

Flash 8000 Installation Manual



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Introduction

Introducing the *Flash 8000*

You have made a wise choice in selecting Protel's Flash 8000 Retrofit Kit to upgrade your Payphone. Protel is committed to providing the best possible solution to your Payphone needs. The Flash 8000, specifically designed for the telecommunications industry, utilizes advanced and dependable components and features patented line-powered technology. This product shares the proud heritage of excellence that Protel has established in the payphone industry.

The Flash 8000 is a line-powered, smart/bright pay-telephone chassis featuring a built-in modem for communication with a remote computer running Protel's Payphone Management Software. The computer provides the ability to perform remote diagnostics, centralized coin collection, remote polling and full-featured route management. The computer maintains reports detailing call type analysis and revenue generated. Additionally, the computer can be used to download new operating parameters to the phone, thus reducing the need to visit a payphone location when program updates become necessary.

Features

Additional Features of the Flash 8000 include the following:

- The Flash 8000 is compatible with standard Western Electric D-type paystation components including unit coin dial assembly, coin validators (See specifications Appendix L) and escrow relay.
- Line powered (needs no AC outlet).
- Ni-cad battery provides retention of operating parameters.
- Volume control is adjustable using the “#” key on the payphone keypad or by using an external passive volume control push button (See specifications Appendix L).
- Natural sounding digitally synthesized voice instructions enhance user friendliness.
- Built in modem (300/1200 bps) for remote computer polling and programming.
- Communicates with a remote computer running Protel's Payphone Management Software. This provides audit trails of all phone activity (maintenance/trouble reports and summary reports detailing call type analysis and revenue generated).
- Antifraud design.
- Dialing error correction interprets dialed numbers and adds or eliminates digits as needed to process the call.
- Provides conversion of local post-pay calls to local prepaid calls.
- Converts “911” dialing to an appropriate emergency number for areas that do not have “911” emergency service.
- Remote monitoring of the amount in the coin box reduces the number of required visits to empty the box, thus increasing the average collection per visit.
- Routine maintenance visits are decreased using remote diagnostics to alert conditions such as: relay jam, handset missing, payphone inactivity. A complete listing of trouble conditions [Flags] can be found in the Appendix I.
- Compatible with Equal Access and standard Operator Service offerings.
- Interfaces with voice message systems.
- Telephone line DTMF receiver.
- Operates on a coin line or B1 line.
- Electronic Serialization
- Electronic Ringer

Installing the Flash 8000 Retrofit Kit

Installation of the Flash 8000 is an easy task to perform. The steps included in the installation are as follows:

- Removing the existing chassis assembly from the phone's lower housing.
- Configuring the Flash 8000 chassis assembly.
- Installing the Flash 8000 chassis into the lower housing
- Initializing and testing the phone for proper operation.

Components

Listed below are the standard and optional components of the Flash 8000 Retrofit Kit.

Electronic Chassis Assembly

The chassis assembly contains the transmission network, coin-control components and logic circuitry. The paystation's operating program is stored in downloadable memory allowing the phone to be reprogrammed when an update to the phone's operating program becomes necessary. A program button is also provided which allows service personnel to initialize the phone.

External Volume Control Button (Optional)

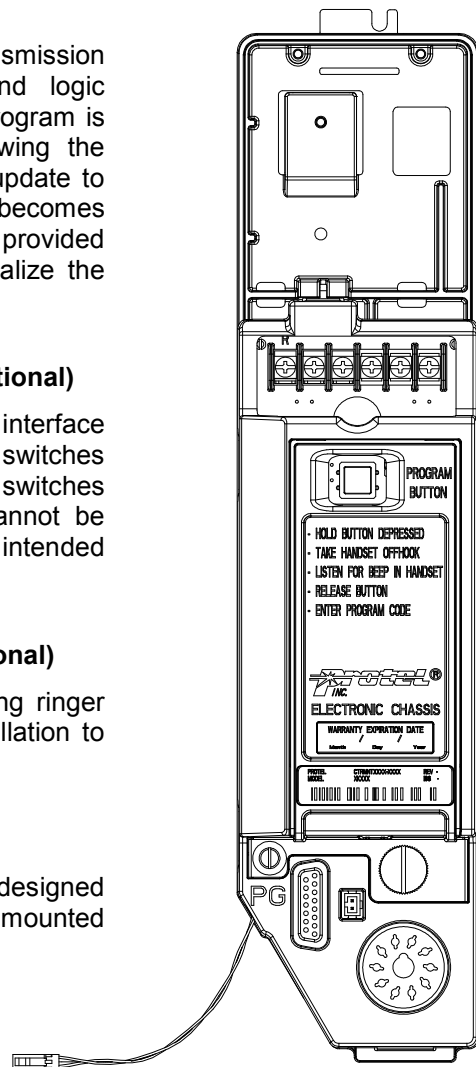
The Flash 8000 chassis assembly will interface with PASSIVE external volume control switches only. ACTIVE external volume control switches (those with built-in audio amplifier) cannot be used. Protel must approve any switch intended to be used for this application.

Double Gong Ringer Assembly (Optional)

The Flash 8000 features a double gong ringer assembly designed for easy field installation to the electronic chassis assembly.

Coin Box Alarm Switch (Optional)

An optional coin box alarm switch, designed specifically for the Flash 8000 can be mounted inside the vault.



Electronic Chassis Assembly

Installing the Retrofit Kit

The instructions outlined below will guide you through the installation of the Flash 8000 Retrofit Kit. It is assumed that all internal components of the phone (i.e. original equipment) are in proper working order prior to installing the Flash 8000 retrofit kit. After the hardware installation is completed, the phone will need to be initialized and tested to ensure proper operation. Information on initializing and testing the phone can be found elsewhere in this manual.

Removing the Existing Chassis Assembly

Removing the Existing Chassis Assembly from the Lower Housing

- Separate the upper housing from the lower housing.
- Disconnect the unit coin dial connector from the circular connector at the bottom of the chassis assembly.
- Disconnect the incoming Tip/Ring and Ground wires from the phone.
- Disconnect the coin validator connector from the chassis assembly.
- Disconnect the escrow relay wires from the escrow relay assembly.
- Using a straight slot screw driver, loosen the slotted nut at the bottom of the chassis.
- Remove the chassis assembly from the lower housing by guiding the mounting tab at the top of the assembly out of the mounting slot inside the lower housing.

Connecting the Escrow Relay Wires

Important: *The coin relay connector should be connected to the coin relay prior to being connected to the chassis assembly.*

- Locate the escrow relay wire assembly (Part Number WICA800002). Secure the spade lug of the yellow wire to the screw terminal marked "G" on the top right side of the relay. Secure the spade lug of the black wire to the screw terminal marked "3" on the right hand side of the relay. Plug the female connector on the escrow relay wires that are extending out from the lower left side of the chassis assembly, into the male connector of the WICA800002 wire that is attached to the escrow relay.

Installing the Coin Box Alarm Switch (Optional)

- If the optional coin box alarm switch is to be installed, reference Appendix D at this time.

Installing the Double Gong Ringer (Optional)

- If the optional double gong ringer is to be installed, reference Appendix G at this time.

Installing the Ni-Cad Battery Into the New Chassis Assembly

- Lift the front cover off the chassis assembly by pressing upward on the locking tab located just above the slotted nut at the bottom of the chassis assembly.
- If not already installed, locate the supplied ni-cad battery pack and install it into the battery compartment on the front of the chassis assembly.
- Plug the battery into the connector labeled BT1 on the chassis assembly.
- Route the battery wires through the wire groove path.
- Reinstall the front cover of the chassis assembly by positioning the two tabs at the top of the cover into place and then applying pressure to the bottom of the cover to lock it in place.

Reference
Appendix B for
Connection
Locations

Installing the new Chassis Assembly

Before beginning the chassis installation procedure, verify that the payphone housing has been installed in accordance with local, state, and federal guidelines for mounting placement and electrical safety. A properly installed payphone housing must be connected to earth ground. U.S. standards for grounding can be found in the National Electrical Code, Section 250.

Installing the New Chassis Assembly

- Install the new chassis assembly into the lower housing by guiding the mounting tab at the top of the assembly, into the slot near the top right corner inside the phone's lower housing. Then, slide the assembly upward until the slotted nut at the bottom of the chassis assembly is aligned with the mounting stud.
- Hand tighten the slotted nut at the bottom of the chassis using a screw driver if necessary.
- FCC Labeling Requirements: FCC Part 68 (68,300 Labeling Requirements) requires that an FCC label for the product be prominently displayed on an outside surface of the telephone. An FCC label for this produce has been supplied for this purpose.

Connecting the Coin Validator

- Connect the 15-pin connector from the coin validator to the 15-pin D-Type connector at the bottom of the chassis assembly.

Connecting the Coin Box Alarm Switch (Optional)

- Connect the male connector of the gray and black cable extending from the lower left side of the chassis assembly, to the coin box alarm switch, reference Appendix D at this time.

Connecting the Volume Control Interface (Optional)

- Connect the 2-wire (black wires) connector from the volume control switch (located in the upper housing), to the 2-pin connector located to the right of the 15-pin Coin Validator connector on the chassis assembly. This interface is not polarized, therefore pins 1 and 2 are interchangeable.

Connecting the Central Office Wires

- Connect the incoming central office tip and ring wires to the terminal block on the chassis assembly. Connect the **tip** wire to the terminal marked "**T**". Connect the **ring** wire to the terminal marked "**R**".

Connecting Ground

- Connect local earth ground to the terminal marked "**G**" on the chassis terminal block. When the housing is properly grounded, the terminal labeled "**PG**", which is located at the lower left of the chassis, provides a source for earth ground.

Connecting the Unit Coin Dial connector

- Connect the 11-pin circular connector from the unit coin dial assembly in the upper housing to the 11-pin circular connector at the bottom of the chassis assembly.
- Do not secure the upper and lower housings together at this time. Access to the programming button on the chassis assembly is needed during initialization of the phone.

This completes the installation of the Flash 8000 Retrofit Kit hardware.

NOTE: Unit Coin Dial

WE 61A w/70A keypad WE 61B w/70B keypad

The receiver wire at terminal #7 on the TB2 interconnect board must be moved to terminal #4 of the TB2 board. This is required to bypass the receiver MUTE contact.

! Warning

Failure to use proper grounding procedures could lead to injury or death. Pay telephone installation must comply with applicable electrical codes.

Initializing the Phone

This section details the process of initializing the phone for operation. The initialization procedure is basically used to reset the operating parameters of the phone to a known condition. Initializing the phone requires the following steps:

When to Initialize

- All new installations.
- After replacing the chassis assembly.

- Entering the program mode of the phone.
- Specifying the telephone number of the payphone and the remote computer.
- Downloading the operating parameters from the remote computer to the phone.
- Confirming the download.

Verify that an account record has been set up for phone

Before beginning the initialization procedure it is highly recommended that you verify with the computer operator that the computer is on-line and that an account record has been set up for the phone.

Keep the following points in mind when initializing the phone.

- During the initialization sequence, one beep in the handset indicates that the data entered at the keypad was accepted.
- During the initialization sequence, three beeps indicate that an error was made while entering data at the keypad. The information causing the error must be reentered.
- If an error is made while entering data at the keypad, press the “#”. When three beeps are heard in the handset, reenter only that line of data.

Step One

Enter the Program Mode

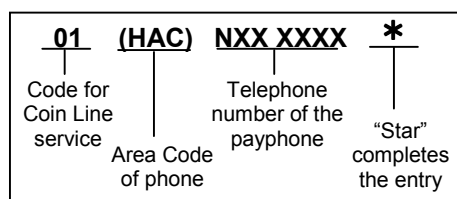
- Locate the program button access hole on the chassis assembly just under the terminal block connector.
- With the phone on hook, press and hold down the programming button.
- While still pressing the button, lift the handset off hook.
- Listen in the receiver for a single beep. When the beep is heard, release the button.

Step Two

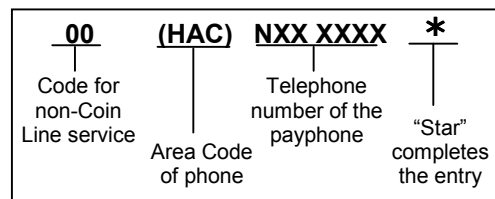
Input the phone number of the payphone

- Choose one of the following formats to enter the telephone number of the phone. A beep will be heard when the number has been accepted.

For Coin Line Operation



For Non-Coin Line Operation



Do Not Hang Up, Proceed To Next Step

Step Three

Input the Phone Number of the Remote Computer

- Enter the phone number of the remote computer exactly as it should be dialed by the phone. Use the following format to enter the phone number:

25	(1)	(NPA)	NXX XXXX	*
Code for Mode 25	Enter "1" for long distance (if required)	Area Code of computer (if required)	Telephone number of the computer	"Star" completes the entry

NOTE:
(For coin line phones)
The telephone number to the remote computer must be a 1-800 number, a local 7-digit call, or programmed free number in the CO switch.

Step Four

Download the Program from the Computer to the Payphone

- Press the **"Star" (*)** key.
- Press the **"Pound" (#)** key.
- Press the **"3"** key.
- Listen for the phone to repeat the ANI number and verify that it is correct.
- Listen for the phone to dial out and the remote computer to answer.
- Go on hook. The payphone automatically reports in to the remote computer and requests a download of rates/options information.

Step Five

Confirming the Download

- After the download is complete, come off hook and listen for dial tone.
- Press the **"Star" (*)** key.
- Press the **"Pound" (#)** key.
- Press the **"6"** key.
- Listen for a voice prompt stating the date and time of the last successful phone update. The date and time heard should match the date and time that the download took place. If the download was not successful, repeat Steps One through five or refer to the troubleshooting section of the manual titled "Phone will not take download from computer".

This completes the initialization process. Perform the operational test procedure shown on the following page to ensure that the phone is in proper working order.

Operational Test

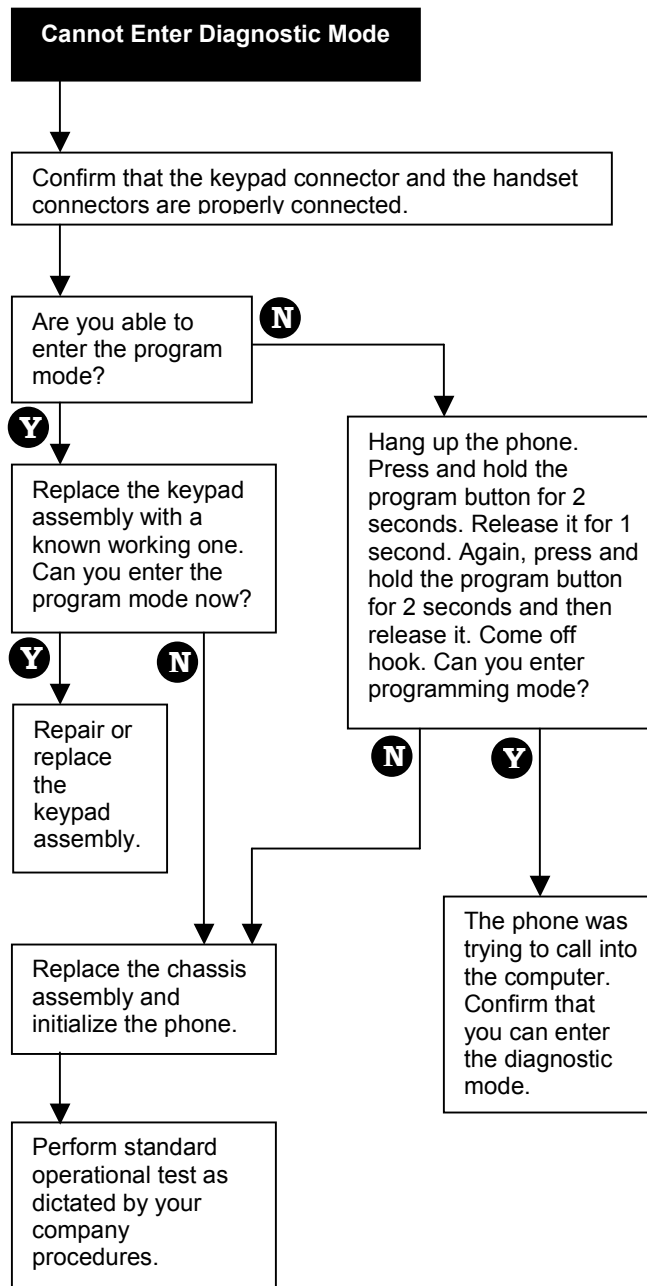
The following test procedure can be utilized to verify proper operation of the phone. Specific test procedures and guidelines established by your company should be referred to and performed in addition to the operational test shown below.

Operational Test Procedure:

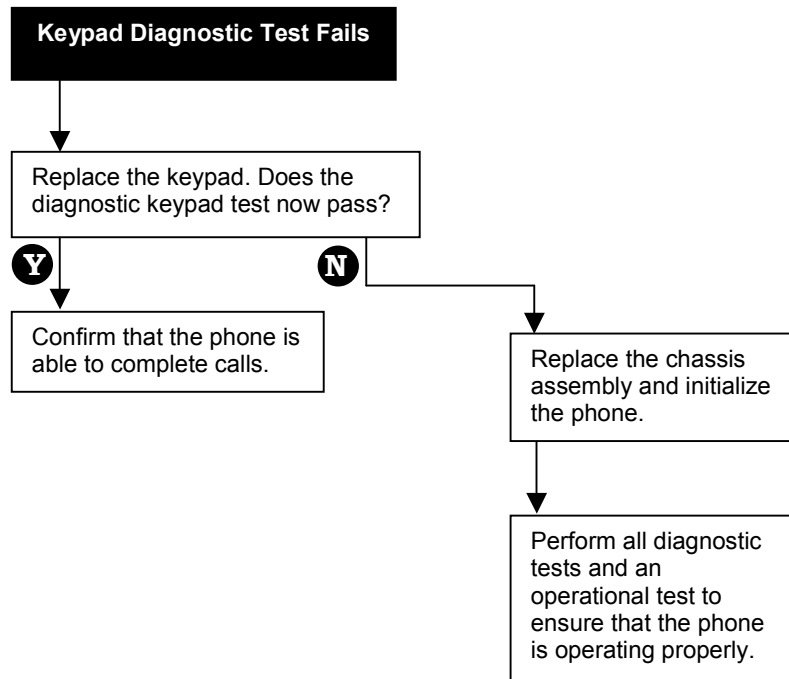
- Take the handset off hook and listen for dial tone in the receiver.
- If the phone is equipped with a volume control button, press the button three times. You should hear the dial tone level change on the first two presses. On the third press, the volume should return to the original level. If the phone is not equipped with a volume control button, press the “#” key three times. The dial tone level should change on the first two presses. On the third press, the volume should return to the original level.
- Press the program button. While continuing to hold the button, listen for a single beep in the handset. After the beep is heard, release the program button.
- Dial **[9]** (pause) **[0]** (pause) **[2]** (pause) to place the phone into diagnostic mode.
- Refer to **Appendix J** to perform the following tests: Keypad Test, Coin Recognition Test, Loop Current Test, Alarm Switch Test (if installed), Escrow Relay Test, Coin Ground Test (if phone is installed on a coin line), and then exit the diagnostic mode.
- Place the handset on hook.
- Go off hook and dial a local phone number (must be a 7-digit call). Deposit the required amount of money less 10¢. Wait for the voice prompt for 10¢ more. Deposit 10¢. Wait for the call to be answered. Hang up and the money should be collected by the phone.
- Go off hook and dial a local phone number (must be a 7-digit call). Deposit the required amount of money. Immediately hang up and the deposited coins should be refunded.
- Dial a series of calls to check that the phone is charging the correct rates for the type of call dialed. For example, dial a local number, a 1+ 7-digit number and a 1+ 10 digit phone number.
- Dial a 0 (zero) + 10-digit call and verify that the call goes to the correct operator service provider (OSP).
- From another phone, call the paystation and verify that modem tone is heard after a specified number of rings (Verify the number of rings with the computer operator.)

Troubleshooting

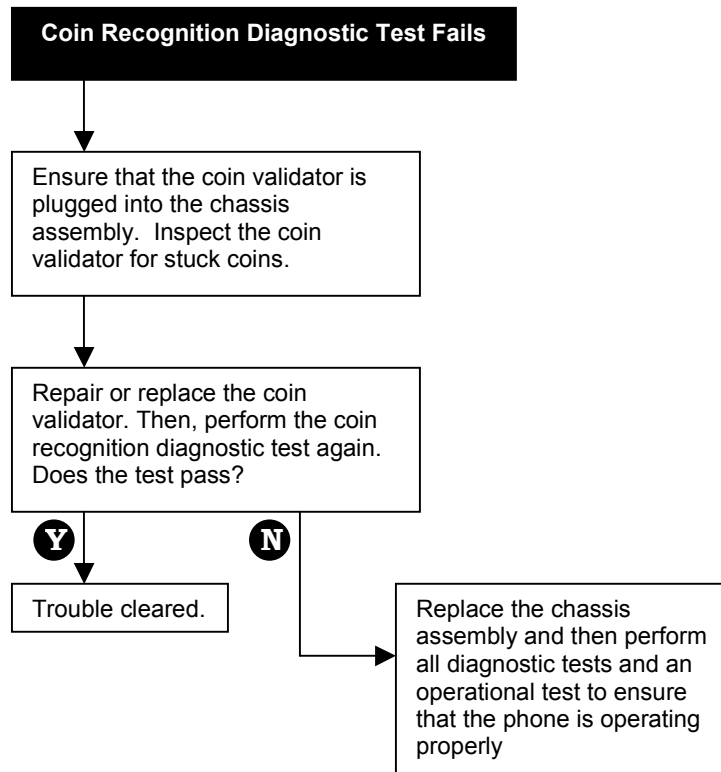
Cannot Enter Diagnostics Mode



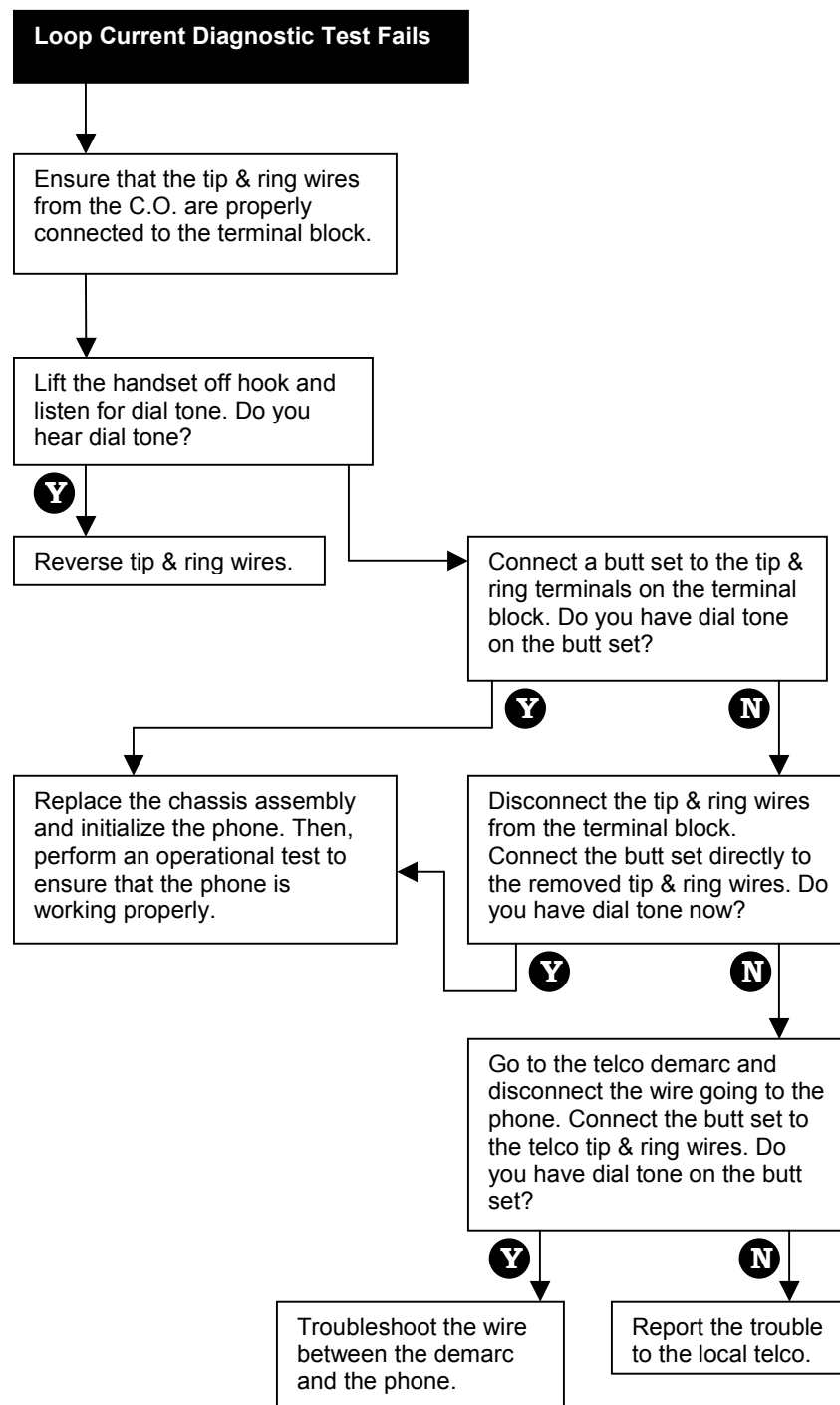
Keypad Diagnostic test Fails



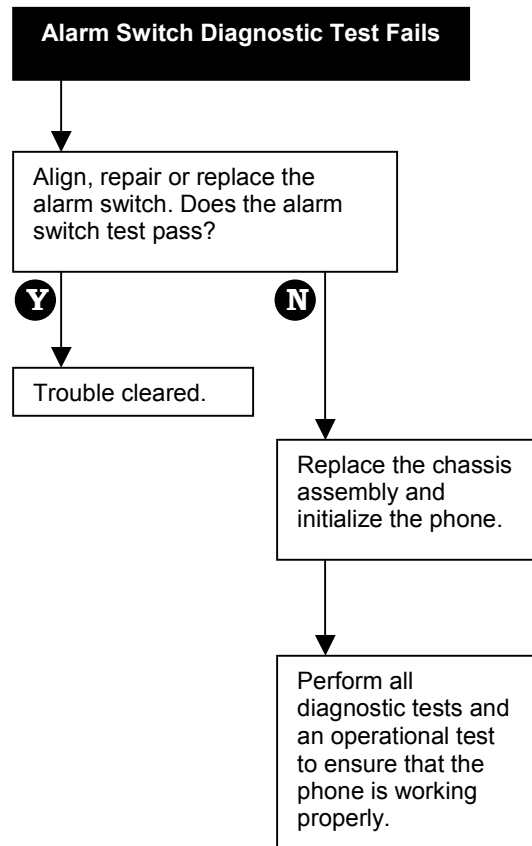
Coin Recognition Diagnostic test Fails



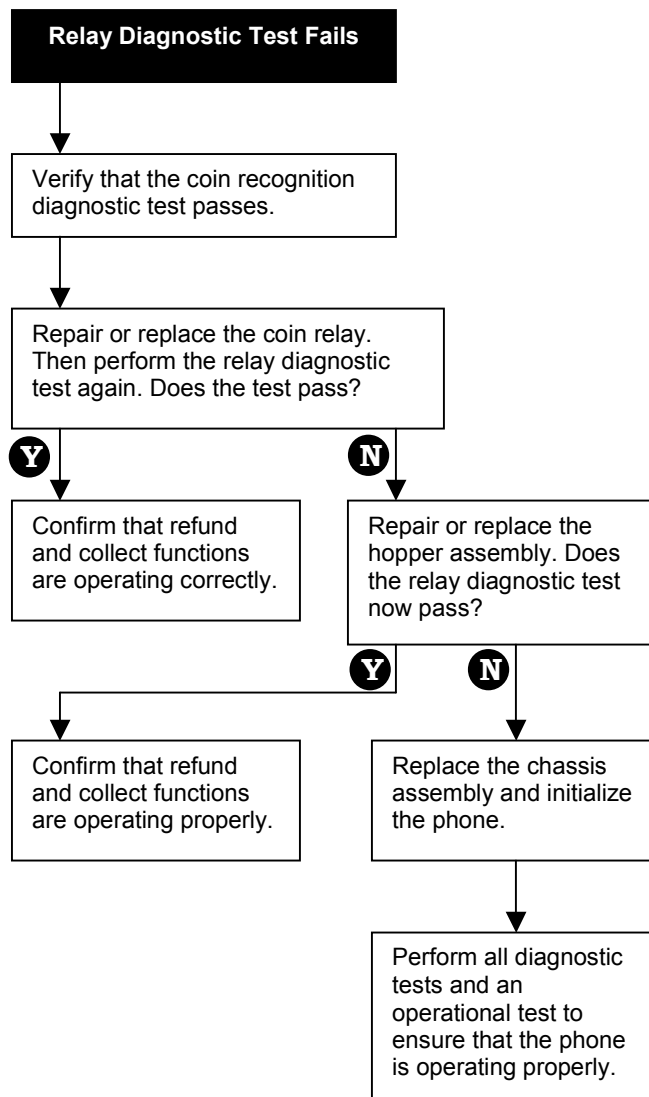
Loop Current Diagnostic Test Fails



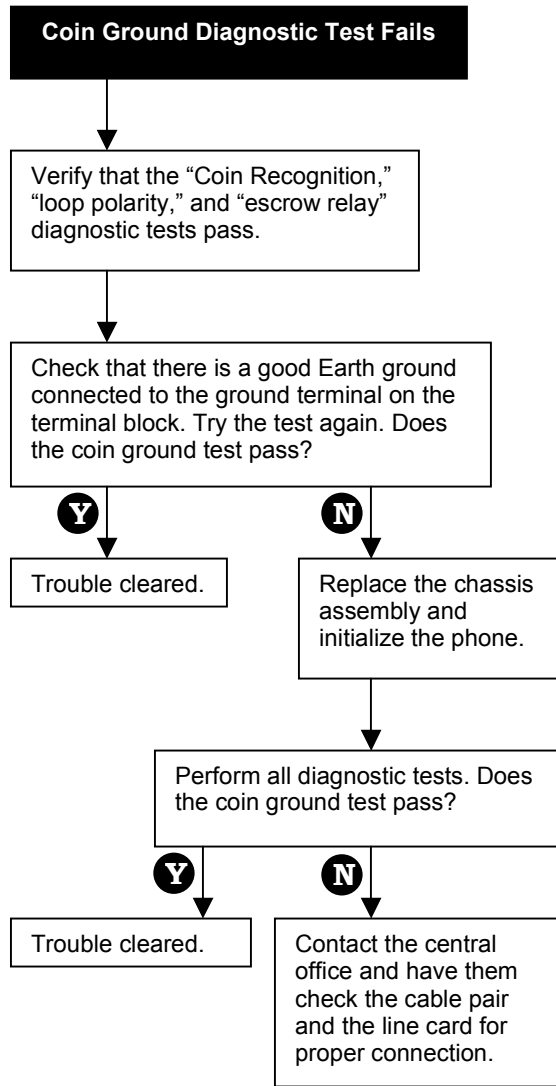
Alarm Switch Diagnostic Test Fails



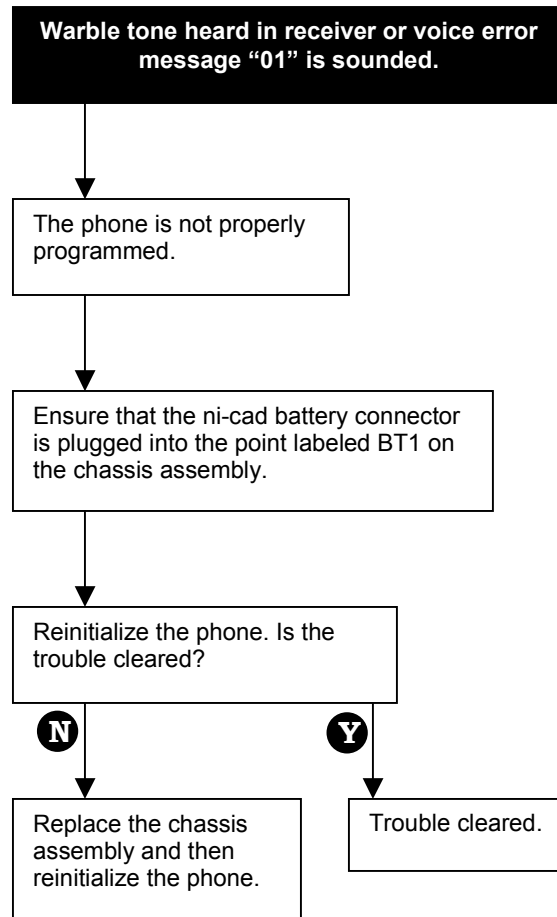
Relay Diagnostic Test Fails



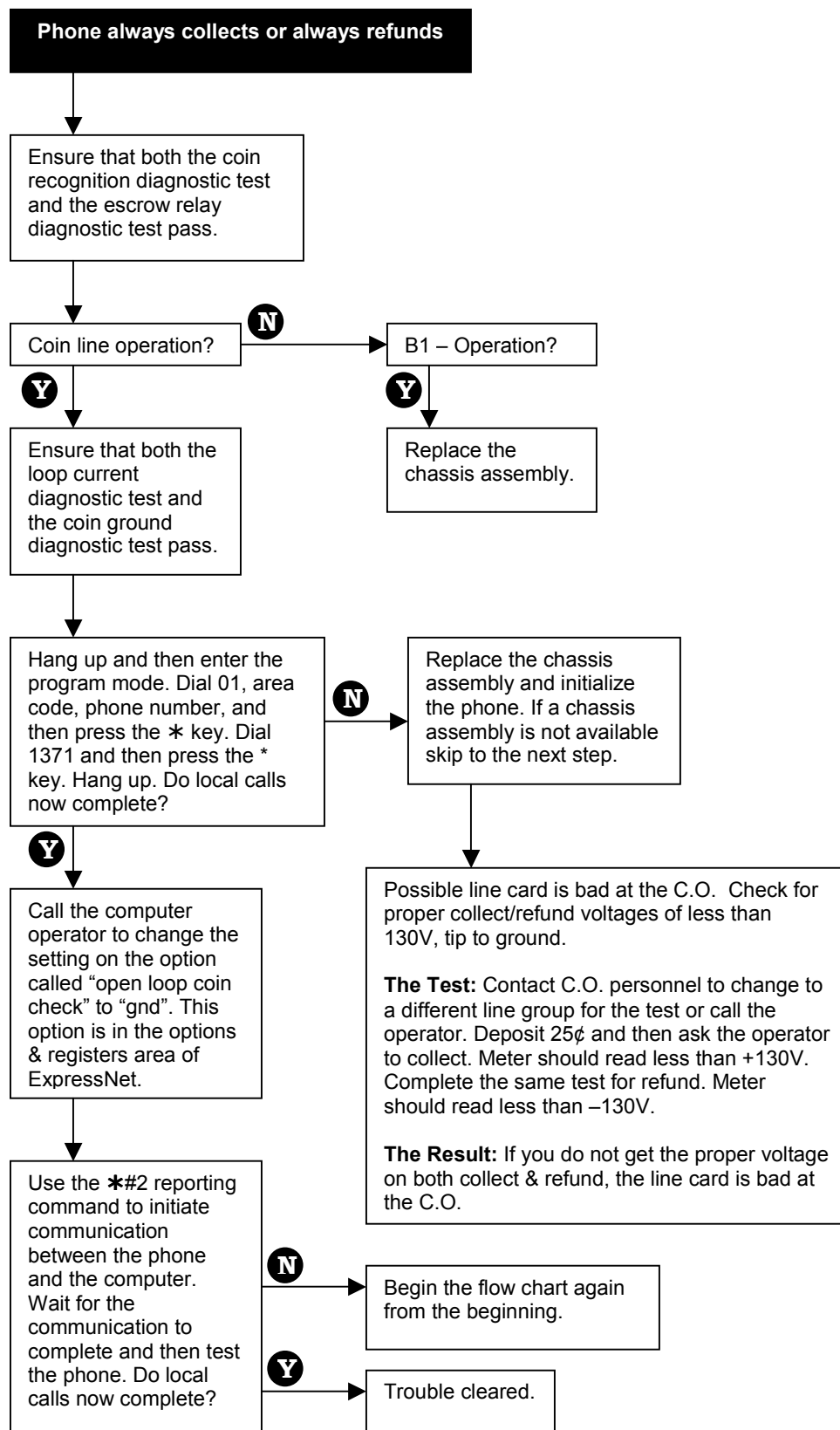
Coin Ground Diagnostic Test Fails



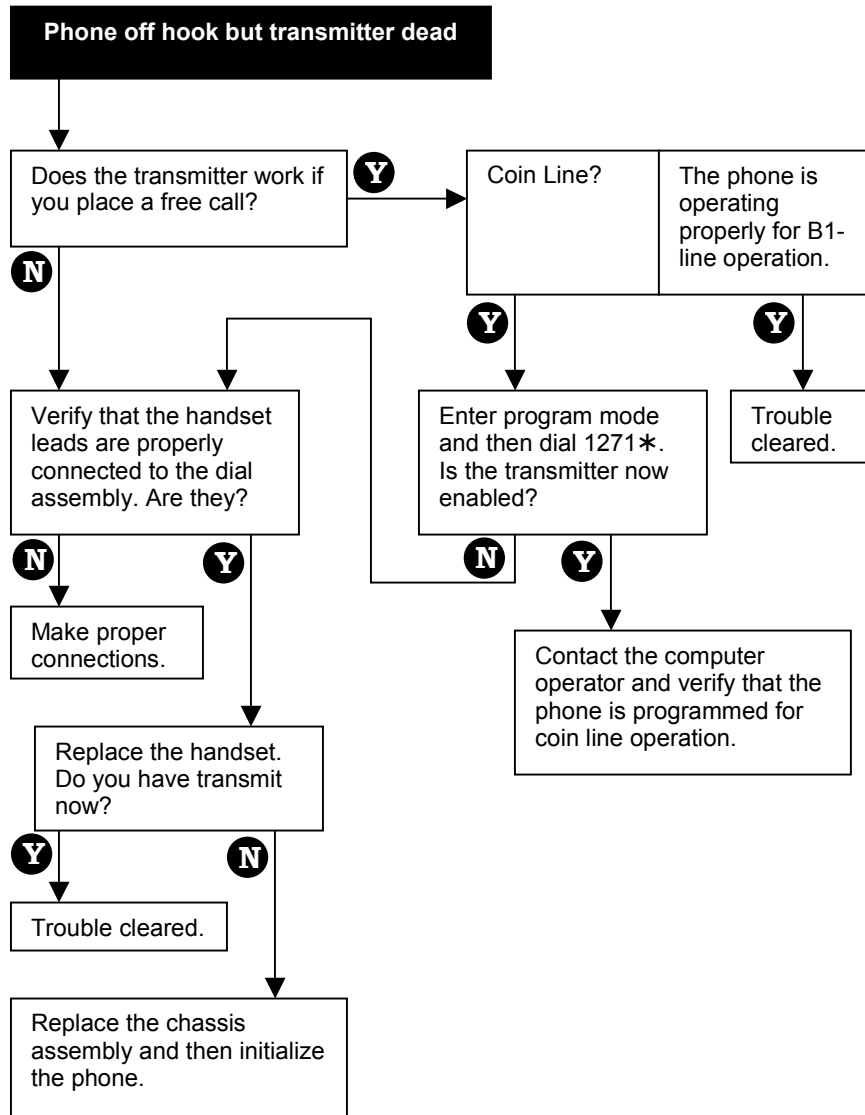
Warble Tone or Voice Error Code "01" In Receiver



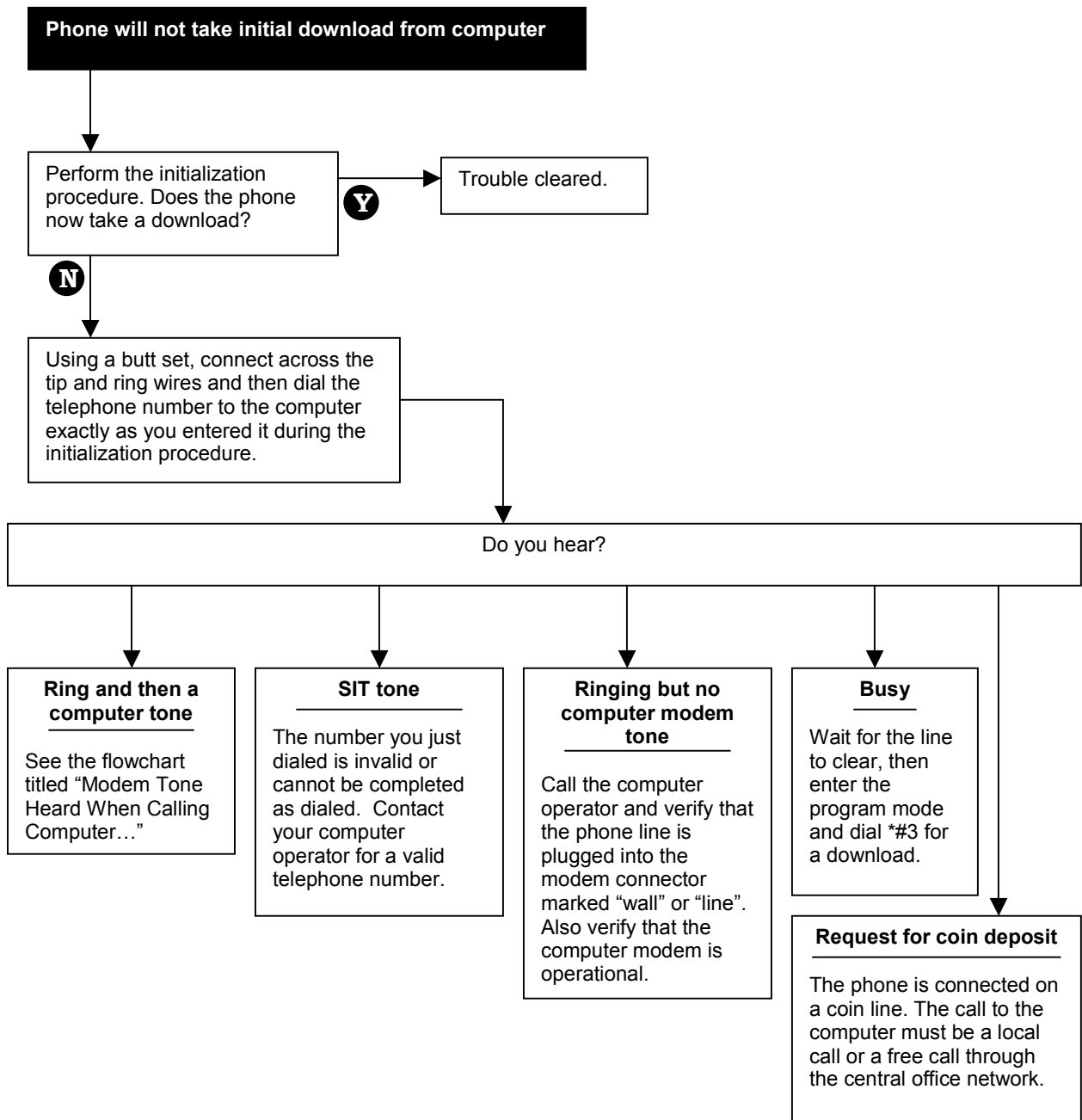
Phone Always Collects or Refunds



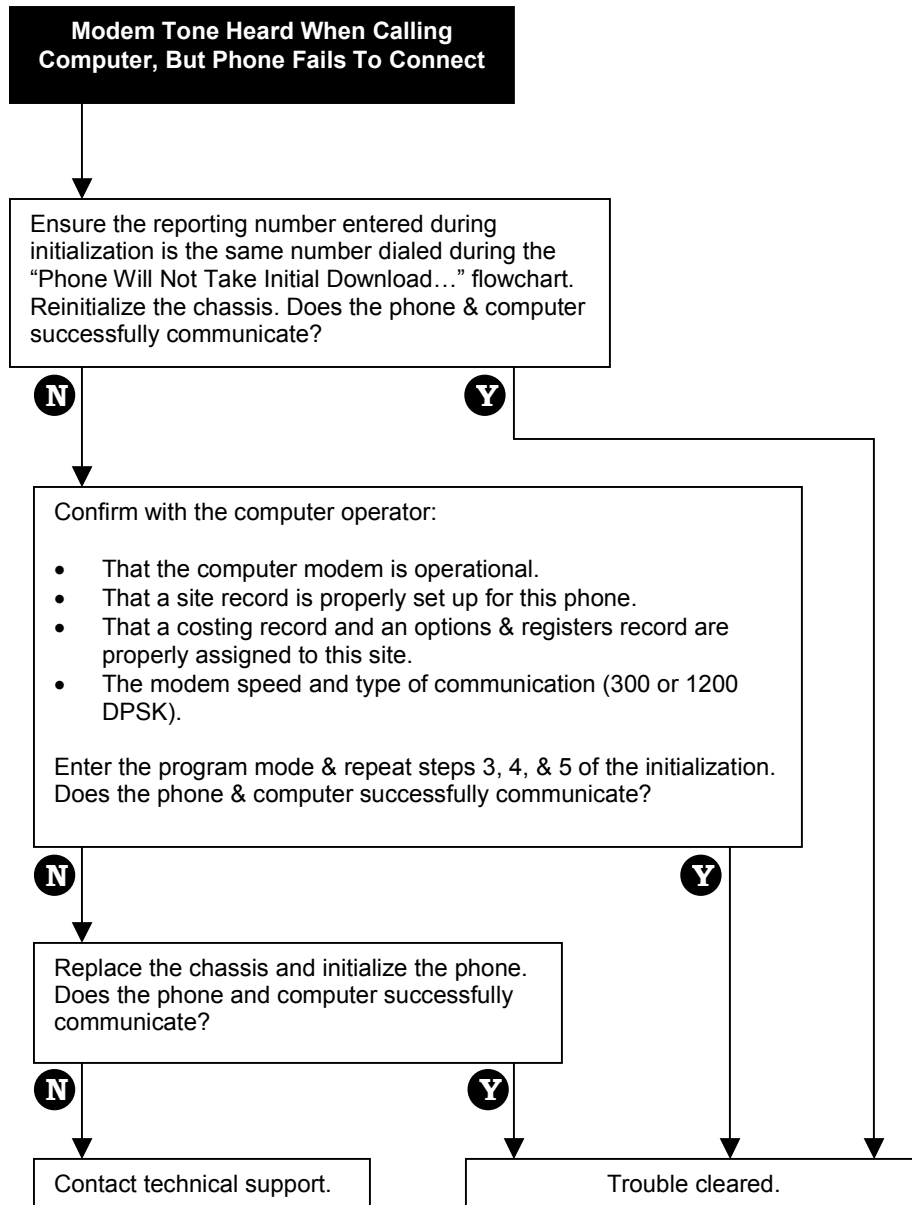
Transmitter Dead



Phone Will Not Take Initial Download



Modem Tone Heard When Calling Computer, But Phone Fails To Connect



Symptoms & Probable Causes of Problems on a B1 Line

Below are nine sets of trouble symptoms that may occur with a Protel phone operating on a B1 Line. Use the guide below to identify the possible causes for each problem and to pinpoint the cause of the trouble.

• PROBLEM TYPE I SYMPTOMS

- No dial tone heard in the receiver.
- Keypad is active (DTMF tones heard).
- Keypad is still active after being off hook for 6 seconds.
- Reporting command “*#64” results in error code 56 (dial inactivity) to be sounded in handset.

Remarks

- a. The chassis assembly detects central office loop current.
- b. The handset receiver works properly.
- c. The keypad works properly.

MOST PROBABLE CAUSES

1. The central office has taken the line out of service.
2. Faulty chassis assembly.

• PROBLEM TYPE II SYMPTOMS

- No dial tone,
- Keypad goes dead 6 seconds after the phone is taken off hook.
- “*#64” may cause the phone to sound error code 56 (dial inactivity) in the handset.

Remarks

- a. The chassis assembly does not detect loop current.

MOST PROBABLE CAUSES

1. Central office tip and ring are shorted or open.
2. Faulty chassis assembly.

• PROBLEM TYPE III SYMPTOMS

- No dial tone in receiver.
- No response from the keypad.
- No side tone.
- After disconnecting, and then reconnecting the keypad/hookswitch ribbon cable, the phone works properly.
- The phone may have reported the “HO” flag (handset off hook) to the computer.

Remarks

- a. Something in the upper housing is making the chassis assembly produce an off hook condition.
- b. After two minutes, the chassis assembly automatically powers down.
- c. When the keypad/hookswitch cable is disconnected and then reconnected, the phone powers up and operates correctly.

MOST PROBABLE CAUSES

1. Faulty keypad/hookswitch assembly.
2. Pinched wire in upper housing.

• **PROBLEM TYPE IV SYMPTOMS**

- No dial tone.
- No response from keypad.
- No side tone.
- The phone still does not respond after disconnecting then reconnecting the keypad/hookswitch ribbon cable.

Remarks

- a. Chassis assembly is dead.

MOST PROBABLE CAUSES

1. The volume control button is shorted to the upper housing.
2. The coin box alarm switch is shorted to lower housing.
3. Both the ni-cad and lithium batteries are dead.
4. Faulty chassis assembly.
5. Faulty keypad/hookswitch assembly.

• **PROBLEM TYPE V SYMPTOMS**

- Cannot break dial tone when digits are pressed.
- Can enter program mode.
- Passes diagnostic keypad test.

Remarks

- a. Chassis is not muting receiver after the first digit is dialed.

MOST PROBABLE CAUSE

1. Faulty chassis.

• **PROBLEM TYPE VI SYMPTOMS**

- Dial tone is not broken when digits are pressed on the keypad.
- Cannot enter program mode.
- Cannot hear DTMF tones in the receiver.

MOST PROBABLE CAUSE

1. Faulty keypad assembly.
2. Faulty chassis assembly.

• **PROBLEM TYPE VII SYMPTOMS**

- Coins refund (6-second delay) after making a local call.
- Passes diagnostic relay test.

Remarks

- a. Chassis assembly may be programmed for coin line operation (check with the computer operator.)

MOST PROBABLE CAUSE

1. Chassis assembly is programmed incorrectly.
2. Chassis assembly is bad.

• **PROBLEM TYPE VIII SYMPTOMS**

- The phone reported the “RJ” flag (relay jam) to the computer.
- The coin relay refunds and collects coins.
- A beep is heard in the handset each time the phone fires the relay.
- The relay always operates twice.
- The reporting command “*#64” sounds error code “06” (relay jam) in the handset.
- The diagnostic relay test fails (fires twice).

MOST PROBABLE CAUSE

1. Damaged coin relay.
2. Faulty chassis assembly.
3. Coin present contacts stay closed.

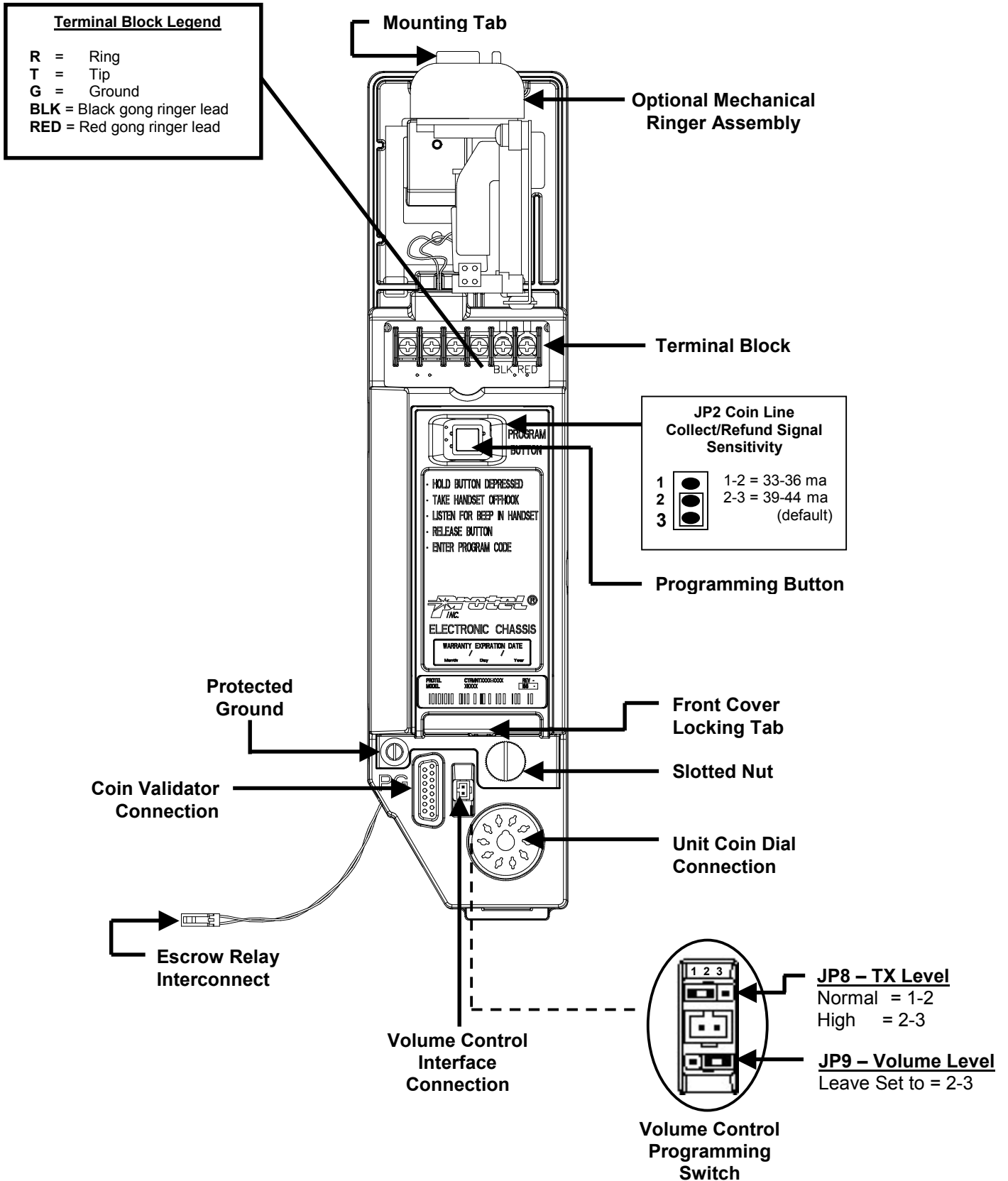
• **PROBLEM TYPE IX SYMPTOMS**

- The coin relay does not operate correctly.
- The coin relay diagnostic test fails.
- The phone sounds the message “Please wait two minutes” and then restricts calls after each attempt to fire the relay.

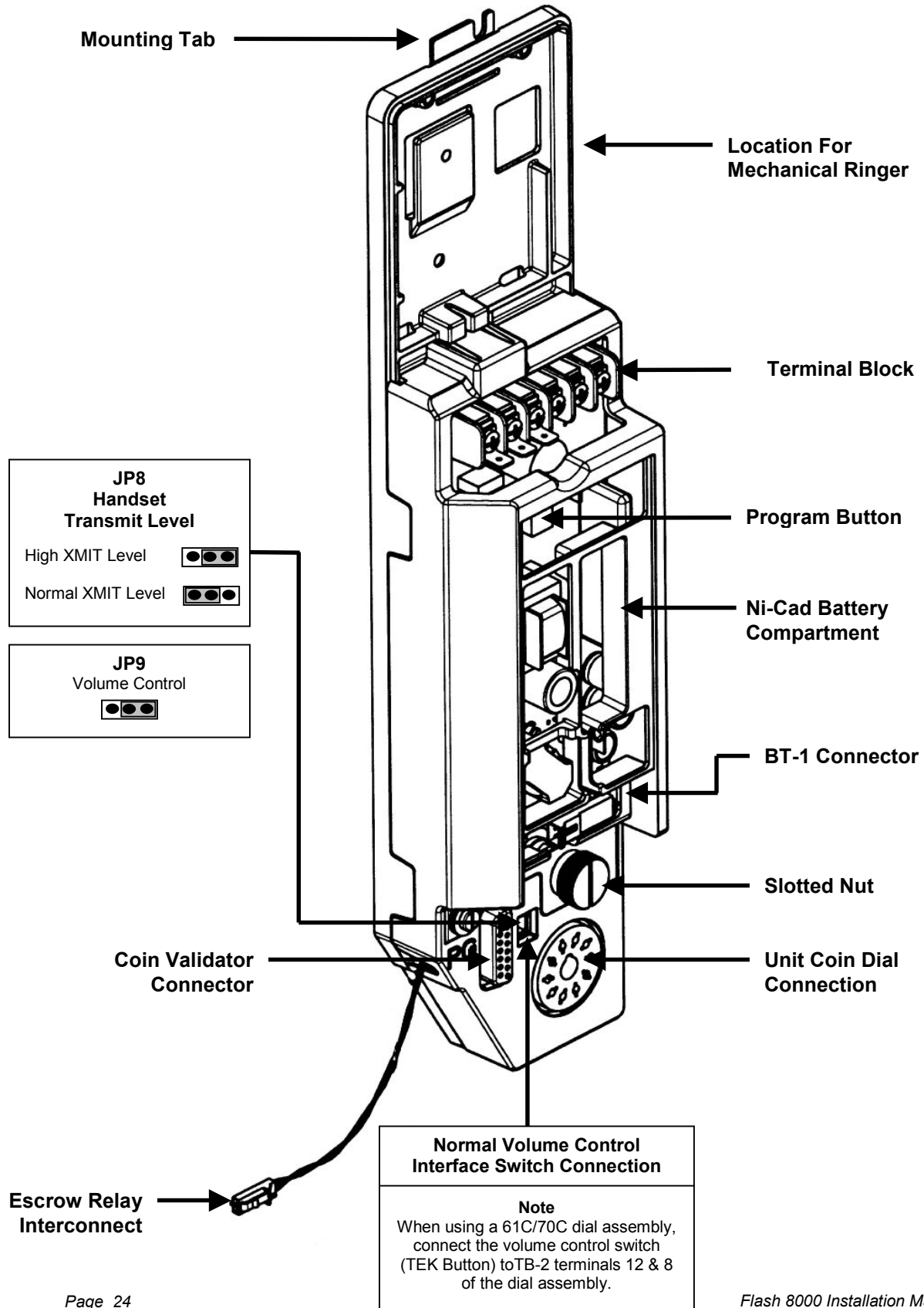
MOST PROBABLE CAUSES

1. Low central office loop current.
2. Faulty ni-cad battery.
3. Faulty chassis assembly.

Appendix A - Chassis Assembly Front View



Appendix B - Chassis Assembly Inside View with Cover Removed



Appendix C - Reporting Commands

Reporting commands are commands that are entered at the payphone keypad to instruct the phone to report certain information to the payphone handset or to a remote computer. Reporting commands are entered at the payphone keypad after the handset comes off hook. Listed below are the reporting commands that the phone will accept from the keypad.

- *#1 XXXXCash Box Emptied:** This reporting command is entered by taking the handset off hook and then pressing the following keys on the keypad ***#1XXXX**. Where XXXX = Security #2 Code provided to you by the computer operator. This command will reset the coin box totalizer (in the remote PC) and report to the computer that the coin box is empty. For ExpressNet[®] users: When ExpressNet[®] sees this flag it will update the payphone's coin history, reset the "Amount in Box" to \$0.00 and reset the coin box full flag. The "Coin History" screen will then display the amount that is currently in the cash box.

- *#2General Reporting Status: (Sets Status Check Flag (ST))** This reporting command is entered by taking the handset off hook and then pressing the following keys on the keypad ***#2**. This will cause the phone to call in to the remote computer and report the details of the calls that have been made on the phone since the last time that the phone reported this information to the computer. Information such as destination numbers dialed, call charges, etc. will be sent to the computer for record keeping purposes. The phone will also verify with the computer that call rates and operating parameters (rates/options) of the phone are correct and up to date. If there is a discrepancy between the rates/options information in the computer and the rates/options information in the phone, the computer will automatically send updated rates/options information to the phone.

- *#3Program Update: (Generally Called Phone Repair (PR))** (*This command should only be used when performing a new installation, when replacing the firmware on the chassis assembly or when replacing the chassis assembly.*) This command will only be accepted if it is entered while the phone is in the programming mode (See the "Initializing the Phone" section for information on entering the programming mode.). This command ***#3** will cause the phone to call in to the remote computer and request a complete download of rates/options information to program or reprogram the phone. If necessary the phone will send General Call Status information to the computer before accepting a rates/options download.

- *#6Time and Date of Last Update:** This reporting command is entered by taking the handset off hook and then pressing the following keys on the keypad: ***#6**. This causes the phone to sound a voice message (in the handset) indicating the date and time of the last rates/options update that was received from the computer.

- *#61ANI Verification:** This reporting command is entered by taking the handset off hook and then pressing the following keys on the keypad: ***#61**. This will cause the phone to sound a voice prompt in the handset indicating the telephone number that the phone is initialized to.

- *#62** **Firmware/Software Revision:** This reporting command is entered by taking the handset off hook and then pressing the following keys on the keypad: ***#62**. If the phone's operating program is in EPROM, a voice prompt should sound the firmware revision number followed by the message "**One.**" If the phone's operating program in E² ROM, a voice prompt should sound the software revision number followed by the message "**Two.**"
- *#64** **Flags Currently Set in Phone's Memory:** This reporting command is entered by taking the handset off hook and then pressing the following keys on the keypad: ***#64**. This will cause the phone to sound a voice code in the handset indicating any flags that are currently set in the phone. Reference Appendix I for listing of voice flag codes.
- *#65** **Reporting Number:** This command is entered by taking the handset off hook and then pressing the following keys on the keypad: ***#65**. This command causes the phone to sound the telephone number that the phone will dial to reach the computer.
- *#67** **Battery Test:** This command is entered by taking the handset off hook and then pressing the following keys on the keypad: ***#67**. This command causes the phone to test the condition of the battery. The phone will reply with one of three responses.
- A single beep indicates that the battery is good
 - Two beeps indicate a marginal battery
 - Three beeps indicate a weak battery
- *#68** **Manual Battery Charge:** This reporting command is entered by taking the handset off hook and then pressing the following keys on the keypad: ***#68**. This command causes the phone to immediately charge the battery. It is important to note that the service tech must wait for the "please wait two minutes" prompt before placing the handset on-hook. This "manual battery charge" is recommended for phones that have a marginal or weak battery as indicated from the battery test. Once the manual battery charge routine has been invoked, it cannot be interrupted.

Assigning a security code for ***#6** options.

The ***#6** reporting options may be programmed to be blocked if the user does not enter the proper security code to access these options.

- If a security code is assigned for ***#6** commands and the user does not enter the correct security code, the phone sounds the following message: "**ERROR 27**"
- If a security code is not assigned for ***#6** commands in the Options & Registers record used by the phone, access to these reporting commands is always enabled.

Follow the steps below to assign a security code for the ***#6** reporting commands.

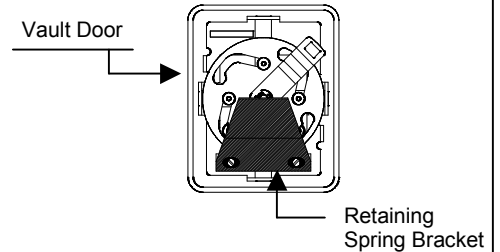
- a. Press "3" from the main menu of ExpressNet®: **[Edit Options & Registers]**.
- b. Use arrow keys to highlight the record to be edited and then press **[ENTER]**.
- c. Use arrow keys to highlight the option labeled "Credit Express Security Code" (under the "Security Codes" section).
- d. Enter the 4-digit security code.

Appendix D - Installing the Coin Box Alarm Switch

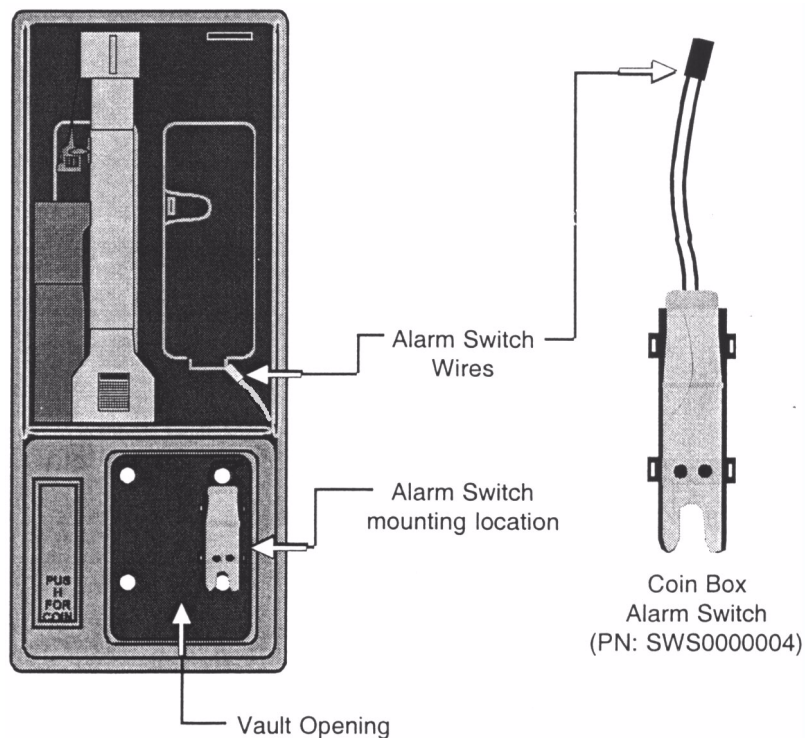
The instructions outlined below show the steps necessary to install the optional coin box alarm switch. This procedure assumes that the chassis assembly has been removed from the upper housing of the phone prior to installing the switch. This will allow for easy access to the alarm switch wires during the installation. After the switch has been installed, reference the "Installing the Flash 8000" section of the manual for information on reinstalling the chassis assembly.

- Unlock the vault door and remove the coin box from the lower housing vault.
- Route the end of the coin box alarm switch (PN: SWS0000004) cable through the small opening located inside the top right corner of the coin box vault.
- Position the switch inside the vault by placing the "U" shaped opening in the alarm's bracket to the lower right-hand mounting hole inside the vault.
- Secure the alarm switch in place by tightening the mounting bolt.
- Reinstall and lock the vault door. (See note below).

Note: The coin box retaining spring bracket must be in place on the inside of the vault door in order for the coin box alarm switch to operate as designed. This retaining spring places tension on the coin box to ensure that the box is pushed toward the rear of the vault causing the switch to engage.



This concludes the steps necessary to install the coin box alarm switch.



Appendix E - Ni-Cad Battery Replacement

If it becomes necessary to replace one of the batteries in the chassis assembly, use caution and proceed with the steps outlined below. (Reference Appendix B for battery locations.)

Ni Cad Battery Replacement

Before replacing the battery, have the phone call the computer to report the details of the calls that have been made on the phone since the last time that the phone reported this information. The procedure for phone reporting and replacement of the battery is as follows.

CAUTION
Dispose of used
batteries according
to the manufactures
instructions

- If the phone is operational, lift the receiver off hook and then dial the reporting command ***#2**. When the computer answers, hang up. The reporting process is complete when dial tone can be heard in the receiver.
- Separate the upper housing from the lower housing and then disconnect the circular unit coin dial connector from the chassis assembly.
- Lift the front cover off the chassis assembly by pressing upward on the locking tab located just above the slotted nut at the bottom of the chassis assembly.
- Disconnect the Ni-Cad battery from the connector labeled **BT1** on the chassis assembly.
- Remove the Ni-Cad battery pack from the chassis assembly.
- Install the new Ni-Cad battery pack where the old battery pack was removed.
- Plug the battery into the connector labeled **BT1** on the chassis assembly.
- Route the battery wire through the wire groove path.
- Reinstall the front cover of the chassis by positioning the two tabs at the top of the cover into place and then applying pressure to the bottom of the cover to lock it in place.
- Connect the circular unit coin dial connector from the upper housing to the circular connector on the chassis assembly.
- If necessary, follow the "Initializing the Phone" procedure earlier in this manual to reinitialize the phone.
- Secure the upper and lower housings of the phone together.

This completes the steps necessary to replace the Ni-Cad battery.

Appendix F - Replacing the Chassis Assembly

If it becomes necessary to replace the chassis assembly, after it has been installed and operating, use caution and proceed with the following steps. Before replacing the chassis assembly, have the phone call the computer to report the details of the calls that have been made on the phone since the last time that the phone reported this information. The procedure for phone reporting and replacement of the chassis assembly is as follows.

Reference Appendix A for connector locations on the chassis assembly.

Reporting to the Computer

- If the phone is operational, lift the receiver off hook and then dial the reporting command ***#2**. When the computer answers, hang up. The reporting process is complete when dial tone can be heard in the receiver.

Removing the Chassis Assembly

- Separate the upper housing from the lower housing and then disconnect the circular unit coin dial assembly connector from the chassis assembly.
- Disconnect the tip, ring and ground wires from the chassis assembly.
- Disconnect the coin validator from the 15-pin connector at the lower left of the chassis assembly.
- Disconnect the escrow relay wires by unplugging the connectors in the center of the wires. (**Do Not remove the spade lugs from the screws on the relay.**)
- Disconnect the coin box alarm switch connector from the chassis assembly (If switch is installed).
- Disconnect the volume control connector from the chassis assembly (if installed).
- Loosen the slotted nut at the bottom right of the chassis assembly and then guide the chassis assembly downward until the mounting tab at the top of the chassis assembly is disengaged from the slot in the phone's housing. Then, remove the chassis assembly from the phone's housing.

Installing the New Chassis Assembly

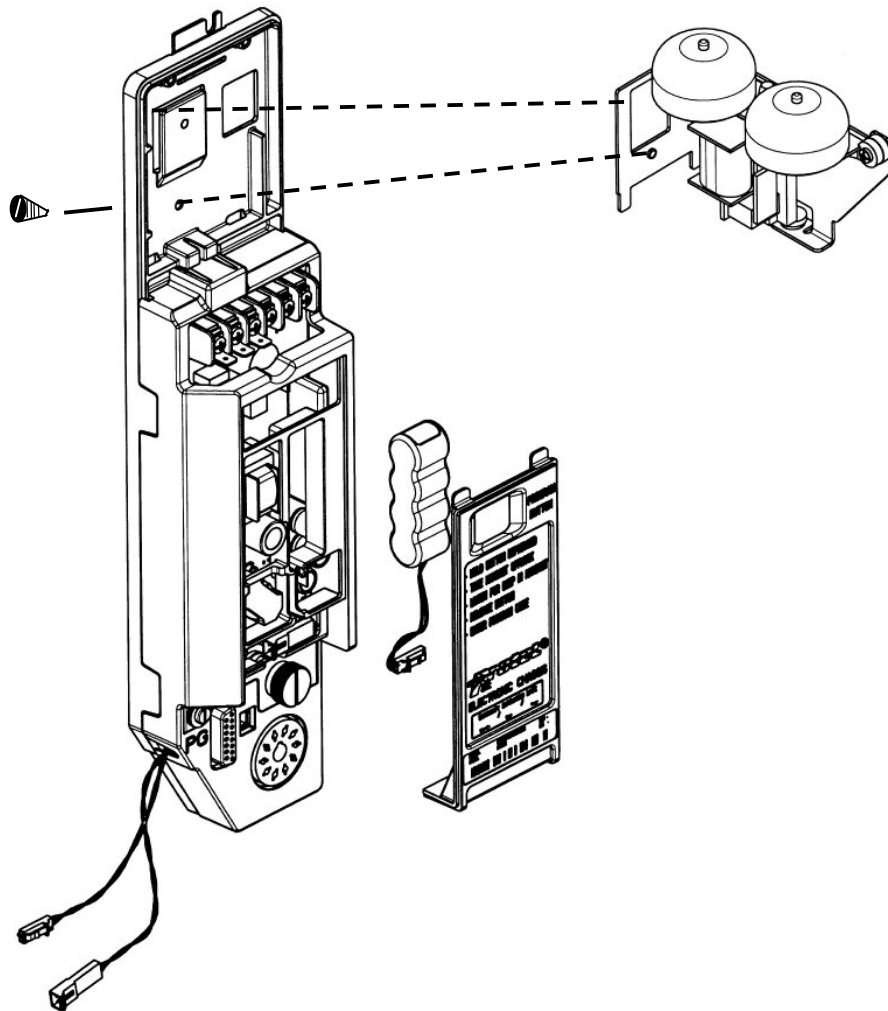
- Install the new chassis assembly in the lower housing by guiding the mounting tab at the top of the assembly into the slot in the lower housing.
- Tighten the slotted nut at the bottom of the chassis assembly.
- Reconnect the coin validator to the 15-pin connector at the lower left of the chassis assembly.
- Reconnect the tip, ring and ground wires to the chassis assembly.
- Reconnect the coin box alarm switch wires (if switch is present).
- Reconnect the escrow relay wires.
- Reconnect the volume control connector from the chassis assembly (if installed).
- Secure the circular unit coin dial connector from the upper housing to the circular connector at on the chassis assembly.
- Follow the "Initializing the Phone" procedure found earlier in this manual to reinitialize the phone.
- Secure the upper and lower housings of the phone together.

This completes the steps necessary to replace the chassis assembly.

Appendix G - Installing the Mechanical Ringer (Optional)

Installing the Mechanical Ringer Assembly

- Attach the mechanical ringer assembly to front top of the chassis such that the square opening at the back of the ringer assembly is positioned over the plastic tab protruding out from the chassis.
- Make sure that the two tabs at the bottom of the ringer assembly are positioned such that they are aligned with the two holes in the chassis just above the terminal block.
- Apply downward pressure to the top of the ringer assembly until the ringer assembly locks into place.
- Use the slotted screw supplied with this assembly as an added fastening method to secure the mechanical ringer assembly to the plastic chassis bracket.
- Attach the red wire from the ringer assembly to the screw position labeled “RED” on the terminal block. Then, attach the black wire from the ringer assembly to the screw position labeled “BLK” on the terminal block.
- Route the wires from the ringer assembly through the wire groove path located just above the terminal block screw labeled “T”. This will secure the wires in place.



Appendix H - Voice Error Messages

The phone is capable of sounding either a beep code or a voice error message to indicate that an error has occurred with the operation of the phone. The listing below shows the possible voice error messages that can be heard in the handset of the phone.

●	See next page
▲	for legend guide
■	

●	Error 1	Ram Error	Phone detected a discrepancy in the calculated RAM checksum. Phone must be reinitialized.
●	Error 2	Relay Jam	Phone detected an error with the operation of the escrow relay.
●	Error 3	ESC I Failure	Phone detected an error with the operation of the ECS I.
●	Error 4	ECS II Failure	Phone detected an error with the operation of the ECS II.
●	Error 5	ECS II Gate Failure	Phone detected an error with the operation of the coin accept/reject gate of the ECS II.
●	Error 6	Key/Card Inactivity	Handset off hook more than 25 sec. and phone did not see any keypad or card reader activity
▲	Error 7	Invalid Speed Dial	User pressed an unprogrammed speed dial button.
■	Error 8	Invalid Key Press	Phone detected a key press that is invalid in the sequence of pressed keys.
▲	Error 9	Invalid Speed Dial	The number programmed for the speed dial key pressed is not a valid number.
▲	Error 10	Volume Control Error	Volume control (Option 117) is turned off and user pressed “#” key to adjust volume.
■	Error 11	Dialed Digits “11”	The first two digits of the dialed number are “11.” This is an invalid sequence of dialed digits.
■	Error 12	Equal Access # NG	User dialed a 10XXX number for an Alternate Operator Service and then dialed “1.”
▲	Error 13	Coin Call Denied	User dialed a number denied on a coin line. The “Over Time Period” in the Rate Band = “0.”
■	Error 14	User Didn’t Pre-Pay	Phone on continuous ground line and user didn’t deposit enough coins before dialing local No.
▲	Error 15	Card Route NG	The intralata route to be used for this type of call is not configured (Mode 8).
■	Error 16	No Answer or Busy	Call was not answered or busy and handset stayed off hook longer than the phone expected.
▲	Error 17	Store & Forward Limit	User made a Store & Forward or a Super Collect call and the time limit for the call expired.
▲	Error 18	Initial Period Time Out	The initial time period for the call has expired and no over time has been granted (Mode 6).
▲	Error 19	Over Time Expired	The over time period set up for the call has expired (Mode 6).
▲	Error 20	Insufficient Deposit	The user has not deposited the required amount of money for over time.
●	Error 21	Over Time Rate Error	The phone has detected an error in the calculated overtime rate for the call.
●	Error 22	Call Rate Error	The phone has detected an error in the calculated rate for an operator assisted call.
●	Error 23	Answer Not detected	The phone did not detect loop reversal as an indication of answer when it expected to.
■	Error 24	Collect Call Refused	Called party did not accept the Super Collect call.
▲	Error 25	Route Not Programmed	The alternate route to be used for this type of call is not configured (Mode 8).
▲	Error 26	Call Denied	Card call or international number was dialed and the phone is set up to deny this type of call.
■	Error 27	Program Mode Error	The program mode access code “100001XXXX” was not entered correctly at the keypad.
●	Error 28	EPROM Error	The phone detected a discrepancy in the calculated checksum of the EPROM.
▲	Error 29	Invalid Speed Dial	The user pressed an unprogrammed speed dial button.
●	Error 30	Stuck Key	The keypad has a stuck key or the user pressed a key for too long.
▲	Error 31	IXC Not Selected	IXC button not pressed when phone expected it or button is not set up with an IXC code.
●	Error 32	Reporting Error	The phone has detected one of the following conditions during a “*#X” reporting attempt. a. Program button was down during attempt to report. b. Too much time passed before “Reporting” security code entry. c. The “Reporting” security code is not programmed in phone. d. 4-digit security code entered at keypad did not match the code programmed in the phone.
■	Error 33	Keypress Time-out	The phone expected a keypress and a keypress did not occur.
■	Error 34	Invalid Number Dialed	The user dialed an invalid PBX code (“0” or “1”) or a ten-digit 976-XXXX number was dialed.
■	Error 35	Invalid Number Dialed	The user dialed either a 1-900 phone number or an invalid area code.
▲	Error 36	Invalid Number Dialed	The office code of the 0+ or 1+ 7 digit number dialed is not found in the NXX table (Mode 5).
▲	Error 37	Card Group Denied	The rate band used to process the call does not have a route number programmed (Mode 6).
▲	Error 38	Card Group Denied	The rate band used for the call has been set up to deny this call. [“Subsequent Period = 0”]
●	Error 39	Coin Mech/Relay NG	Attempted coin call denied due to coin scanner failure or relay failure [ECS II Only].
■	Error 40	No Coin Deposit	The phone did not detect deposited coins when it expected to.
▲	Error 41	IXC Button NG	The interexchange button pressed by the user has not been programmed.
▲	Error 42	International No. NG	The user has dialed an invalid international phone number.
■	Error 43	No IXC Button Pressed	User did not press and IXC button when the phone expected one to be pressed.
■	Error 44	End of the Price Quote	User pressed V0 for price quote of last call and user did not hang up after the quote ended.
●	Error 45	Coin Gate Failure	ECS II coin gate failed 3 times in a row. This error message is sounded immediately after the third attempt to accept or reject deposited coins.
●	Error 46	Coin Track Failure	Phone detected an error with the ECS’s coin track.
●	Error 47	ECS Failure	Phone detected error with the operation of the ECS. May be coin track or chassis assembly.

▲	Error 48	Incoming Call Denied	The phone has been set up to deny incoming calls.
▲	Error 49	Call Denied	Phone is set up to deny calls placed to this destination number.
▲	Error 50	Call Denied	Incoming call or coin call was made during a time that the phone is set to deny these calls.
●	Error 51	Coin Mech Failure	Phone is not correctly detecting deposited coins (Incorrect coin frequencies).
■	Error 52	Feature Group D Rest.	The Feature Group D code (10XXX) entered is invalid.
●	Error 53	Debit Card Error	Unable to debit the required amount from the debit card.
●	Error 54	Loop Reversal Restrict	Phone detected loop reversal and is programmed to restrict local and 1+ coin calls.
●	Error 55	Opto Coupler Defective	Phone detected an opto coupler hardware failure and will restrict local and 1+ coin calls.
▲	Error 56	Destination Number NG.	Phone did not find a match in the valid destination number table.
▲	Error 57	Too Few NPA Tables	The phone could not find enough tables to properly assign a cost band number (NANP).
▲	Error 58	Too many NPA Tables	The phone has determined that there are too many 100 byte tables assigned (NANP).
▲	Error 59	No NPA located in tables	The phone could not locate the desired NPA in its database (NANP).
▲	Error 60	Range outside limit	The calculated range is outside of the NPA/NXX limit (NANP).
■	Error 61	Coin Tone Fraud	The phone detected DTMF generated outside the payphone.
●	Error 62	Signal Unit Stuck	The phone detected a stuck coin (continuous nickel, dime or quarter signal.)

Legend:

- This error message is hardware related to the components of the phone. A technician is required to troubleshoot the problem.
- ▲ This error message is software related. If possible, the problem should be recreated and the computer operator should be contacted to determine if the phone has been purposely set up to cause the error message.
- This error message is a result of an improper or invalid action being performed by the phone user. If possible, the problem should be recreated and the computer operator should be contacted to determine if the phone has been purposely set up to deny the action that is causing the error.

Appendix I - Voice Flag Codes

Below is a listing of flag code and alarm code descriptions for the Ascension Series Model 7000 phone. Flag are listed in alphabetical order using the two character flag code.

Note: The phone can be set to report error flags to the computer immediately, as they occur, by setting each flag to "immediately report" in the Options & Registers Record used by the phone (See the "Programmable Reporting Flags" in the Options & Registers Record.) If a flag is not set to immediately report, the flag remains set in the phone and is reported to the computer during the polling process. A service person entering the *#64 reporting command at the payphone keypad will receive a voice code for the flags set in the chassis.

FLAG CODE (E\$)	COIN BOX EMPTIED (*#1)	VOICE CODE (0, 0)
<p>Cause This flag is set if the phone detects that a repair person entered the reporting command *#1 (Coin box emptied), followed by the security code, at the payphone keypad. This command causes the phone to report this information to the computer. Activating the vault door or coin box alarm switch also sets this flag. When this flag is set, coin box totals and coin box volume counters are reset.</p> <p>Reporting Time The phone reports this flag to the computer immediately after a *#1 command is entered at the keypad or it is reported two minutes after the coin box alarm is set. After successful communication with the computer, the flag is reset, and the phone does not report in again. If communication is not successful, the phone attempts communication with the computer again in 2 hours, then 4 hours, then in 8 hours. If communication is successful at any of these points or if the phone is polled, the reporting attempts stop. If communication is not successful, the phone continues to try to report the flag every 8 hours until communication is successful.</p> <p>Resetting the Flag The computer resets this flag when successful communication occurs between the computer and the phone.</p> <p>Corrective Action: N/A</p>		

FLAG CODE (ST)	STATUS CHECK (*#2)	VOICE CODE (0, 1)
<p>Cause This flag is set if the phone detects that a repair person entered the reporting command *#2 (General Reporting Status) at the payphone keypad. This command causes the phone to call the computer and report the details of the calls that have been made on the phone since the last time that the phone reported this information to the computer. The phone also verifies that the costing/options information stored in the phone is up to date and if necessary requests a download of costing/options information from the computer.</p> <p>Reporting Time The phone reports this flag to the computer immediately after it is set. After successful communication with the computer, the flag is reset and the phone does not report it again. If communication is not successful, the phone attempts communication with the computer again in 2 hours, then 4 hours, then in 8 hours. If communication is successful at any of these points or if the phone is polled, the reporting attempts stop. If communication is not successful, the phone continues to try to report the flag every 8 hours until communication is successful.</p> <p>Corrective Action: N/A</p> <p>Resetting the Flag The computer resets this flag when successful communication occurs between the computer and the phone.</p>		

FLAG CODE (PR)	PHONE REPAIR (*#3)	VOICE CODE (0, 2)
<p>Cause This flag is set if the phone detects that a repair person entered the reporting command *#3 (Program Update) at the payphone keypad. This reporting command causes the phone to call in to the computer and request a download of costing/options information to program or reprogram the phone.</p> <p>Reporting Time The phone reports this flag to the computer immediately after it is set. After successful communication with the computer, the flag is reset and the phone does not report it again. If communication is not successful, the phone attempts communication with the computer again in 2 hours, then 4 hours, then in 8 hours. If communication is successful at any of these points or if the phone is polled, the reporting attempts stop. If communication is not successful, the phone continues to try to report the flag every 8 hours until communication is successful. Note: This flag is set when the reporting command *#3 is entered at the payphone keypad during initialization.</p> <p>Corrective Action: N/A</p> <p>Resetting the Flag The computer resets this flag when successful communication occurs between the computer and the phone.</p>		

FLAG CODE (PC)	PEG COUNT REACHED	VOICE CODE (0, 3)
<p>Cause This flag is set if the phone detects that the number of calls made on the phone is equal to the number specified in the field labeled "Peg Count/Inactivity" in the options & registers record used by the phone.</p> <p>Reporting Time The phone reports this flag to the computer two minutes after the flag is set. After successful communication with the computer, the flag is reset and the phone does not report in again. If communication is not successful, the phone attempts communication with the computer again in 2 hours, then 4 hours, then in 8 hours. If communication is successful at any of these points or if the phone is polled, the reporting attempts stop. If communication is not successful, the phone continues to try to report the flag every 8 hours until communication is successful.</p> <p>Corrective Action: N/A</p> <p>Resetting the Flag The computer resets this flag in the phone when successful communication occurs between the computer and the phone. The Audit CDR counter is also reset to zero (0) when this flag is reset.</p>		

FLAG CODE (\$V)	COIN BOX VOLUME REACHED	VOICE CODE (0, 4)
<p>Cause This flag is set when the volume of coins in the cash box reaches the percentage (%) full programmed for the phone to report. The percentage full value is programmed in the field labeled "cash box volume" in the Options & Registers record used by the phone.</p> <p>Reporting Time The phone reports in to the computer two minutes after the flag is set. After successful communication with the computer, the phone does not report this flag to the computer again, but the flag remains set until the condition is cleared. If communication is not successful, the phone attempts communication with the computer again in 2 hours, then 4 hours, then in 8 hours. If communication is successful at any of these points or if the phone is polled, the reporting attempts stop. If communication is not successful, the phone continues to try to report the flag every 8 hours until it is successful.</p> <p>Corrective Action: Dispatch a service tech to empty the coin box.</p> <p>Resetting the Flag Empty the coin box and then use the *#1 reporting command to report in to the computer. If the phone is equipped with a vault door or coin box switch, empty the coin box and replace it.</p>		

FLAG CODE (RE)	RAM ERROR	VOICE CODE (0, 5)
<p>Cause This flag is set if the phone detects an error in the RAM used for storing costing/options information in the phone. Possible causes include lightning surges or low ni-cad and lithium batteries. An "EE" flag may also be reported with this flag.</p> <p>Reporting Time The phone reports this flag to the computer two minutes after the flag is set. During the time that the phone and the computer communicate with each other, the phone receives a costing data/options update to restore the RAM. If the update is successful, the phone does not report this flag again. If communication is not successful, the phone attempts communication with the computer again in 2 hours, then 4 hours, then in 8 hours. If communication is successful at any of these points or if the phone is polled, the reporting attempts stop. If communication is not successful, the phone continues to try to report the flag every 8 hours until communication is successful.</p> <p>Corrective Action If this flag reoccurs, have the service technician label the chassis with RE, and replace the chassis assembly.</p> <p>Resetting the Flag Enter program mode, dial 2, and then hang up. This flag is reset after the computer updates costing/options information in the phone.</p>		

FLAG CODE (RJ)	RELAY JAM	VOICE CODE (0, 6)
<p>Cause Coin relay jammed. This flag is set after 12 consecutive failed attempts to collect and/or refund coins.</p> <p>Reporting Time The phone reports in to the computer two minutes after the flag is set. After successful communication with the computer, the phone does not report in again, but the flag remains set until the condition is cleared. If communication is not successful, the phone attempts communication with the computer again in 2 hours, then 4 hours, then in 8 hours. If communication is successful at any of these points or if the phone is polled, the reporting attempts stop. If communication is not successful, the phone continues to try to report the flag every 8 hours until communication is successful.</p> <p>Corrective Action Verify that there has been no "trouble gone" flag (TG) set in the phone since the relay jam was reported. If the relay jam condition still exists, dispatch a service tech immediately. Have the service tech check for a faulty relay connection, stuck coins, and proper relay function using diagnostic procedures.</p> <p>Resetting the Flag Enter the phone's program mode, press 2 and then hang up. Clear the escrow relay, and perform complete diagnostic tests. The escrow relay clears itself if a successful collect or refund occurs.</p>		

FLAG CODE (LR)	LOOP REVERSAL	VOICE CODE (0, 7)
<p>Cause This flag is set if tip & ring are determined to be reversed on three consecutive regulated coin calls. The loop reversal check is performed after the last digit of the destination number is dialed by the user.</p> <p>Reporting Time The phone reports this flag to the computer two minutes after the flag is set. After successful communication with the computer, the phone does not report in again, but the flag remains set until the condition is cleared. If communication is not successful, the phone attempts communication with the computer again in 2 hours, then 4 hours, then in 8 hours. If communication is successful at any of these points or if the phone is polled, the reporting attempts stop. If communication is not successful, the phone continues to try to report the flag every 8 hours until it is successful.</p> <p>Corrective Action Dispatch a service tech, or have the Central Office technician reverse the tip & ring pair.</p> <p>Resetting the Flag Enter program mode, press 2, and then hang up or the flag is reset when the phone detects normal loop polarity on a call.</p>		

FLAG CODE (\$E)	NON-RESETTABLE COIN TOTALIZER ERROR	VOICE CODE (1,1)
<p>Cause This flag is set if the phone detects an error in the calculated checksum for the non-resettable coin totalizer amount. Possible causes include electrical surges or low ni-cad or lithium battery voltages. This flag generally indicates that the stored cash box amount is invalid.</p> <p>Reporting Time The phone reports this flag to the computer two minutes after the flag is set. After a successful communication with the computer, the flag will be cleared. If communication with the computer is not successful, the phone reports in to the computer again in 2, 4 and 8 hours.</p> <p>Corrective Action If this flag reoccurs, have the service technician verify that the ground is properly connected and that the battery voltage levels are correct. If ground and battery voltages are good, label the chassis with \$E, and replace the chassis assembly.</p> <p>Resetting the Flag Enter the program mode, dial 2, and then hang up. This flag is reset after successful communications with the computer.</p>		

FLAG CODE (VE)	CASH BOX VOLUME ERROR	VOICE CODE (1,0)
<p>Cause This flag is set if the phone detects an error in the calculated checksum for the cash box volume percentage. Possible causes include electrical surges or low Ni-cad or lithium battery voltages. This flag generally indicates that the stored cash box amount is invalid.</p> <p>Reporting Time The phone reports this flag to the computer two minutes after the flag is set. After a successful communication with the computer, the flag will be cleared. If communication with the computer is not successful, the phone reports in to the computer again in 2, 4 and 8 hours.</p> <p>Corrective Action If this flag reoccurs, have the service technician verify that the ground is properly connected and that the battery voltage levels are correct. If ground and battery voltages are good, label the chassis with VE, and replace the chassis assembly.</p> <p>Resetting the Flag Enter the program mode, dial 2, and then hang up. This flag is reset after successful communications with the computer.</p>		

FLAG CODE (TE)	RESETTABLE COIN TOTALIZER ERROR	VOICE CODE (1,2)
<p>Cause This flag is set if the phone detects an error in the calculated checksum for the resettable coin totalizer amount (amount to date). Possible causes include electrical surges or low ni-cad or lithium battery voltages. This flag generally indicates that the stored cash box amount is invalid.</p> <p>Reporting Time The phone reports this flag to the computer two minutes after the flag is set. After a successful communication with the computer, the flag will be cleared. If communication with the computer is not successful, the phone reports in to the computer again in 2, 4 and 8 hours.</p> <p>Corrective Action If this flag reoccurs, have the service technician verify that the ground is properly connected and that the battery voltage levels are correct. If ground and battery voltages are good, label the chassis with TE, and replace the chassis assembly.</p> <p>Resetting the Flag Enter the program mode, dial 2, and then hang up. This flag is reset after successful communications with the computer.</p>		

FLAG CODE (BE)	CASH BOX AMOUNT ERROR	VOICE CODE (1,3)
<p>Cause This flag is set if the phone detects an error in the calculated checksum for the cash box amount. Possible causes include electrical surges or low ni-cad or lithium battery voltages. This flag generally indicates that the stored cash box amount is invalid.</p> <p>Reporting Time The phone reports this flag to the computer two minutes after the flag is set. After a successful communication with the computer, the flag will be cleared. If communication with the computer is not successful, the phone reports in to the computer again in 2, 4 and 8 hours.</p> <p>Corrective Action If this flag reoccurs, have the service technician verify that the ground is properly connected and that the battery voltage levels are correct. If ground and battery voltages are good, label the chassis with BE, and replace the chassis assembly.</p> <p>Resetting the Flag Enter the program mode, dial 2, and then hang up. This flag is reset after successful communications with the computer.</p>		

FLAG CODE (OE)	OVERAGE ERROR	VOICE CODE (1,4)
<p>Cause This flag is set if the phone detects an error in the calculated checksum for the overage amount (the actual amount deposited over the amount charged). Possible causes include electrical surges or low ni-cad or lithium battery voltages. This flag generally indicates that the stored overage amount is invalid.</p> <p>Reporting Time The phone reports this flag to the computer two minutes after the flag is set. After a successful communication with the computer, the flag will be cleared. If communication with the computer is not successful, the phone reports in to the computer again in 2, 4 and 8 hours.</p> <p>Corrective Action If this flag reoccurs, have the service technician verify that the ground is properly connected and that the battery voltage levels are correct. If ground and battery voltages are good, label the chassis with OE, and replace the chassis assembly.</p> <p>Resetting the Flag Enter the program mode, dial 2, and then hang up. This flag is reset after successful communications with the computer.</p>		

FLAG CODE (AE)	CALL ACCOUNTING ERROR	VOICE CODE (1,5)
<p>Cause This flag is set if the phone detects an error in the calculated checksum for the call accounting data. Possible causes include electrical surges or low ni-cad or lithium battery voltages. This flag generally indicates that the stored call accounting data is invalid.</p> <p>Reporting Time The phone reports this flag to the computer two minutes after the flag is set. After a successful communication with the computer, the flag will be cleared. If the call accounting error condition remains within the phone, the phone attempts communication with the computer again in 2 hours, then 4 hours, then in 8 hours until the error condition is corrected.</p> <p>Corrective Action If this flag reoccurs, have the service technician verify that the ground is properly connected and that the battery voltage levels are correct. If ground and battery voltages are good, label the chassis with AE, and replace the chassis assembly.</p> <p>Resetting the Flag Enter the program mode, dial 2, and then hang up. This flag is reset after successful communications with the computer.</p>		

FLAG CODE (CL)	BILLING CDR LIMIT REACHED	VOICE CODE (1, 6)
<p>Cause This flag is set if the phone detects that the number of Store & Forward calls made on the phone is one more than the number of calls specified in the field labeled "Number of Billable CDR Records before Reporting" in the Options & Registers record used by the phone.</p> <p>Reporting Time The phone reports this flag to the computer two minutes after the flag is set. After successful communication with the computer, the flag is reset. If communication is not successful, the phone attempts communication with the computer again in 2 hours, then 4 hours, then in 8 hours. If communication is successful at any of these points or if the phone is polled, the reporting attempts stop. If communication is not successful, the phone continues to try to report the flag every 8 hours until communication is successful.</p> <p>Corrective Action N/A</p> <p>Resetting the Flag The computer resets this flag when successful communication occurs with the phone.</p>		

FLAG CODE (CF)	BILLING CDR FULL	VOICE CODE (1, 7)
<p>Cause This flag is set if the phone detects that there have been 52 Store & Forward calls made on the phone and the call detail records for these calls have not yet been transferred to the computer. The Store & Forward records must be reported to the computer and the Store & Forward call counter must be reset before the phone allows any more Store & Forward calls.</p> <p>Reporting Time The phone reports this flag to the computer two minutes after the flag is set. After successful communication with the computer, the flag is reset. If communication is not successful, the phone attempts communication with the computer again in 2 hours, then 4 hours, then in 8 hours. If communication is successful at any of these points or if the phone is polled, the reporting attempts stop. If communication is not successful, the phone continues to try to report the flag every 8 hours until communication is successful.</p> <p>Corrective Action N/A</p> <p>Resetting the Flag The computer resets this flag when successful communication occurs with the phone.</p>		

FLAG CODE (\$F)	COIN BOX FULL	VOICE CODE (2, 1)
<p>Cause This flag is set when the volume of coins in the coin box reaches 100 percent.</p> <p>Reporting Time The phone reports this flag to the computer two minutes after the flag is set. After successful communication with the computer, the phone does not report in again, but the flag remains set until the condition is cleared. If communication is not successful, the phone attempts communication with the computer again in 2 hours, then 4 hours, then in 8 hours. If communication is successful at any of these points or if the phone is polled, the reporting attempts stop. If communication is not successful, the phone continues to try to report the flag every 8 hours until communication is successful.</p> <p>Corrective Action Dispatch a service tech to empty the coin box.</p> <p>Resetting the Flag Empty the coin box and then use the *#1 reporting command to report in to the computer. If the phone is equipped with a vault door or coin box switch, then simply empty the coin box and replace it.</p>		

FLAG CODE (CG)	COIN GATE FAILURE	VOICE CODE (2,2)
<p>Cause This flag is set if the phone detects an error in the operation of the coin gate in the ECS II. Possible causes include a damaged, jammed or defective ECS coin gate.</p> <p>Reporting Time The phone reports this flag to the computer two minutes after the flag is set. After a successful communication with the computer, the phone does not report in again, but the flag remains set until the cause of the failure is corrected. If communication with the computer is not successful, the phone reports in to the computer again in 2, 4 and 8 hours.</p> <p>Corrective Action Dispatch a service technician. Have the service technician perform the coin recognition diagnostic test on the phone. If the test fails, follow the procedures outlined in the Coin Recognition Diagnostic Test Fails flow chart.</p> <p>Resetting the Flag Enter the program mode, dial 2, and then hang up.</p>		

FLAG CODE (DE)	DEFECTIVE ESCROW	VOICE CODE (2, 3)
<p>Cause This flag is set if the phone does not detect deposited coins on 10 consecutive attempts to process a coin call.</p> <p>Reporting Time The phone reports this flag two minutes after the flag is set. After successful communication with the computer, the flag is cleared and the phone does not report in again even if the condition remains uncorrected. If communication is not successful, the phone attempts communication with the computer again in 2 hours, then 4 hours, then in 8 hours. If communication is successful at any of these points or if the phone is polled, the reporting attempts stop. If communication is not successful, the phone continues to try to report the flag every 8 hours until it is successful.</p> <p>Corrective Action Dispatch a service tech. Have the service tech perform a coin recognition diagnostic test on the phone.</p> <p>Resetting the Flag This flag is reset when the phone recognizes a good coin deposit.</p>		

FLAG CODE (ME)	ELECTRONIC COIN MECH (ECS) ERROR	VOICE CODE (2, 4)
<p>Cause This flag is set if the phone detects an error in the Electronic Coin Scanner (ECS) or associated electronic circuitry. Possible causes include a damaged or defective ECS, interconnect cable, ECS option board or chassis.</p> <p>Reporting Time The phone reports this flag to the computer two minutes after the flag is set. After a successful communication with the computer, the phone does not report in again, but the flag remains set until the cause of the failure is corrected. If communication with the computer is not successful, the phone reports in to the computer again in 2, 4 and 8 hours.</p> <p>Corrective Action Dispatch a service technician. Have the service technician perform the coin recognition diagnostic test on the phone. If the test fails, follow the procedures outlined in the Coin Recognition Diagnostic Test Fails flow chart.</p> <p>Resetting the Flag Enter the program mode, dial 2, and then hang up.</p>		

FLAG CODE (TR)	TIME REPORT	VOICE CODE (2, 5)
<p>Cause This flag is set when the phone detects that it has reached the scheduled time to report. The scheduled time for the phone to report in to the computer is specified in the "Reporting Options" of the Options & Registers record used by the phone.</p> <p>Reporting Time The phone reports this flag to the computer two minutes after the flag is set. After successful communication with the computer, the flag is reset and the phone does not report in again. If communication is not successful, the phone attempts communication with the computer again in 2 hours, then 4 hours, then in 8 hours. If communication is successful at any of these points or if the phone is polled, the reporting attempts stop. If communication is not successful, the phone continues to try to report the flag every 8 hours until communication is successful.</p> <p>Corrective Action: N/A</p> <p>Resetting the Flag The computer resets this flag when successful communication occurs between the computer and the phone.</p>		

FLAG CODE (NE)	AUDIT CDR ERROR	VOICE CODE (2,6)
<p>Cause This flag is set if the phone detects an error in the calculated checksum for the audit CDR. Possible causes include electrical surges or low ni-cad or lithium battery voltages. This flag generally indicates that the stored cash box amount is invalid.</p> <p>Reporting Time The phone reports this flag to the computer two minutes after the flag is set. After a successful communication with the computer, the flag will be cleared. If the audit CDR error condition remains within the phone, the phone attempts communication with the computer again in 2 hours, then 4 hours, then in 8 hours until the error condition is corrected.</p> <p>Corrective Action If this flag reoccurs, have the service technician verify that the ground is properly connected and that the battery voltage levels are correct. If ground and battery voltages are good, label the chassis with NE, and replace the chassis assembly.</p> <p>Resetting the Flag Enter the program mode, dial 2, and then hang up. This flag is reset after successful communications with the computer.</p>		

FLAG CODE (CE)	BILLABLE CDR ERROR	VOICE CODE (2,7)
<p>Cause This flag is set if the phone detects an error in the calculated checksum for the store & forward billable CDR. Possible causes include electrical surges or low ni-cad or lithium battery voltages. This flag generally indicates that the stored cash box amount is invalid.</p> <p>Time The phone reports this flag to the computer two minutes after the flag is set. After a successful communication with the computer, the flag will be cleared. If the billable CDR error condition remains within the phone, the phone attempts communication with the computer again in 2 hours, then 4 hours, then in 8 hours until the error condition is corrected.</p> <p>Corrective Action If this flag reoccurs, have the service technician verify that the ground is properly connected and that the battery voltage levels are correct. If ground and battery voltages are good, label the chassis with CE, and replace the chassis assembly.</p> <p>Resetting the Flag Enter the program mode, dial 2, and then hang up. This flag is reset after successful communications with the computer.</p>		

FLAG CODE (LB)	LOW BATTERY	VOICE CODE (3, 0)
<p>Cause This flag is set if the phone detects that the ni-cad battery voltage in the phone is too low. If this condition occurs, the phone attempts to recharge the battery.</p> <p>Reporting Time The phone reports this flag to the computer two minutes after the flag is set. After successful communication with the computer, the flag is reset. If communication is not successful, the phone attempts communication with the computer again in 2 hours, then 4 hours, then in 8 hours. If communication is successful at any of these points or if the phone is polled, the reporting attempts stop. If communication is not successful, the phone continues to try to report the flag every 8 hours until communication is successful.</p> <p>Corrective Action If this flag is repeated, have the service tech verify that the battery voltage and line current are at proper levels.</p> <p>Resetting the Flag Enter program mode, press 2, and then hang up.</p>		

FLAG CODE (HO)	HANDSET OFFHOOK	VOICE CODE (3, 4)
<p>Cause This flag is set if the phone detects that the handset is off hook with no hookswitch activity for approximately 15 minutes.</p> <p>Reporting Time The phone reports this flag to the computer two minutes after the flag is set. After successful communication with the computer, the flag is cleared and the phone does not report this flag again even if the condition remains uncorrected. If communication is not successful, the phone attempts communication with the computer again in 2 hours, then 4 hours, then in 8 hours. If communication is successful at any of these points or if the phone is polled, the reporting attempts stop. If communication is not successful, the phone continues to try to report the flag every 8 hours until communication is successful.</p> <p>Corrective Action Make sure that the handset is hung up in the cradle. Verify proper operation of the hookswitch.</p> <p>Resetting the Flag This flag is reset when the phone goes on hook and the hookswitch is determined to be operating properly. Enter the program mode, press 2, and then hang up.</p>		

FLAG CODE (LA)	LOWER ALARM	VOICE CODE (3, 6)
<p>Cause This flag is set if the phone detects that the lower housing (coin box) door is removed or the inside vault switch is activated. This flag is in conjunction with the E\$ flag (Cash Box Emptied) flag.</p> <p>Reporting Time The phone reports this flag to the computer 2 minutes after the coin box is removed from the phone. After successful communication with the computer, the flag is reset and the phone does not report in again. If communication is not successful, the phone attempts communication with the computer again in 2 hours, then 4 hours, then in 8 hours. If communication is successful at any of these points or if the phone is polled, the reporting attempts stop. If communication is not successful, the phone continues to try to report the flag every 8 hours until communication is successful.</p> <p>Corrective Action: N/A</p> <p>Resetting the Flag The computer resets this flag when successful communication occurs between the computer and the phone.</p>		

FLAG CODE (HG)	HANDSET GONE	VOICE CODE (3, 7)
<p>Cause This flag is set if the phone detects improper resistance in the handset receiver. The handset may be missing or have defective/incorrect wiring.</p> <p>Reporting Time The phone reports this flag to the computer two minutes after the flag is set. After successful communication with the computer, the phone does not report in again, but the flag remains set until the condition is cleared. If communication is not successful, the phone attempts communication with the computer again in 2 hours, then 4 hours, then in 8 hours. If communication is successful at any of these points or if the phone is polled, the reporting attempts stop. If communication is not successful, the phone continues to try to report the flag every 8 hours until it is successful.</p> <p>Corrective Action Have the computer poll the phone approximately 8 hours after the alarm is reported. Check for an increase in the number of calls by checking the call counters. If there is no increase in the number of calls made from the phone, dispatch a service tech. Have the service tech check for a faulty handset and/or dial pad connection.</p> <p>Resetting the Flag This flag is reset when the phone detects that the handset is operating properly.</p>		

FLAG CODE (NF)	AUDIT CDR FULL	VOICE CODE (4, 0)
<p>Cause This flag is set if the phone reaches the maximum number of audit CDR that can be stored. Once the Audit CDR buffer has reached the maximum, the phone will overwrite call records beginning from the oldest record in the buffer.</p> <p>Reporting Time The phone reports this flag to the omputer two minutes after the flag is set. After a successful communication with the computer, the flag will be cleared. If communication with the computer is not successful, the phone reports in to the computer again in 2, 4 and 8 hours.</p> <p>Corrective Action Initiate a communication with the computer. If audit CDR is not retrieved by the computer, inform the computer operator to disable this flag in the options and registers file for the phone.</p> <p>Resetting the Flag Enter the program mode, dial 2, and then hang up. This flag is reset after successful communications with the computer.</p>		

FLAG CODE (BG)	BAD GROUND (Coin Line Phones Only!)	VOICE CODE (4, 4)
<p>Cause This flag is set if the phone fails to detect a refund or collect signal from the Central Office on four successive calls and has been forced to the auto default condition.</p> <p>Reporting Time The phone reports this flag to the computer two minutes after the flag is set. After successful communication with the computer, the flag is reset and the phone does not report in again. If communication is not successful, the phone attempts communication with the computer again in 2 hours, then 4 hours, then in 8 hours. If communication is successful at any of these points or if the phone is polled, the reporting attempts stop. If communication is not successful, the phone continues to try to report the flag every 8 hours until communication is successful.</p> <p>Corrective Action Dispatch a service tech. Have the service tech perform a coin ground diagnostic test (*4). Also verify that local and long distance coin calls are properly collecting and refunding coins.</p> <p>Resetting the Flag The flag is reset when the phone detects a good collect or refund signal from the C.O. or when the program mode is entered and a digit is pressed.</p>		

FLAG CODE (CR)	CLOCK RESET	VOICE CODE (4, 5)
<p>Cause This flag is set if the date and time setting in the phone has been reset due to a power-on reset condition. This condition can occur if the ni-cad or lithium battery supply voltage is low voltage.</p> <p>Reporting Time The phone reports this flag to the computer two minutes after the flag is set. After successful communication with the computer, the flag is reset and the phone does not report in again. If communication is not successful, the phone attempts communication with the computer again in 2 hours, then 4 hours, then in 8 hours. If communication is successful at any of these points or if the phone is polled, the reporting attempts stop. If communication is not successful, the phone continues to try to report the flag every 8 hours until communication is successful.</p> <p>Corrective Action If this flag occurs 8 times over a 30-day period dispatch a service tech. Have the service tech replace either the battery or the Chassis Assembly.</p> <p>Resetting the Flag The computer resets this flag when successful communication occurs with the phone.</p>		

FLAG CODE (EE)	EEPROM ERROR	VOICE CODE (4, 6)
<p>Cause This flag is set if the phone detects that the program stored in the downloadable chip in the phone is corrupt. If this situation occurs, the phone defaults to operating out of EPROM instead.</p> <p>Reporting Time The phone reports this flag to the computer two minutes after the flag is set. After successful communication with the computer, the flag is reset, and the phone does not report in again. If communication is not successful, the phone attempts communication with the computer again in 2 hours, then 4 hours, then in 8 hours. If communication is successful at any of these points or if the phone is polled, the reporting attempts stop. If communication is not successful, the phone continues to try to report the flag every 8 hours until communication is successful.</p> <p>Corrective Action Verify that the firmware installed at the phone matches the firmware specified in the site record used by the phone. If so, review a 30-day history of flags that were reported from the phone. If the EE flag was reported, dispatch a service tech to mark and replace the chassis assembly. If the firmware installed in the phone does not match the firmware specified in the site record, poll the phone and force a firmware download to the phone. If the firmware download is unsuccessful, dispatch a service tech. Have the service tech check for noisy phone line conditions or replace the chassis assembly.</p> <p>Resetting the Flag The flag is reset when the phone and the computer successfully communicate with each other.</p>		

FLAG CODE (TG)	TROUBLE GONE	VOICE CODE (4, 7)
<p>Cause This flag is set if the phone detects that a previously reported relay jam condition (RJ, RR, RC) is cleared.</p> <p>Reporting Time The phone reports this flag to the computer two minutes after the flag is set. After successful communication with the computer, the flag is reset and the phone does not report in again. If communication is not successful, the phone attempts communication with the computer again in 2 hours, then 4 hours, then in 8 hours. If communication is successful at any of these points or if the phone is polled, the reporting attempts stop. If communication is not successful, the phone continues to try to report the flag every 8 hours until communication is successful.</p> <p>Corrective Action: N/A</p> <p>Resetting the Flag The computer resets this flag when successful communication occurs between the computer and the phone.</p>		

FLAG CODE (OC)	OPTO COUPLER (Coin Line Phones Only!)	VOICE CODE (5, 0)
<p>Cause This flag is set if the phone detects a collect/refund signal immediately after coming off hook.</p> <p>Reporting Time The phone reports this flag to the computer two minutes after the flag is set. After successful communication with the computer, the flag is reset. If communication is not successful, the phone attempts communication with the computer again in 2 hours, then 4 hours, then in 8 hours. If communication is successful at any of these points or if the phone is polled, the reporting attempts stop. If communication is not successful, the phone continues to try to report the flag every 8 hours until communication is successful.</p> <p>Corrective Action Dispatch a service tech. Have the service tech replace the chassis assembly.</p> <p>Resetting the Flag The computer resets this flag when successful communication occurs between the computer and the phone.</p>		

FLAG CODE (BR)	BOX REMOVED	VOICE CODE (5, 1)
<p>Cause This flag is set if the phone detects that the coin box is removed from the phone during a time that is other than when the coin box removal window is active.</p> <p>Reporting Time The phone reports this flag to the computer two minutes after the flag is set. After successful communication with the computer, the phone does not report in again and the flag is reset. If communication is not successful, the phone attempts communication with the computer again in 2 hours, then 4 hours, then in 8 hours. If communication is successful at any of these points or if the phone is polled, the reporting attempts stop. If communication is not successful, the phone continues to try to report the flag every 8 hours until communication is successful.</p> <p>Corrective Action Monitor the phone to determine if the box is returned.</p> <p>Resetting the Flag The computer resets this flag when successful communication occurs with the phone.</p>		

FLAG CODE (RR)	RELAY REFUND	VOICE CODE (5, 2)
<p>Cause This flag is set if there have been six consecutive coin refund failures. A relay jam flag (RJ) may be reported in conjunction with this flag.</p> <p>Reporting Time The phone reports in to the computer two minutes after the flag is set. After successful communication with the computer, the alarm is cleared. The relay jam flag (RJ) reported along with this flag remains set until the condition is corrected. If communication is not successful, the phone attempts communication with the computer again in 2 hours, then 4 hours, then in 8 hours. If communication is successful at any of these points or if the phone is polled, the reporting attempts stop. If communication is not successful, the phone continues to try to report the flag every 8 hours until it is successful.</p> <p>Corrective Action Verify that there has been no "trouble gone" flag (TG) since the relay jam and relay refund flags were reported. If the condition still exists, dispatch a service tech immediately. Have the tech check for stuck coins, and proper relay function using diagnostic tests to thoroughly test the refund function.</p> <p>Resetting the Flag</p> <ul style="list-style-type: none"> * Enter the phone's program mode, press 2 and then hang up. * Clear the condition manually and perform complete diagnostic tests. * This flag is cleared if a successful refund and collect occurs. 		

FLAG CODE (RC)	RELAY COLLECT	VOICE CODE (5, 3)
<p>Cause This flag is set if there are six consecutive coin collection failures. A relay jam flag (RJ) may be reported along with this flag.</p> <p>Reporting Time The phone reports in to the computer two minutes after the flag is set. After successful communication with the computer, the phone does not report this flag to the computer again. The relay jam flag (RJ) reported along with this flag remains set until the condition is corrected. If communication is not successful, the phone attempts communication with the computer again in 2 hours, then 4 hours, then in 8 hours. If communication is successful at any of these points or if the phone is polled, the reporting attempts stop. If communication is not successful, the phone continues to try to report the flag every 8 hours until communication is successful.</p> <p>Corrective Action Verify that there has not been a "trouble gone" flag (TG) reported since the relay jam and relay collect flags were reported. If the condition still exists, dispatch a service tech immediately. Have the tech check for a faulty relay connection, stuck coins, and proper relay function using diagnostic tests to thoroughly test the collect function.</p> <p>Resetting the Flag Enter the phone's program mode, press 2 and then hang up. Clear the escrow relay and perform complete diagnostic tests. This flag is reset if a successful collect and refund occurs.</p>		

FLAG CODE (SN)	SERIAL NUMBER	VOICE CODE (5, 4)
<p>Cause This flag is set if the electronic serial number of an option board has changed or if a *#3 phone repair has been initiated at the telephone.</p> <p>Reporting Time The phone reports this flag to the computer two minutes after the flag is set. After a successful communication with the computer, the flag is reset and the phone does not report in again. If communication is not successful, the phone continues to try to report the flag every 8 hours until communication is successful.</p> <p>Corrective Action Initiate a communication with the computer.</p> <p>Resetting the Flag Enter the program mode, dial 2, and then hang up. The flag is reset after a successful communication with the computer.</p>		

FLAG CODE (BM)	BOX MISSING	VOICE CODE (5, 5)
<p>Cause This flag is set if the phone detects that the coin box has been missing from the phone for 15 minutes. This flag only occurs in phones that are equipped with a coin box alarm switch.</p> <p>Reporting Time The phone reports this flag to the computer two minutes after the flag is set. After successful communication with the computer, the phone does not report this flag again but the flag remains set. If communication is not successful, the phone attempts communication with the computer again in 2 hours, then 4 hours, then in 8 hours. If communication is successful at any of these points or if the phone is polled, the reporting attempts stop. If communication is not successful, the phone continues to try to report the flag every 8 hours until communication is successful.</p> <p>Corrective Action Dispatch a service tech. Have the tech replace the coin box or check for a faulty coin box alarm switch.</p> <p>Resetting the Flag Replace the coin box, the faulty switch or enter program mode, press 2, and then hang up.</p>		

FLAG CODE (DI)	DIAL INACTIVITY	VOICE CODE (5, 6)
<p>Cause This flag is set when the handset comes off hook "X" number of times without the call ever getting to the cut-through point (phone dials out and the transmitter/receiver turns on). The value of "X" is specified in the field labeled "Peg Coin/Inactivity" in the Options & Registers record used by the phone.</p> <p>Reporting Time The phone reports this flag to the computer two minutes after the dial inactivity counter reaches the specified value. After successful communication with the computer, the phone does not report in again, but the flag remains set until the condition is cleared. If communication is not successful, the phone attempts communication with the computer again in 2 hours, then 4 hours, then in 8 hours. If communication is successful at any of these points or if the phone is polled, the reporting attempts stop. If communication is not successful, the phone continues to try to report the flag every 8 hours until communication is successful.</p> <p>Corrective Action Have the computer poll the phone approximately 8 hours after the alarm is reported. Check for an increase in the number of calls by checking the call counters. If there is no increase in the number of calls made from the phone, dispatch a service tech. Have the tech test for proper keypad activity.</p> <p>Resetting the Flag This flag is reset when the phone dials a successfully completed call.</p>		

FLAG CODE (SU)	SIGNAL UNIT BAD	VOICE CODE (5, 7)
<p>Cause This flag is set if the phone detects a continuous signal from the coin signal unit (trigger switch). This indicates a defective signal unit or a stuck coin in the signal unit.</p> <p>Reporting Time The phone reports this flag to the computer two minutes after the flag is set. After a successful communication with the computer, the does not report this flag to the computer again. The flag will remain set until the condition is corrected. If the communication is not successful, the phone attempts communication with the computer again in 2 hours, then 4 hours, then in 8 hours. If communication is successful at any of these points or if the phone is polled, the reporting attempts stop. If communication is not successful, the phone continues to try to report the flag every 8 hours until communication is successful.</p> <p>Corrective Action Dispatch a service technician. Have the service technician perform the coin recognition diagnostic test on the phone. If the test fails, follow the procedures outlined in the Coin Recognition Diagnostic Test Fails flow chart.</p> <p>Resetting the Flag Enter the program mode, dial 2, and then hang up. The flag is reset if the condition is cleared.</p>		

Appendix J - Diagnostic Test Procedure

This appendix outlines a diagnostic test procedure for Flash 8000 payphones running CD8814 or higher version firmware. This procedure can be used to test for proper operation of the hardware components of the phone and should be performed during installation of the paystation, after the phone has been initialized.

- **Entering the diagnostic mode.** Enter program mode and then dial **[9]** (pause) **[0]** (pause) **[2]** (pause).
- **Exiting the diagnostic mode.** ...Dial **[*] [#]** to exit diagnostic mode. Three beeps are sounded in the handset.
- **Keypad Test** Each key press except **[*]** results in voice verification to handset.
- **Coin Recognition Test** Each coin deposit results in voice verification to handset.
- **Escrow Relay Test (Refund)** Deposit coin, dial **[*] [1]**, voice =“Refunding”, coin returns.
(Collect)..... Deposit coin, dial **[*] [2]**, coin is collected by phone.
(Failed)..... Two beeps sound in handset.
- **Alarm Switch Test** Coin box, vault door or upper housing removal result in tone to handset.
- **Loop Current Test** Dial **[*] [3]**, if tip/ring properly connected, Voice =“Thank You”.
(Failed)..... Warble tone in receiver = tip/ring are reversed or loop current from C.O. not detected by phone.
- **Coin Ground Test** Deposit coin, dial **[*] [4]**, money in escrow is collected or refunded.
(Failed)..... Two beeps sounded in handset.

ENTERING THE DIAGNOSTIC MODE

The phone must be in the diagnostic mode in order to perform any of the diagnostic tests. Use the procedure below to enter the diagnostic mode.

1. If necessary, open the phone's housing to gain access to the program button on the chassis assembly.
2. With the phone on hook, press and hold the program button.
3. While holding the program button, lift the receiver off hook.
4. Listen in the receiver for a single beep.
5. Release the program button.
6. Key in **[9]** (pause) **[0]** (pause) **[2]** (pause) to enter diagnostic mode. Note: If three beeps are sounded immediately after dialing the [9], the phone has not yet been initialized. Initialize the phone and then enter diagnostic mode.

KEYPAD TEST

- Press each key on the keypad and listen for the voice response acknowledging the key that is pressed. Shown below are the voice responses to be sounded in the handset. **Note:** The [*] key must not be pressed during this test as this will result in the phone exiting from the keypad test.

KEY PRESS	VOICE RESPONSE
1	ONE
2	TWO
3	THREE
4	FOUR
5	FIVE
6	SIX
7	SEVEN
8	EIGHT
9	NINE
0	ZERO
*	Do Not Press
#	TWELVE
Volume Button	THIRTEEN

COIN RECOGNITION TEST

This test checks to ensure that the phone is correctly identifying deposited coins.

- Deposit a **nickel** and listen for the following voice response in the handset: "FIVE CENTS"
- Deposit a **dime** and listen for the following voice response in the handset: "TEN CENTS"
- Deposit a **quarter** and listen for the following voice response in the handset: "TWENTY-FIVE CENTS"

ESCROW RELAY TEST

This test checks to ensure that the escrow relay collects and refunds deposited coins.

Refunding Coins

- Deposit a coin (nickel, dime or quarter).
- Press [*] [1] on the keypad.
- Phone should sound "REFUNDING" in the handset and the deposited coin should be refunded.

Note: If the escrow relay fails to operate correctly, two beeps will be sounded in the handset.

Collecting Coins

- Deposit a coin (nickel, dime or quarter).
- Press [*] [2] on the keypad.
- The deposited coin should be collected by the phone.

Note: If the escrow relay fails to operate correctly, two beeps will be sounded in the handset.

ALARM SWITCH TEST (Only applicable if alarm switch is installed)

This test checks to ensure that the coin box alarm switch and/or vault door alarm switch is operating correctly. During this test, if the coin box or vault door switch is activated, a tone should be sounded in the handset. Use the appropriate test(s) below to verify the operation of the alarm switches.

Coin Box Alarm Switch (If installed)

- Turn the lower housing lock to the unlock position.
- Turn the vault door T-wrench lock to the unlock position and then remove the vault door.
- While listening in the handset, remove the coin box from the vault.
- A bong tone should be heard in the handset.

Vault Door Alarm Switch (If installed)

- Turn the lower housing lock to the unlock position.
- While listening in the handset, turn the lock at the front of the vault door to the unlock position.
- A bong tone should be heard in the handset.

LOOP CURRENT TEST

This test checks to ensure that the phone is able to detect the presence of loop current.

- Press **[*] [3]** on the keypad.
- Phone should sound "THANK YOU" in the handset

Note: If a warble tone is heard in the handset, either tip and ring are reversed or the phone does Not detect loop current from the central office.

COIN GROUND TEST (Coin Line Only!)

This test is used to ensure that the phone detects refund signals from the central office. This test causes the phone to drop loop current, apply a coin ground and then look for a refund signal from the C.O.

- Deposit a coin (nickel, dime or quarter).
- Press **[*] [4]** on the keypad.
- Phone should sound "REFUNDING" in the handset and the deposited coin should be refunded.

Note 1: If the phone detects a refund signal from the C.O. but confirms a failure with the escrow relay to refund, two beeps will be heard in the handset.

Note 2: If the phone does not detect a refund signal from the C.O., the phone will enable loop current and sound the message "PLEASE WAIT" in the handset. The phone will then wait 1.5 seconds and automatically repeat the coin ground test. If the phone does not detect a refund signal for the second time, the phone will enable loop current and sound the following message in the handset: "ERROR".

If this situation occurs, tip, ring and ground should be verified for proper connection to the phone.

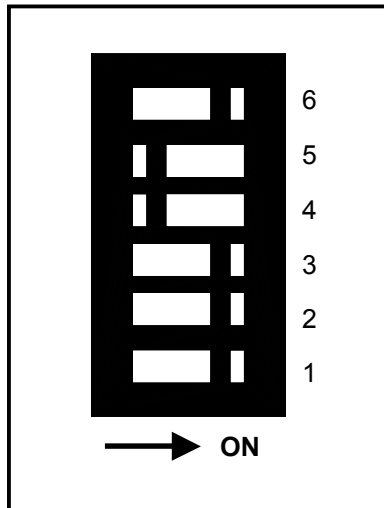
EXITING THE DIAGNOSTIC MODE

1. Press **[*] [#]** on the keypad.
2. Three beeps will be sounded in the handset, indicating exit from the diagnostic mode.

Appendix K - AT&T 22A & ATT 22B Switch Settings

Below are the switch settings for the AT&T 22A & ATT 22B Electronic Coin Validator. For proper operation of the phone, be sure to verify that the switch settings on the coin validator match those shown in the diagram below.

AT&T 22A & ATT 22B Electronic Coin Validator Switch Settings



Appendix L - Custom Calling Features

Note:

Custom calling features, such as call waiting and call forwarding may be indiscriminately supplied on B-1 phone lines. These features are activated by a hookswitch flash. Due to the nature of these features, the potential for problems or fraud exist.

To reduce the possibility of problems or fraud, it is recommended that the phone be tested for these features on your pay telephone lines. If a problem occurs, contact your telephone company immediately to have these custom calling features disabled.

Appendix M - Specifications

Electrical

Input Power.....	Line powered, loop start
Loop Current.....	18 ma to 90 ma
DC Resistance.....	400 ohms +/- 5% @ 20ma
Dialing.....	Dial pulse or DTMF
DTMF Power Level (LOW Group)	-10.5 dBm (min) into 600 ohms
DTMF Power Level (HIGH Group).....	-8.5 dBm (min) into 600 ohms
DTMF Power Level (per pair)	+1.0 dBm (max) into 600 ohms
DTMF Frequency Tolerance.....	±0.5% per frequency
DTMF Twist.....	<= 4 dB
Modem	1200 bit/s, DPSK generator, 8 data bits, 1 stop bits and no parity
Modem Transmit Level	-11dBm ±2 dB (per frequency)
Modem Receive Level	0 to -40 dBm (per frequency)
Coin Tone Frequencies.....	1700 and 2200 Hz ±1.5%
Coin Tone Power Level.....	-4 to -10 dBm into 600 ohms (per frequency)
Coin Tone Twist.....	< 3dB

Mechanical

Weight.....	1.25 lbs.
Housing Compatibility	Western Electric Housing Western Electric Panel-Phone Housing
Coin Validator Compatibility.....	AT&T 20A with 47A signaling unit AT&T 22A Electronic Coin Validator [See Note 1] AT&T 22B Electronic Coin Validator [See Note 1] MARS LVP 225 Coin Validator [See Note 1] MARS LPX 226 Coin Validator [See Note 1]
Dial Hookswitch Compatibility.....	AT&T 61A with 70A Keypad [See Note 2] AT&T 61B with 70B Keypad [See Note 2] AT&T 61C with 70C Keypad AT&T 61M1M with 70C Keypad [See Note 3] TSG 4000C Keypad TSG 4000CP Keypad TSG 4061 FM w/4000 CPM w/ 2559 IC (See Note 4) APC/FORSUM EMO-03 Rev D

Environmental

Temperature	-40° C to +70° C (Approximately -40° F to +158° F)
Humidity.....	0 to 95% relative, non-condensing

Software

Computer SoftwareExpressNet® Payphone Management Software
(required for communications between the
phone and a computer)

NOTE 1: The "Loop Current" may vary for coin mechanism types other than the AT&T 20A w/47A signaling unit. If using another coin mechanism type, consult the coin mechanism manufacturers specifications for the current requirements of the other coin mechanism. The current requirement will need to be added to the "Loop Current" specification shown above to determine the new Loop Current.

NOTE 2: The receiver wire at terminal #7 on the TB2 interconnect board must be moved to terminal #4 on the TB2 to bypass the receiver mute contact in the 61A and 61B units.

NOTE 3: The selection on the AT&T 61M1M must be in the "D SET" position.

NOTE 4: Mechanical interference has been found to exist with this dial/hookswitch in a panel phone configuration.