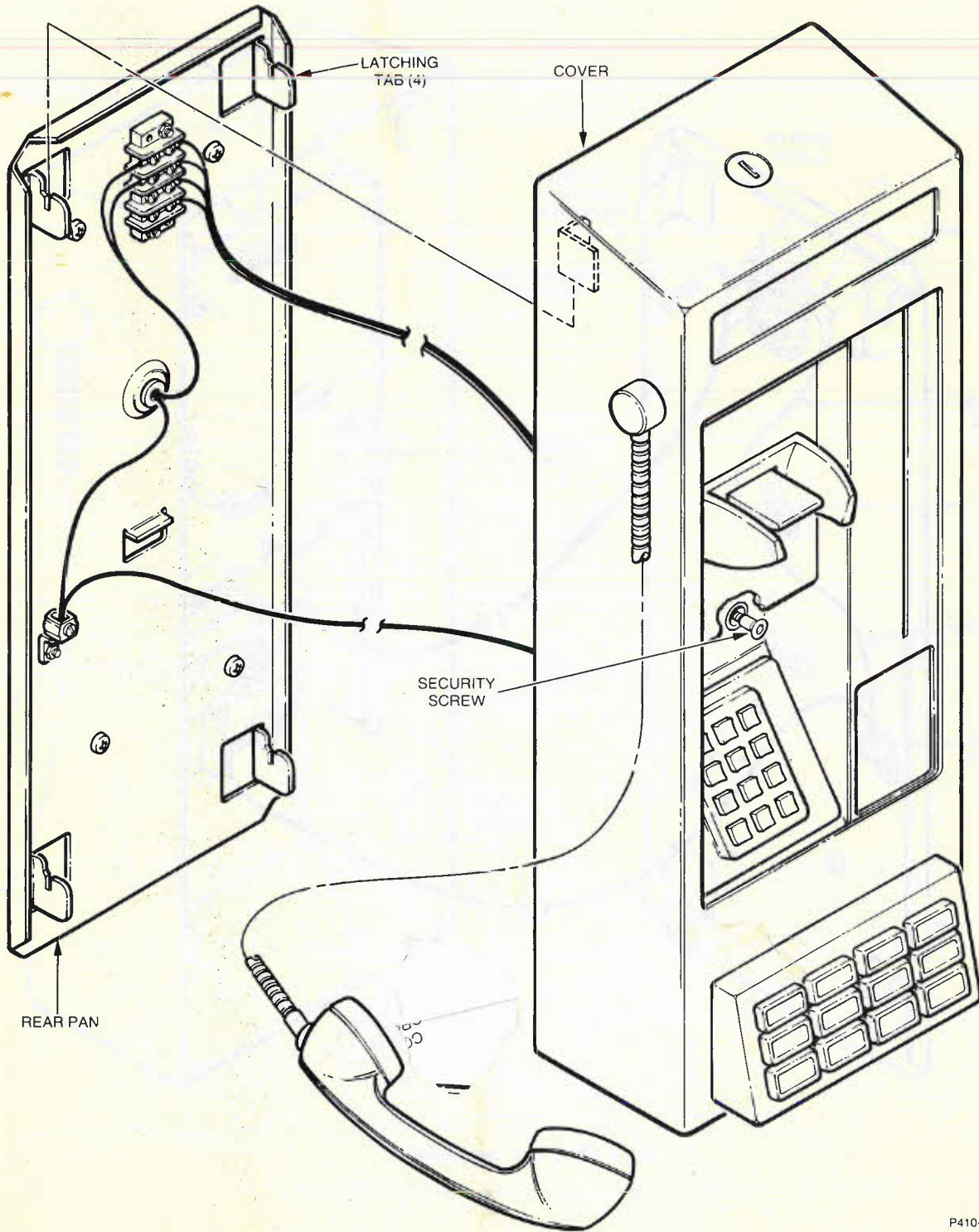


Fig. 4—Cover Installation

P410-019