

ERNEST TELECOM

MODEL ETX

COIN OPERATED PAY TELEPHONE

OPERATIONS MANUAL

ORIGINAL FIRMWARE VERSION ETX 40.00

Use Telelink Payphone Management System Revision 2.61 or greater.

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WARNING

This pay phone should be operated on a COCOT telephone line only. Do not use on any other type business line. Please check with your local telephone company to be sure the line is a COCOT line. COCOT lines provide screening for collect and operator assisted calls. If the telephone company cannot provide call screening, contact Ernest Telecom Customer Service for assistance and advice.

NOTE: Ernest Telecom cannot support phones installed on a non-COCOT line.

This device complies with part 68 of FCC Rules and Regulations.

FCC Registration #: GYRUSA20356CXE
Ringer Equivalence #: 1.2

PRODUCT LIABILITY STATEMENT

Ernest Telecom pay phones are sophisticated microprocessor-based systems that must be installed, programmed, and maintained by experienced technicians in order to provide the reliable service expected. Proper personnel training and installation planning will assure a prompt, efficient installation as well as reliable long-term performance.

Ernest Telecom, in good faith and to the best of its abilities, has designed and tested this product for reliability and software integrity, but does not guarantee this product to be absolutely free of anomalies. In addition, Ernest Telecom does not guarantee the product operation amidst changes in the Network and Regulatory environments. **In no event will Ernest Telecom be liable to the Purchaser for any damages, including but not limited to any lost profits, lost savings, or other incidental or consequential damages arising out of the use or inability to use such program, even if Ernest Telecom or an Authorized Dealer has been advised of the possibility of such damages, or for any claim by any other party.**

You acknowledge that you have read this agreement, understand it, and agree through the acceptance of this product to be bound by its terms and conditions.

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SECTION 1 GENERAL

1-1 DESCRIPTION OF ETX, LINE-POWERED, PAYPHONE

This manual describes the features, operation, installation, programming, and field maintenance for the Model ETX Coin Operated Telephone. The ETX, and all other Ernest Telecom products are referred to as "smart" payphones. "Smart" technology simply means that the phone's answer-detect functions are controlled by a circuit board within the phone housing. On the other hand, there is such a term as "dumb" phones. "Dumb" technology means that all functions of the payphone are controlled by the Central Office (CO). It is important that the purchaser recognize that these pay phones are no different than any other sophisticated microprocessor-based system in that it must be installed, programmed, and maintained by experienced technicians in order to provide the reliable service expected. Proper personnel training and installation planning will assure a prompt, efficient installation as well as reliable, long-term performance.

1-2 A BRIEF TOUR OF THE MODEL ETX

The Model ETX Pay Phone is a full prepay coin operated telephone intended for use in a COCOT (Customer Owned Coin Operated Telephone) environment. The advanced microprocessor technology enables the phones to duplicate the intelligence and decision making formerly contained in a telco, an abbreviation for telephone company, central office. The ETX is housed in the industry-proven GTE 120B-style Coin Telephone case, secured from theft and vandalism due to its rugged all steel construction. **(Please note here that a phone consists of two major parts: the circuit board and the housing. Terms are often used interchangeably. Please do not be confused when manual refers to circuit boards, or housings, or phones.)** Rate tables are incorporated for call costing in the U.S., Alaska, Hawaii, Canada, Puerto Rico, the Virgin Islands, and the Dominican Republic. Programming flexibility is maintained through the use of keypad options. (See Programming the Payphone.) Rate and programming information may be downloaded via the internal 1200 baud modem. The ETX is intended to be connected to a COCOT telephone line and is powered solely from the telephone line. No external power is required.

NOTE: All references to the optional LCD pertain to the portable, plug-in display that permits manual programming and trouble-shooting in the field.

1-3 SYSTEM OPERATION

The Model ETX is a full prepay phone, meaning that all coins required to initiate a call must be deposited before the call can be placed. (Except free calls) **Please see Appendix B for illustration.**

When the handset is taken Off-Hook, the actual C.O.-generated dial tone is heard in the earpiece. (In other Ernest Telecom products, the dialtone is generated by the circuit board. This is important when you are trouble-shooting a problem, and may be familiar with the operation of a Ernest Telecom D-1.)

The caller enters the desired phone number using the keypad, hearing the associated tones as each key is depressed.

The phone stores the number dialed in memory.

The number is analyzed and the call cost determined from the rate table file contained in the phone. A high-quality, digitally-recorded voice requests the required amount for the call. The optional display will show the actual cost and the amount received. Every 5 seconds, the voice will repeat the remaining amount to be deposited.

The phone detects the coins deposited by scanning the three coin switches.

When the correct amount has been deposited, the phone number, which has been held in memory, is speed-dialed out.

The microprocessor then monitors the phone line to determine if the line has been answered. If an answer is detected, the call cost timer is started and the microphone in the handset, which has been off during this process, is unmuted.

If the phone detects a busy signal, the payphone refunds the coinage. If the caller does not hang up during six (6) busy signal cycles, the phone will automatically hang up and refund the coinage.

The phone also recognizes "Special Information Tones", which precede recorded intercept messages. When these signals are detected, the coinage is refunded upon returning On-Hook.

On calls that require additional coinage for additional time, the amount is quoted by the speech synthesizer at 30 seconds and 15 seconds before the call is disconnected.

The coinage is collected into the coin box from the escrow chamber, which holds the coins until a "Collect" or "Return" decision has been made, at the conclusion of a valid call.

1-4 SPECIFICATIONS

Paystation Case:	GTE Model 120B-Style
Size:	21 x 7.625 x 6 inches
Weight:	44 lbs.
F.C.C. Registration:	GYRUSA20356CXE
Ringer Equivalence #:	1.2
Power Source:	Telephone line powered Battery-backed memory and real-time clock
Battery Type:	Lithium, 3.0 volt coin cell
Battery Life:	10 years
Line Interface:	Terminal strip connections internal to the phone.
Telco Line Type:	COCOT, Loop Start
Telco On-Hook Voltage:	42 to 56 volts
Telco Loop Impedance:	400 to 1750 ohms
Telco Loop Current:	20 mA to 90 mA
Telco Loop Supervision:	Dial Tone Busy Tone Ringback Tone Special Information Tones Reorder Tones Incoming Ring Voice
Sensitivity:	-40 dbm to 0 dbm
Coin Acceptance:	(U.S.) Nickel, Dime, Quarter

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Coin Relay Output:	12 VDC, 48V option
Voice Message:	Digitally Recorded Female Voice (English), Spanish and French option
Display (Optional):	LCD 2 line X 16 characters, 2 X 20 option
Rate Table:	Based upon Area Code (NPA) and Prefix (NXX). Stored in a remotely downloadable Flash chip. Rates specified to Continental U.S., Alaska, Hawaii, Canada, Puerto Rico, and the Virgin Islands.
Temperature:	-40 to +85 deg. C.
Humidity:	0% to 95% RH Non-condensing
Touch Tone	Slow = 150 milliseconds
Output Speed:	Fast = 75 milliseconds

This product is Hearing Aid Compatible (HAC) per Section 68.316, F.C.C. Rules and Regulations.

Note: These Specifications are subject to change without notice.

SECTION 2 INSTALLATION

2-1 UNPACKING AND INSPECTION

- a. The Model ETX phone is fully tested and quality inspected before shipment. The circuit board is rigidly mounted to a back plate for ease of installation and removal from the phone case.
- b. The phone is shipped from the factory in a single cardboard case. Upon receipt, examine the case for any signs of damage. Carefully unpack the payphone and inspect it for any signs of damage. Verify that all standard accessories have been received. (Standard accessories should include instruction cards, plastic inserts, upper and lower lock keys.)
- c. Report any damages or shortages to the carrier and Ernest Telecom. Save the packing case and packing materials for possible reshipment. Using other packaging may not provide adequate protection against damage during shipment and could void the warranty.

2-2 INSTALLATION PLANNING **See Appendix C for Illustration**

Do not run any AC power through the same cable as the telco line. Avoid long parallel runs of power and telco lines which may induce hum into the telco line. The telco line should not be routed in close proximity to cables powering fluorescent lighting and other inductive loads.

After the phone line has been run, check it using a lineman's handset for hum or static. If hum or static is detected, disconnect the run from the demarcation block, the point at which the telephone line meets the telephone company block, and check for hum or static at the block.

If it is still detected, contact the telephone company for service on that line. If the hum or static is not present at the block, the phone wiring to the pay phone may need to be rerouted. Also, the phone line could be defective, requiring another run to be made.

Hum or static resulting from a poor installation will severely degrade the long term performance of the payphone.

NOTE: Using an extension phone on the same line as the payphone is not recommended or supported by Ernest Telecom. Operation of the ETX is not possible when another phone is Off-Hook on the same line.

2-3 TELCO WIRING

- a. It is assumed that the telco line has been activated prior to the installation.
- b. Determine the amount of wire and other materials needed for the telco hookup.

2-4 MOUNTING PREPARATION

See Appendix D for Illustration

NOTE: In order to assure correct operation of the coin rejecter mechanism, the mounting surface for the paystation must be vertical to within 1 1/2 degrees in any direction.

- a. To verify a vertical surface: Place a spirit level vertically against the mounting surface with the top end of the level at the required height of the telephone. Move the top or bottom end of the level away from the mounting surface as required to obtain a vertical reading. When the reading is obtained, the end of the level opposite the point of contact should be no further from the mounting surface than the distances shown below:

<u>Spirit Level Length (inches)</u>	<u>Distance (inches)</u>
18	15/32
24	5/8
30	25/32
36	15/16

- b. The mounting surface must be flat and free of peaks and valleys which create gaps large enough to allow the telephone or the backboard to be pried loose. The mounting surface should be strong enough to support the paystation and the backboard. (50 pounds)
- c. Route the power and telco wiring through the hole in the center of the backboard that will align with the grommet wire opening in the back of the telephone case. (If backboard is used.)

2-5 PAYSTATION MOUNTING

CAUTION: THE PRINTED CIRCUIT BOARD CONTAINS STATIC SENSITIVE COMPONENTS. A STATIC BRACELET SHOULD BE WORN AND CONNECTED TO A KNOWN GROUND POINT.

- a. Place the key in the upper housing and turn it counter-clockwise. Place the "T" wrench in the slot of the telephone case upper housing and turn one quarter turn clockwise. Carefully

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grasp the upper housing with both hands and slide it slowly forward to remove it. Disconnect the keypad cable, if connected.

- b. Using the lower lock key, unlock the coin vault. Insert the "T" wrench in the slot in the vault cover and turn one quarter turn clockwise and remove vault cover and cash box to expose mounting holes.
- c. Remove the screw holding the coin chute and pull the chute from the phone. Loosen the large screw holding the coin acceptor at the top of the case and remove the acceptor.
- d. If circuit board is installed, remove all connections and completely loosen the single nut which holds the pcb back plate in place. Remove the back plate by moving it out and upward to clear it of its upper retaining slot in the case.
- e. Install and tighten the four security studs in the threaded holes on the back of the telephone case. Lift the paystation and align it with the backboard. Run the power and telco lines from the backboard through the hole with the grommet in the phone case. Position the security studs over the key slots in the backboard and allow the paystation to slide down in place.
- f. Install and tighten four 1/4-20 x 1/2 machine screws at the rear of the cash vault.
- g. Insure that there is enough wire to reach the terminal block on the printed circuit board after it is secured in place.

2-6 WIRING CONNECTIONS

2-6.1 CONNECTING THE TELCO LINE AND GROUND (See Appendix B)

- a. Connect the telco line red wire (ring) to screw terminal L1 and the green wire (tip) to terminal L2 of the terminal strip.

NOTE: The line connector on the PC board is not polarized. It can be connected either way because circuitry on the board automatically takes care of line polarity (See Glossary for Definition).

- b. Connect earth ground to screw terminal "G" of the terminal strip. The ideal ground is a minimum 6 foot copper plated rod driven into the earth near the payphone site. Using a 12 AWG or larger wire from the ground rod to the booth and from the booth to the Terminal strip in the phone case (Terminal "G"). A solid ground will help to protect the phone from static discharge, lightening and radio frequency interference and provide a path for long term reliable operation.

2-6.2 INSTALLATION OF THE BELL

The bell is mounted to the threaded standoff, located at the bottom of the circuit board, by the screw and lockwasher provided. Position the bell so that its wires are oriented toward the side of the case and secure to the standoff by the uppermost mounting tab. Make sure that the bell is positioned midway between the case wall and the bottom part of the coin chute before tightening the mounting screw.

2-6.3 INSTALLATION OF THE CIRCUIT BOARD

See Appendix E for Illustration

- a. Locate the 1/4-20 stud about half way down in the case. Remove one of the hex nuts and retain to mount the PCB back plate.
- b. Locate the 1" long slot on the inside of the case about 1/2" from the top and 1" from the left side.
- c. Placing the PCB in the case at an angle, hook the back plate into the slot and allow the threaded stud to protrude through the hole at the bottom of the back plate. Secure the back plate with the nut removed in step a.

2-6.4 CONNECTING THE PRINTED CIRCUIT BOARD

NOTE: Use the enclosed circuit board drawing (Appendix E) to locate the following connectors. These connectors fit easily in one direction only. **DO NOT FORCE!**

- a. Locate header JP3 (3-pin) near the bottom of the circuit board (See Diagram on page). Plug the connector from the **COIN RELAY** cable onto this header with the white wire on the right. The slots in the connector body will face downward.
- b. Locate header JP1 (4-pin) on the right side of the circuit board. Plug the connector from the **COIN SWITCHES** onto this header with the green wire on top. The slots in the connector body will be to the right.
- c. Locate connector JP4 (14-pin) near the left center of the circuit board. Connect the ribbon cable coming from the **LCD DISPLAY**. (The display is only used for programming.)
- d. Locate the DB15 **KEYPAD** connector beneath the LCD connector on the circuit board. Connect the ribbon cable coming from the **KEYPAD ASSEMBLY** onto this connector. It will go on only one way.

- e. Locate the **TELCO** header JP2 at the bottom left side of the circuit board. Connect the mating connector coming from the telco terminal strip in the bottom of the phone case.
- f. Locate the **BELL** header JP5 next to the TELCO connector on the circuit board. Connect the mating connector coming from the bell.

2-7 COIN BOX INSTALLATION

Before reinstalling the coin box into the phone, the trap door mechanism in the lid must be reset. Insert a flat blade screwdriver into the slot on the underside of the lid and rotate one quarter turn clockwise. The box will not go back into the phone unless this is accomplished.

The ring through the tab allows the use of a seal to insure that the box has not been entered. This is beneficial in situations where those responsible for collecting the boxes do not count the actual coins.

2-8 INSTALLATION TESTS

2-8.1 INSTALLATION CHECKLIST

Before going Off-Hook for the first time, check to see that all of the following items have been accomplished:

- a. Earth ground connected to terminal #2.
- b. Telco line is connected and dial tone is present at the terminal block (terminals #1 and #3) in the phone.
- c. The circuit board backplate has been secured with the 1/4-20 hex nut.
- d. The keypad assembly is connected.
- e. The coin switch is connected.
- f. The coin relay is connected.
- g. The optional LCD is connected (if to be used for programming).
- h. The coin relay dust cover is in place and intact.
- i. The coin switch dust cover is in place and intact.
- j. The bell is connected.

- k. The RUN/PROGRAM switch on the circuit board is in the RUN mode.

2-8.2 HOOKSWITCH TEST

1. With the handset Off-Hook, the display should read:

DIAL NUMBER

2-8.3 KEYPAD TEST

1. Go off hook and dial "12034567890*#". Verify that these digits appear on the display and that tones are heard for each of these keys.

2-8.4 COIN RELAY TEST

1. With the handset Off-Hook, deposit at least 8 quarters. (This puts proper weight in escrow chamber)
2. Go back On-Hook and verify that the coins are **RETURNED**.
3. Repeat steps 1 & 2 several times and verify that the coin relay operation is consistent.

NOTE: This test must be completed within 30 seconds or the phone will hang up and return the coins.

4. With the handset Off-Hook, deposit at least (8) quarters and dial a valid local number (weather or time,etc.). Allow the phone to dial out and measure the time that passes between the microphone being unmuted and the appearance of the "*** THANK YOU ***" message on the display. This time period should be between 9 and 12 seconds. If it is not, contact Ernest Telecom Customer Service. After the "THANK YOU" message appears, hang up the phone and verify that the phone **COLLECTS** the coins into the coin box. Also verify that the cash box and cumulative counters both increment by the amount of money deposited.
5. Repeat step #4 several times and verify that the coin relay operation is consistent.

2-8.5 COIN SWITCH TEST

1. With the handset Off-Hook, dial a long distance number.
2. Wait a few seconds and the top line of the display will read:

"DEPOSIT \$XX.XX"

and the second line will read:

"RECEIVED \$00.00".

3. Deposit a nickel, a dime, and a quarter and verify that the second line of the display reads:

"RECEIVED \$00.40".

2-8.6 MICROPHONE TEST

1. Dial a valid local number and, after the phone dials out, push any key four times and verify that the microphone unmutes and your voice can be heard in the earpiece.

2-8.7 USER INSTRUCTIONS

Payphones should be marked, or accompanied by a prominent notice giving users of the payphone the information, in English, as follows:

1. Operator Access- Where any access to operator services (including Directory available must be clearly shown.
2. Coin Return- It must be clearly shown that coins will only be returned when call is not connected, and that unused coins will be kept.
3. Minimum Payment- The minimum payment required to connect a call must be clearly shown.
4. Method of Payment- The coin denominations and any other method of payment, e.g. credit cards, accepted by the instrument as payment for a call must be clearly shown.
5. Address of Payphone- To assist the making of emergency calls the full postal address of the payphone must be clearly indicated adjacent to where the payphone is installed.
6. Complaints- The identity of the person to be contacted in case of user complaint must be clearly shown.

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7. Basis of Charging- An explanation of charges for calls made from the payphone should be clearly shown, related to either a PTO unit cost, or the amount of time purchased at standard rate for a specified denomination for both (a) local, and (b) national calls. (National calls are those routes over 56 km or 35 miles.)
8. Emergency Calls- Where a payphone is connected to a direct exchange line, it must be stated that access to the emergency services by way of 911 calls can be made without the proffering of any fee, card or other relevant token. Where a payphone is connected to a PABX extension the appropriate means for making an emergency call on that system must be stated.
9. Extension Telephones- A clear warning must be shown where there is an extension telephone on apparatus which might affect the privacy of a conversation on the payphone.
10. Incoming Calls- An indication of whether the payphone will accept incoming calls.

SECTION 3 PROGRAMMING

3-1 GENERAL

The many features of the Model ETX phone are determined by a series of functions which can be programmed either manually (on a work-bench or in the field) or through a computer. Some functions can even be entered through another telephone. Computer downloading is explained in Section 4.

3-2 PREPARATION FOR MANUAL PROGRAMMING

The following equipment is required:

- Upper Housing Key
- "T" wrench
- LCD Display
- Upper Housing Hinge (optional)

CAUTION: THE PRINTED CIRCUIT BOARD CONTAINS STATIC SENSITIVE COMPONENTS. A STATIC BRACELET SHOULD BE WORN AND CONNECTED TO THE TELEPHONE CASE GROUND!!!

Note: Take some uninterrupted time to learn how to Program the pay phone before installation.

- a. It is necessary to remove the upper housing cover to access the circuit board in order to alter the programmable options.
- b. Unlock the upper housing using the upper housing key and a "T" wrench. Remove the housing and install the hinge, if used, for easy circuit board access. Connect the LCD display ribbon cable to the circuit board, observing proper orientation.
- c. To set or change programmable options, the phone must be in what is called "Program Mode". This is done by moving the slide on switch SW1 to the "right" position, and then going Off Hook. The switch is located about half-way up on the right side of the board. The phone is shipped, and normally used, with SW1 in the "Operate," or left position. When SW1 is set to the "Program" position, and the phone taken Off-Hook, the display will show:

* PROGRAM MODE *

3-2.1 MANUAL PROGRAMMING

Viewing the programmable values on the LCD display is accomplished by pressing the "#" key. The display will show:

DISPLAY OPTION
NUMBER XX

Push the two digits associated with the particular function of interest. See the following listing for functions.

Changing the values is done by pressing the "*" key. The display will show:

PROGRAM OPTION
NUMBER XX

Push the two function digits. Once a function is selected, values are entered from the keypad as prompted by the cursor on the LCD display.

NOTE: Costs are entered in cents to the nearest nickel.

3-3 PROGRAMMABLE FUNCTION TABLE

The circuit board shipped from the factory has been pre-programmed with a set of standard options. You will need to familiarize yourself with the Programmable Functions. Section 3-4 offers a description of each programmable feature. Below is a Quick Reference Chart to assist you once you become adept at programming.

The table below shows:

- a. The function number in the left column.
- b. What the display will show in the middle column.

QUICK REFERENCE

FUNCTION

DISPLAY

00	CLOCK AND CALENDAR
01	I. D. NUMBER
02 a	CALLBACK NUMBER
b	CALLBACK METHOD
03	REFUND NMBR. 211
04	REPAIR NMBR. 611
05	MAXIMUM \$ AMOUNT
06	VARIABLE RATES = X 0=Fixed Daytime Rates 1=Enable Variable Rates (Night/Weekend)
07 a	D.A. CHG.= \$00.XX
b	ALTERNATE D.A. NUMBER
08	D.A. CHG.= \$00.XX FOR 555-1212

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- 09 D.A. CHG.= \$00.XX
FOR XXX-555-1212
- 10 a LOCAL DELAY= XX S
- b LONG DISTANCE DELAY
- 11 ATK. DLY.=0.XX S
- 12 GRACE PRD. = XX S
- 13 a WINK DURATION
- b WINK DELAY
- 14 311 EMERGENCY NUMBER
- 15 a PBX OPTION = X
"0" Disables
"1" allows
- b PBX NUMBER
Programs Outside Line
- 16 a OPERATOR BLOCK = X
"0" Allows, "1" Denies
- b TOUCH OR PULSE = X
"0" Tone, "1" Pulse Dialing
- 17 COIN BOX TOTAL
- 18 CUMULATIVE TOTAL
- 19 a MAX OUT RINGS= XX
- b MAX IN RINGS= XX
- c POLLING WINDOW
- d FROM: XX TO XX
- 20 XXX-XXX-XXXX X
Customized Special Numbers

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- 21 SPEED DIAL # 0
- 22 SPEED DIAL # 1
X-XXX-XXX-XXXX
- 23 SPEED DIAL # 2
X-XXX-XXX-XXXX
- 24 SPEED DIAL # 3
X-XXX-XXX-XXXX
- 25 SPEED DIAL # 4
X-XXX-XXX-XXXX
- 26 SPEED DIAL # 5
X-XXX-XXX-XXXX
- 27 SPEED DIAL # 6
X-XXX-XXX-XXXX
- 28 SPEED DIAL # 7
X-XXX-XXX-XXXX
- 29 SPEED DIAL # 8
X-XXX-XXX-XXXX
- 30 SPEED DIAL # 9
X-XXX-XXX-XXXX
- 31 a MINIMUM NUMBER
Inactivity Call
- b CALLBACK PERIOD START
- c CALLBACK PERIOD END
- 32 LCL. CALLS = XXXX Count
- 33 L.D. CALLS = XXXX Count
- 34 0-,0+ CALLS = XXXX Count
- 35 D.A. CALLS = XXXX Count

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- 36 PRECEDE NON LOCAL
Adds '1' to Numbers
- 37 DTMF SPEED = X
0=FAST 1=SLOW
- 38 a LOCAL SWT/OCC CODE #
 - b INTRALATA SWT/OCC CODE #
 - c INTERLATA SWT/OCC CODE #
 - d INTERSTATE SWT/OCC CODE #
 - e INTERNATIONAL SWT/OCC CODE #
 - f CALLBACK SWT/OCC CODE #
 - g OCC CODE #1 NUMBER
 - h OCC CODE #2 NUMBER
 - i SWITCHED SERVICE CODE #3 NUMBER
 - j SWITCHED SERVICE CODE #3 ID
 - k SWITCHED SERVICE CODE #4 NUMBER
 - l SWITCHED SERVICE CODE #4 ID
 - m ADD HOME NPA IF SWT/OCC
- 39 CALL AFTER CASH BOX COLLECTED
- 40a CALL WHEN COIN SWITCH JAMMED
 - b COIN JAM THRESHOLD
- 41 LOCATION PHONE #
- 42 ADD # TO 0- CALLS

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43 a	LOCAL SCRIPT
b	INTRALATA SCRIPT
c	INTERLATA SCRIPT
d	INTERSTATE SCRIPT
e	0- SCRIPT
f	INTERNATIONAL SCRIPT
g	00 SCRIPT
h	1 + CREDIT CARD SCRIPT
i	0 + CREDIT CARD SCRIPT
j	611 SCRIPT
k	DIRECTORY ASSISTANCE SCRIPT
l	1010288 SPLASHBACK
m	0 + CREDIT CARD TIME
47	OPEN KEYPAD TIME
48 a	LOCAL INITIAL AMT.
b	LOCAL INITIAL TIME
c	LOCAL SECOND AMT.
d	LOCAL SECOND TIME
49	OPER MSG. COUNT (0-5)
50	ADD HOME NPA
52 a	211 OPER REFUNDS ON Instant Refund Option
b	RFND CALLS=XXXX

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c	INSTANT REFUND COUNTER \$0000.00
d	211 CALL TIMER
56	FOREIGN NPA 7-DIGITS
61a	AMERICAN EXPRESS
b	MASTER CARD
c	VISA
d	DISCOVER CARD
62a	INTERDIGIT TIME OUTGOING
b	DIALING TIMER #1
c	DIALING TIMER #2
d	PREDIAL DIGITS
63a	DELAYED DIALING ALL
b	DELAYED DIALING INTERNATIONAL
65 a	ENABLE SMDR
b	SMDR ON LOCAL CALLS
66a	INCOMMING FREE TIME
b	INCOMMING 2 ND PERIOD AMOUNT
c	INCOMMING 2 ND PERIOD TIME
67a	10 DGT OVERRIDE 1 ST AMOUNT
b	10 DGT OVERRIDE 1 ST PERIOD
c	10 DGT OVERRIDE 2 ND AMOUNT

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d	10 DGT OVERRIDE 2 ND PERIOD
68a	CALL BLOCKING DIGITS
b	CALL BLOCKING DELAY
c	CALL BLOCKING PIN
d	SEND PIN ON LD ONLY
72 a	ENABLE 10102880+
b	ENABLE 101XXXX0+
73a	7 DGT OVERRIDE 1 ST AMOUNT
b	7 DGT OVERRIDE 1 ST PERIOD
c	7 DGT OVERRIDE 2 ND AMOUNT
d	7 DGT OVERRIDE 2 ND PERIOD
e	7-DIGIT DEFAULT
74 a	1+ OVERRIDE 1ST AMT.
b	1+ OVERRIDE 1ST TIME
c	1+ OVERRIDE 2ND AMT.
d	1+ OVERRIDE 2ND TIME
e	INTRALATA OVERRIDE
75a	VOICE BRANDING
b	ALLOW SPANISH
c	ALLOW FRENCH
d	DEFAULT LANGUAGE
76a	VOLUME CONTROL = “#”

98a	NI-CAD BATTERY
b	AC ADAPTOR MODE
c	4 TH COLUMN KEYPAD
d	DISPLAY TYPE
e	ELECTRONIC COIN MECH
f	BOARD SERIAL NUMBER
99	FIRMWARE VERSION

To end the programming sequence, return SW1 to the left or RUN position.

3-4 FUNCTION DESCRIPTIONS

FUNCTION 00 Time of Day and Calendar

This function allows setting the day of week (Sunday = 1, Monday = 2, etc.), date (e.g. 01-07-93), and military time (e.g. 13:15:30). Clock and calendar determine time-of-day and holiday discounts on holiday rates.

FUNCTION 01 Phone ID Number

This is a 6-digit number assignable by the owner to identify a particular phone. This function is useful when a paystation calls in, either to a computer or a regular phone, to report a problem. Example: ID Number 123456 reports box full. You know that ID Number 123456 is located at Buddy's Gas Station on Smith Street.

FUNCTION 02 Callback Phone Number

The callback function allows a paystation to report an error code by dialing an assigned number. The phone number for the callback option is in the format of an 11-digit long distance number. To call 7 or 8 digit numbers, replace the unused digits with a "*" or a "#" as shown in the following examples:

- a. Local call *-***-234-5678 or #-###-234-5678. * and # act as "wild digits."

b. Non local, same area code and a "1" must be dialed. 1-***-234-5678 or 1-###-234-5678.

c. Different area code. 1-211-234-5678

Entering 0-000-000-0000 defeats the callback function.

Option 2 of this function allows selecting the synthesized voice or a digital transmission via the built-in modem. The modem transmission must be received by a computer modem for storage or direct printing of the message. Enter 0 for voice transmission or 1 for digital transmission.

FUNCTION 03 Refund Number 211

A refund call occurs when a phone has "eaten" a customer's money. The phone number for refund calls is entered in this function. If the call is a local call, use wild digits (* or #) as needed to fill the unused digits. The examples given in the preceding function also apply to the refund number. If all zeros are entered into the number, 211 calls are disabled. If a disabled 211 is dialed, the voice will say:

"Your call is invalid. Please hang up and try again."

FUNCTION 04 Repair Number 611

If a customer tries to use a paystation that seems to be broken, he/she may try to contact someone to report the problem. The phone number to be called for repair service is entered in this function. If the call is a local call, use wild digits (* or #) as needed to fill the number. In some states, 611 is a public service number for any phone line repair call. If it is needed, enter *-***-611-1111. To block this number, enter all zeros. If 611 is dialed the voice will say:

"Your call is invalid. Please hang up and try again."

FUNCTION 05 MAX. \$XXXX.XX

The MAX. \$XXXX.XX = is the maximum dollar limit of the coin box total at which the phone will call the number programmed in function 02 and inform the owner that collection is necessary. To defeat this feature, program in \$0000.00. The coin box holds approximately \$175.00. If more than that amount accumulates a coin jam could result.

FUNCTION 06 VARIABLE RATES

The VARIABLE RATES function allows the owner to fix all rates to daytime rates by programming "0", or allow discounted rates for nights, weekends, and holidays by programming a "1" into this location. The phone uses the calendar clock to make these determinations. By fixing daytime rates, the potential for increased 1+ revenue exists.

NOTE: Some states' tariffs require the discounted rates for nights, weekends, and holidays.

FUNCTIONS 07, 08, 09 Directory Assistance Charges

Directory assistance charges are programmed under three functions:

- (a) 411 charges (Function 07)
- (b) 555-1212 charges (Function 08)
- (c) XXX-555-1212 charges (Function 09).

For function 07, the display will show:

D.A. CHG = 00.XX
FOR 411

Enter the amount to be charged. If 411 is to be free, enter 00. If 411 is to be blocked, enter ## or ** . If 411 is not blocked, the display will show:

ALTERNATE 411 NBR.
X-XXX-XXX-XXXX

Enter 411***** to have the phone dial 411 for these calls. The display will show:

ALTERNATE 411 NBR.
4-11*_*_*_*_*_*_*_*_*_*

If you want the phone to dial an alternate number when 411 is entered at the keypad, enter the number using * for unneeded digits (e.g. * *** 455 4848).

Functions 08 and 09 allow for different charges for these types of directory calls. Enter values in the same manner as for Function 07.

NOTE: If different area codes require different Directory Assistance rates use the CSN's for the special case. In some area codes a "1" must be dialed before 411 or 555-1212. The phone will handle all 1 + directory assistance calls. These calls can be

blocked by entering ** or ## for the charge amount. 411 cannot be implemented in the CSN Table.

FUNCTION 10A LOCAL DELAY

This value differs depending upon the type of central office to which the paystation is connected.

Typical settings:

Crossbar: 04 SECONDS

ESS: 00 SECONDS

This value delays answer detection after the number has been dialed out to the central office to avoid the possibility of false detection due to line switching clicks. Most central offices operate up-to-date equipment thereby eliminating the need to utilize this function. Set at "00", or contact Ernest Telecom for more information.

FUNCTION 10B LONG DELAY

This value is similar in function to the Local Delay but is not a function of the local central office. It is active only when long distance calls are dialed. The range is 00 to 25 seconds. (Value outside this range will default to 00 seconds.) Improper setting of the local and long delays will cause an obvious delay in the microphone being unmuted. As mentioned in Function 10A, the central office's equipment usually negates the use of this function.

Set to "00".

FUNCTION 11 ATK. DCY. (Attack Decay Delay)

This option provides a way of varying the answer detection sensitivity for a particular location. Occasionally, the phone will not detect an answer on the other end. Lowering this value increases the detection sensitivity. The phone will make the decision to collect the money more quickly at lower settings. The phone's program checks to see if this delay is less than .01 second or more than .13 second. If it is, the default value of .08 will automatically be entered.

A typical setting is .07 seconds.

NOTE: For most locations the typical settings will prove to be most satisfactory for answer detection. It should only be necessary to change these values for extreme problem locations. The Attack and Decay delays should be set at the same values. Consult Ernest Telecom Customer Service for additional assistance.

FUNCTION 12 GRACE PRD.

A "Grace Period" is provided after the collection decision is made to allow the caller to go back on-hook and have the money refunded. This is useful in areas where there are recorded messages by the phone company which are not preceded by "Special Information Tones". A typical setting is 10 seconds. The maximum setting is 25 seconds.

CAUTION: IF THIS VALUE IS MADE TOO LARGE, IT WILL ALLOW THE CALLER TO PLACE A FREE CALL IN THIS PERIOD OF TIME.

FUNCTION 13A WINK DURATION

In most areas of the country, the telephone company transmits "winks" on the phone line for different signaling purposes (See Glossary for definition). This setting tells the phone that if the duration of the wink on the line is less than the amount of time allowed, the wink is to be ignored. The recommended setting is 07 milliseconds.

FUNCTION 13B WINK DELAY

The telephone company may transmit several "wink" signals at the beginning of a call which need to be ignored. This is accomplished using the Wink Delay setting. The suggested setting is 15 seconds. The phone will then ignore winks during the first 15 seconds of a call.

FUNCTION 14 311 Emergency #

This option allows the phone to dial out any number when 311 is dialed at the phone. 311 is an emergency number used in some areas of the country just like 911.

FUNCTION 15 PBX Operation

On occasion, it is necessary to operate the paystation on a PBX system. A PBX requires that a single digit (usually a 9) be dialed to get a second dial tone to access an outside line. A "1" entered into the PBX OPTION location allows the programming of this single access digit. A "0" in PBX OPTION will disable this feature.

NOTE: For most applications this feature will be disabled. Installing a pay phone behind a PBX system will only allow outgoing calls. Incoming calls must be routed to the pay phone through the PBX operator. Some states do not allow installing a pay phone behind a PBX system.

FUNCTION 15B PBX Number

As mentioned in the previous feature, a PBX requires a single digit to be dialed to capture dialtone (Usually a '8' or '9'). That number is entered in this option.

FUNCTION 16A Operator Block

Enter a "1" into this function to deny access to all "0 -" calls. Enter a "0" to enable these calls. Blocking this function does not block 0 + calls.

NOTE: In most instances it is illegal to block 0- calls. Please consult with your state Public Service Commission before blocking.

FUNCTION 16B Touch or Pulse Dialing

Enter a "1" in this function for pulse dialing and a "0" for touchtone (DTMF) dialing. Pulse dialing is still employed in some rural areas. If pulse dialing is still used in homes and businesses in the area where the phone is located, you will need to enable this feature.

FUNCTION 17 Reset Coin Box Total

Normally, this function is used to reset the amount of cash in the coin box to zero when the coins are removed. However, any amount may be set. This function does not reset the Cumulative Total.

FUNCTION 18 Reset Cumulative total

This function can be used to reset the total dollar amount collected by the phone. Normally this total is not reset as a double-check against coin collections.

FUNCTION 19A Maximum Rings In

This function allows setting the number of times the payphone will ring before automatically sending an answer tone for remote reading of the Coin Box Total and the Cumulative Money total, either from another phone or by use of the Telelink software package (Max Ring In). The recommended value is 5 rings.

FUNCTION 19B Maximum Rings Out

This function allows setting the number of times the called phone will be rung before the payphone will hang up and return the coins (Max Ring Out).

FUNCTION 19C Polling Window

If the payphone receives an incoming call during the polling window, the phone will answer this call automatically after **one** ring only, regardless of the Max Rings In setting in option #19. Applying this feature reduces the **Telelink** collection status polling time when this is set to call a large number of payphones using the **Autocall** function in Telelink. Phones will answer after one ring instead of the number of rings programmed in option #19. The **Autocall** time feature in Telelink should be set the same as the "start" time of the Polling Windows and the "stop" times should be set to allow Telelink enough hours to call the entire selected list file. Incoming calls occurring outside the Polling Window will be subject to the "Max Rings In" setting in option #19.

FUNCTION 19D Polling Window Start and Stop

The Start and Stop function determines the times that the Polling Window will answer on one ring instead of the number of Max Rings In.

Start Hour ---- -----Stop Hour

Range: 00 to 23 hours (military time)

Note: The Stop Hour must be greater than the Start Hour.

If the Start and Stop hours are both "00", this feature will be defeated.

FUNCTION 20 Customized Special Numbers

This function allows for 120 Customized Special Numbers (CSN) which can be selectively programmed with custom rates for a single phone number or group of numbers. Any data in the CSN table will preempt the rate table file. The CSN function can also be used to "Block" any number or group of numbers or set the "Rate Type Code (RTC)". For viewing the CSN table, use "#20". For editing, enter "*20". A menu will appear on the display which will allow EDITING of any of the (120) CSN's. The menu displays the following commands:

1=D 2=R 3=A 4=SB
5=C 6=E *=B #=S

CSN Examples

The following example should serve to make clear how to enter CSN numbers.

Example #1: Special Charges

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To program a CSN with a prefix 976 (i.e., (404) 976-XXXX) with \$.50 for 1 minute initial and \$.25 per additional 1 minute period, make sure the phone is in the program mode as described in paragraph 3-2.0. Enter "*203" for a new CSN.

a. The display will show:

XXX-XXX-XXXX X
D.CC/MM D.CC/MM

1. The XXX-XXX-XXXX is for the phone number.
 2. The single X is entered as follows:
 - a. 0 if the number is not blocked. It will use the RTC from the rate table.
 - b. 1 if the number is to be blocked.
 - c. 2 if the number is an interstate rate type.
 - d. 3 if the number is an intralata rate type.
 - e. 4 if the number is an interlata rate type.
 - f. 5 if the number is a local rate type.
 3. The first D is for the dollar amount for the initial time.
 4. The first CC is for the cents for the initial time.
 5. The first MM is for the minutes of the initial time.
 6. The second D is for the dollar amount for the secondary time.
 7. The second CC is for the cents for the secondary time.
 8. The second MM is for the minutes in each unit of secondary time period.
- b. Enter 404-976-**** (Either * or # can be entered as a "Wild Digit")
- c. Enter 0 (Do Not Block & use Rate Type Code from rate table)
- d. Enter 05001 and 02501

This will cause any number with a 404-976 Area Code / Prefix to be charged \$.50 for the first minute and \$.25 for each additional minute. The "wild digits" can be used in the place of any or all of the 7 digits of the CSN. If the secondary time period is programmed as 00, the phone will hang up at the end of the initial time period.

Example #2: Free Calls

To program a CSN of 404-249-9200 to be a free call (e.g., Emergency Number). Put the phone in the programming mode. Enter "*203" for a new CSN.

- a. The display will show:

XXX-XXX-XXXX X
D.CC/MM D.CC/MM
- b. Enter 4042499200.
- c. Enter 0 (do not block use rate type code from rate table).
- d. Enter 00001 and 00001

Example #3: Clear CSN Table

To clear all CSN's and disable the CSN options. Put the phone in the programming mode.

- a. Push the "*", "2", and "0" keys. The display will show:

1=D 2=R 3=A 4=SB
5=C 6=E *=B #=SF

Example #3A Change rate type code of a phone number

To change the RTC of an exchange, put the phone in the program mode.

- a. Enter "*203" for a new CSN. The display will show:

XXX-XXX-XXXX X
D.CC/MM D.CC/MM

- b. Enter 305356****.
- c. Enter 5 to set the RTC to local.
- d. Enter 02501 and 00001 to provide 25 cents for unlimited time. (Usual local rate). Any local rate of you choosing can be entered.

Following this example but using a different RTC, charges can be entered for any type call (i.e. interstate, interlata, etc.)

CAUTION: 411, 211, or 611 may be redirected by use of the speed dial function to other numbers. If the area code or prefix of one of these numbers is also used in another CSN entry, the phone may request additional payment or block the call, depending on the entry in the CSN table. Since most state regulations require 211 and 611 to be free calls, an extra entry covering the specific number used for 211 or 611 should be made in the CSN table ahead of the general area code or prefix entry. The installer should test 211, 411, and 611 at installation to insure compliance with state regulations.

Example #4: Block Numbers

Suppose it is desirable to block the number 404-973-9094 from being called. Put the phone in the program mode.

- a. Enter "*203" for a new CSN. The display will show:

XXX-XXX-XXXX X
D.CC/MM D.CC/MM

- b. Enter 4049739094.
- c. Enter 1 (Block this Number)
- d. The display will read:

**** BLOCKED ****

Example #5: Untimed Call

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To program a CSN of 718-976-5555 to be an untimed call with a charge of \$0.25.
Put the phone in the program mode.

- a. Enter "*203" for a new CSN. The display will show:

```
XXX-XXX-XXXX X  
D.CC/MM D.CC/MM
```

- b. Enter 7189765555.
- c. Enter 0 (not blocked)
- d. Enter 02501 and 00001.

If the secondary period is set for 00, the phone will hang up at the end of the primary period.

g. Block Area Code 900

Ernest Telecom has blocked the calling of all 900 calls. This is done to avoid charges to the phone for this type call. Set up a CSN number as follows.

1. Enter "*203" for a new CSN. The display will show:

```
XXX-XXX-XXXX X  
D.CC/MM D.CC/MM
```

2. Enter 900*****. Then enter 1 (block), the display will show:

```
**** BLOCKED ****
```

To reverse the block, see example 1 or 2 above.

h. Block Local Prefix 976

Ernest Telecom has blocked the calling of all local 976 prefix calls. This is done to avoid charges to the phone for this type call. Set up a CSN number as follows.

1. Enter "*203" for a new CSN. The display will show:

```
XXX-XXX-XXXX X
```

D.CC/MM D.CC/MM

2. Enter ***976***. Enter 1 (block), the display will show:

**** BLOCKED ****

To reverse the block, see example 1 or 2 above.

Editing the CSN Table

This feature allows editing of the CSN table in the event that an error has been made during programming or if changes or additions to the table are required. When in the "Program" mode, press "#20" and the first entry in the CSN Table will be displayed. Pressing "*20" will allow you to edit the entries.

1=D 2=R 3=A 4=I
5=C 7=B 8=H 9=F

Editing Commands

1 = D	Delete the currently displayed CSN.
2 = R	Replace the currently displayed CSN.
3 = A	Add a new CSN to the end of the table.
4 = I	Insert a CSN entry.
5 = C	Clear the entire CSN table.
7 = B	Scroll back between display and previous CSN.
8 = H	Displays menu of commands, i.e. 1=D, 2=R, etc.
9 = F	Scroll forward between display and the next CSN.

a. 1 = D Delete the currently displayed CSN.

Choosing this command will cause the currently displayed CSN to be deleted and automatically scroll forward and display the next CSN. If the last CSN is deleted, the Help menu will be displayed.

b. 2 = R Replace the currently displayed CSN.

Choosing this command will allow the replacement of the currently displayed CSN with new information. A blank CSN template will be displayed. Using the blinking cursor, a new CSN can be entered.

c. 3 = A Add a CSN to the end of the table.

Choosing this command will cause a blank CSN template to be displayed. Using the blinking cursor, a new CSN can be entered. This CSN will be added to the end of the CSN table.

d. 4 = I Insert an entry into the CSN Table.

Choosing this command will enable a new number to be inserted into the CSN Table. A blank CSN template will be displayed. Using the blinking cursor, a new CSN can be entered.

e. 5 = C Clear the entire CSN table.

Choosing this command will CLEAR all CSN information from the table. Once cleared using this command, the table must be rebuilt from scratch.

f. 7 = B Scroll back between display and previous CSN.

This command will toggle between the previous entry and the currently selected CSN. Once the editing commands are learned, it is not necessary to view the menu.

g. 8 = H "Home" menu of commands

This command will display the menu of commands starting with 1=D, 2=R, etc. Used primarily to in case a command is forgotten, or to display all options available.

h. 9 = F Scroll Forward and display the next CSN.

Choosing this command will cause the next CSN to be displayed. If this happens to be the last CSN in the table it will not change.

Tip #1: Take time prior to the installation to become very familiar with the CSN editing menu.

Tip #2: Once the editing commands are learned, it is not necessary to toggle between the menu and the currently displayed CSN during an editing session.

FUNCTIONS 21 to 30 Speed Dial Numbers

These functions are programmable numbers that are speed-dialed out when addressed. The numbers can be up to eleven digits in length. To dial a speed dial number from memory, Press "*" and two digits (00 – 09). This will allow for expansion of up to 100 speed dial locations in the future. Entering zeros, "*", or "#" will set a function to not dial out.

FUNCTION 21 Speed Dial Example

To set up a Speed Dial number, put the phone in program mode as described in 3-2.0. Push "*" and the number for the Speed Dial function (21 to 30). This function is used primarily when advertising free numbers. Assume 21 for this example. The display will show:

SPEED DIAL # 0
X-XXX-XXX-XXXX

- a. Enter the number you want Speed Dialed (e.g. 448-2111 emergency ambulance which will be dialed by entering *0). Enter ****4482111.
- b. Note that this is a local number. If the Speed Dial number is a long distance number, you would enter "1" and the area code.

NOTE: These calls are not free unless so programmed as a CSN.

FUNCTION 31A Minimum Number Of Calls/Day

The number of calls made in a day is checked at midnight each day. If the number of calls serviced in the prior 24 hour period is less than the number entered in this function, the phone will dial the callback number and, when answered, the voice synthesizer will say:

"SERVICE ENTRY CODE 2 I.D. NUMBER XXXXXX"

This function can be defeated by entering 00 into the function. Follow the instructions in 3-2.0 and the table in 3-2.1.

A suggested value is 5 calls per day.

FUNCTION 31B Inactivity Callback Period Start

Start Hours ---- ---- Stop Hours

Note: Hours are in Military (24 hr) format.

Range: 00 to 23 hours

When the phone calls back to report inactivity, this call will be made between the hours programmed in this function. If the call is not completed (ie. busy, no answer), it will be retried at 10 minute intervals until the call is completed or the current time is greater than the "stop" hours. This feature is intended to alert the owner that phone inactivity due to problems such as handset damage, etc., has occurred. It can be defeated by entering 00 into the function.

FUNCTION 31C Inactivity Callback Period End

FUNCTION 32 Local Calls Counter

This function is a cumulative LOCAL call counter and totalizer. It totals the number of local calls made whether free or paid and the amount of money collected for these local calls since the last time the function was reset. It should be initialized at zero at installation and if the Telelink Payphone Management System is used, it can be zeroed each time the collection status is logged. This counter is only accessible while in PROGRAM MODE or via Telelink . (It is not accessible from the keypad outside the phone.) To initialize this counter at installation:

- a. Put the phone into program mode.
- b. Enter "*32" on the keypad. The display will show:

LCL. CALLS=XXXX
\$XXXX.XX

- c. Push the "0" key until each "X" on the display is replaced with a "0".

FUNCTION 33 Long Distance Calls Counter

This function is a cumulative LONG DISTANCE call counter and totalizer. It totals the number of long distance calls made whether free or paid and the amount of money collected for these calls since the last time the function was reset. It should be initialized to zero at installation and if the Telelink Payphone Management System

is used, each time the collection status is logged. This counter is only accessible while in PROGRAM MODE or by Telelink. To initialize this counter at installation:

- a. Put the phone in program mode.
- b. Enter "*33" on the keypad. The display will show:

L.D. CALLS=XXXX
\$XXXX.XX

- c. Push the "0" key until each "X" on the display is replaced with a "0".

FUNCTION 34 "0-","0+" Calls Counter

This function is a cumulative counter and totalizer of credit card and operator-assisted calls. It totals the number of calls and the money collected since the last time the counter was reset. It should be initialized to zero at installation and if the Telelink Payphone Management System is used, each time the collection status is logged. This counter is only accessible while in PROGRAM MODE or by Telelink. To initialize this counter at installation:

- a. Put the phone in program mode.
- b. Enter "*34" on the keypad. The display will show:

0-,0+CALLS=XXXX
\$XXXX.XX

- c. Push the "0" key until each "X" on the display is replaced with a "0".

FUNCTION 35 Directory Assistance Calls Counter

This function is a cumulative DIRECTORY ASSISTANCE call counter and totalizer. It totals the number of directory assistance calls and the amount of money collected for these calls. This includes 411, 555-1212, and 1-(XXX)-555-1212 calls. It should be initialized to zero at installation and if the Telelink Payphone Management System is used, each time the collection status is logged. This counter is only accessible while in PROGRAM MODE or by Telelink. To initialize this counter at installation:

- a. Put the phone in program mode.

- b. Enter "*35" on the keypad. The display will show:

D.A.CALLS =XXXX
\$XXXX.XX

- c. Push the "0" key until each "X" on the display is replaced with a "0".

FUNCTION 36 Precede Non Local Numbers By 1

Some locations require that a "1" be dialed preceding numbers beyond the local area. When this function is enabled, the "1" is automatically dialed in the situations where required, regardless of whether the caller has dialed it or not. However, if a customer dials "1" while this function is enabled, the phone will dial only one of the digits, avoiding an incompleting call. This function can be enabled by entering "1" and disabled by entering "0".

FUNCTION 37 DTMF Speed

Two pulse speeds are provided for DTMF tones. In the "slow" mode, the pulses are on for 150 msec. (milliseconds) and off for 75 msec. In "fast" mode, the pulses are on for 75 msec. and off for 50 msec. Use the slow mode in areas with older central offices. In this function, enter "0" for fast mode or "1" for slow mode. In most instances, use "0" unless calls are not being completed. If that occurs, an adjustment in this function may be in order.

FUNCTION 38 1+OCC

38a: **Local Swt/OCC Code #** -- This option will allow you to reroute your direct dialed local calls to another carrier. You have the choice of two 101xxxx OCC numbers which are entered in options 38g and 38h or two switch numbers for 800 & 950 access which are options 38i & 38j and 38k & 38l. Enter [00-04] to route call accordingly. To defeat enter 00, which will route call to LEC, 01 routes to 38g, 02 routes to 38h, 03 routes to 38i and 04 routes to 38k.

38b: **IntraL Swt/OCC Code#** -- Just as in 38a, this option will allow you to reroute direct dialed Intralata calls to another carrier. To defeat enter 00, which will route call to LEC, 01 routes to 38g, 02 routes to 38h.

38c: **InterL Swt/OCC Code#** -- Just as in 38a, this option will allow you to reroute direct dialed Interlata coin calls to another carrier. To defeat enter 00, which will route call to LEC, 01 routes to 38g, 02 routes to 38h.

38d: **InterS Swt/OCC Code#** -- Just as in 38a, this option will allow you to reroute direct dialed Interstate coin calls to another carrier. To defeat enter 00, which will route call to LEC, 01 routes to 38g, 02 routes to 38h.

38e: **InterN Swt/OCC Code#** -- Just as in 38a, this option will allow you to reroute direct dialed International coin calls to another carrier. To defeat enter 00, which will route calls to the LEC, 01 routes to 38g, 02 routes to 38h. This option is not often used due to the proliferation of international fraud.

38f: **Callback Srv. Code#** -- This option will allow you to reroute your callback number set in option (02) to an alternate carrier. You have the choice of two 101xxxx OCC numbers which are entered in options 38g and 38h or two switch numbers for 800 & 950 access which are options 38i & 38j and 38k & 38l. Enter [00-04] to route call accordingly. To defeat enter 00, which will direct dial the callback number in option (02). 01 routes to 38g, 02 routes to 38h, 03 routes to 38i and 04 routes to 38k.

38g: **OCC Code #1 Number** – Enter your OCC code #1 (should be 101XXXX) for the carrier of your choice. Use * for unused digits.

38h: **OCC Code #2 Number** – Enter your OCC code #2 (should be a 101XXXX) for the carrier of your choice. Use * for unused digits.

38i: **Swch Service #3 Number** – Access phone #3 to a 1+ switch such as 1-800 or 950. Use * to fill unused digits.

38j: **Switch Service #3 ID** – Authorization code for switch service #3 switch access. Use * to fill unused digits. Enter all 0's to disable.

38k: **Swch Service #4 Number** – Access phone #4 to a 1+ switch such as 1-800 or 950. Use * to fill unused digits.

38l: **Switch Service #4 ID** – Authorization code for switch service #4 switch access. Use * to fill unused digits. Enter all 0's to disable.

38m: **Add Home NPA If Swt?** – Phone will add the home area code to any call dialed as 7 digits or 1+ 7 digits provided the call is routed by an OCC/Switch number in option 38.

FUNCTION 39 Call After Cash Box Collected

Enter "1" to enable this function or "0" to disable it. This feature allows you to know when coin box is collected for security purposes.

FUNCTION 40a Call When Coin Switch Jammed

Enter "1" to enable or "0" to disable this function. Function 40 provides you with an early-warning signal in maintaining the phone.

FUNCTION 40b Coin Jam Threshold

The phone tries to determine through software if there is a coin jam in the coin mech. This option sets the threshold number of unsuccessful coin-call attempts. When a caller dials a valid number requiring coins but none are deposited, a counter is incremented. Once the counter reaches the threshold, the coin jam flags are set. As soon as a coin is deposited, the flags are reset.

FUNCTION 41 Set Location Phone Number

This function programs the pay phone telephone number for use in identifying service messages sent to the "call back" number set in function 02. This will provide identification of digital messages sent to a modem and printer combination or a computer using Telelink.

NOTE: It is important to include the area code in the number entered into this function.

FUNCTION 43 Scripts

Programming Option 43 allows the user to create a "script" to access an AOS. The scripts are programmed via a language of about 14 instructions. Up to three different scripts can be programmed, thus up to three OSP's can be used on each phone. The different call types (local, intralata, interlata, interstate, 0-, international, 00, 1 plus credit card, 0 plus credit card, 611, and directory assistance found in option 43) can then use any of the three scripts to maximize revenues. In addition to three programmable scripts, a script 0 exists for 0+/- dialing to the LEC or IXC the phone is PICed to. (See Glossary for definition of acronyms)

Description of Script Language Instructions

Instruction	Description
00	Dial AOS Phone Number X (X=1, 2, or 3) AOS Phone Number 1 is in Option 44A AOS Phone Number 2 is in Option 45A AOS Phone Number 3 is in Option 46A

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- 01 Dial AOS Auth. Code X (X=1, 2, or 3)
AOS Auth. Code 1 is in Option 44B
AOS Auth. Code 2 is in Option 45B
AOS Auth. Code 3 is in Option 46B
- 02 Dial ANI
Dials the 10 digit payphone number in Option 41
- 03 Dial Single DTMF Digit X (x=0-9, * or #)
- 04 Dial Destination Number with Home NPA
If the destination number is 7 digits (NXX+XXXX),
then it will be dialed as NPA+NXX+XXXX. This is
useful if your carrier requires the destination to always
be 10 digits. The leading 0 is NOT dialed.
- 05 Dial Destination Number
Dials the destination number as entered by the user.
The leading 0 is NOT dialed.
- 06 Wait for Dialtone/400 Hz
- 07 Pause 0.x seconds (X=1-9)
- 08 Wait for DTMF "A" from AOS
- 09 Wait for DTMF "B" from AOS
- 10 Wait for DTMF "C" from AOS
- 11 Wait for DTMF "D" from AOS
- 12 Wait for DTMF "X" from AOS (X=0-9, * or #)
- 99 End Script

OSP Programming Example

The following is a description of programming a ETX using three different OSP options:

First, determine the access protocol for each OSP carrier. If you are unsure of this, call the OSP and they should be able to help you. For our example, the access protocols will be:

OSP #1

1. Dial Access Number (1-800-234-5678)
2. Wait for a dialtone
3. Dial Authorization Code (404-987-1234). Authorization Code is usually payphone phone number.
4. Wait for a dialtone
5. Dial Destination Number
6. Splashback Tone is a DTMF "B"

OSP #2

1. Dial Access Number (1-800-299-8501)
2. Wait for dialtone
3. Dial Destination Number
4. Splashback tone is a DTMF "B"

OSP #3

1. Dial Access Number (1010789)
2. Dial 0
3. Dial Destination Number
4. Splashback tone is a DTMF "B"

Second, determine which call types will go to each carrier. For our example:

Local: LEC	0-: OSP #2
Intralata: OSP #1	International: OSP #3
Interlata: OSP #2	
Interstate: OSP #3	

Now, we are ready to program the phone.

OSP #1 = Script 1, OSP Phone Number 1, and OSP Authorization Code 1

While in programming mode, press *44. Enter the OSP access number: 1-800-234-5678. After a short pause, the display will ask for the OSP Authorization Code. Enter 404-987-1234.

Next, press *42 in programming mode. The display will respond:
Script Number X

Enter a 1 to program Script 1. The display will then show:
Step 01 INSTR XX

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You are being asked for the two-digit instruction code from the Script Language Instructions described earlier. Enter 00. The display will then show:

Step 01 INSTR00
Dial AOS NUMBR X

Enter a 1. Step 1 of this script will now dial AOS phone number 1. After a pause, the display will show:

Step 02 INSTR XX

Following our access protocols for AOS #1, the second step is 06 for "Wait for Dialtone." The display will show:

Step 02 INSTR 06
WAIT DIALTONE

On to Step 3:

Step 03 INSTR XX

Enter 01. The display responds with:

Step 03 INSTR 01
DIAL AUTH CODE X

Enter a 1. The display will show:

Step 03 INSTR 01
DIAL AUTH CODE 1

For Step 4, the display will read:

Step 04 INSTR XX

Enter 06. You will see:

Step 04 INSTR 06
WAIT FOR DIALTONE

After a short pause, on to step 5:

Step 05 INSTR XX

Again, following our protocol enter 05:

Step 05 INSTR 05
DIAL DEST. NUMBER

For the sixth step, the display shows:

Step 06 INSTR XX

Enter 09 to activate splashback:

Step 06 INSTR 09

WAIT FOR DTMF B

For the last step, enter 99. This allows you to enter another Programming Option Command.

AOS #2 = Script 2, AOS Phone Number 2

Press *45. Enter the AOS access number: 1-800-299-8501. It will then ask for the AOS Auth. Code. Since AOS #2's protocol does not require an authorization code, use all *'s to fill in the unused spaces.

Next, press *42. The display will show:
Script Number X

Enter a 2 to program Script 2. The display will show:
Step 01 INSTR XX

Enter 00, just as in AOS #1.
Step 01 INSTR 00
Dial AOS NUMBR X

Enter a 2. Step 1 of this script will now dial AOS phone number 2.
Step 02 INSTR XX

Enter 06. The screen will read:
Step 02 INSTR 06
WAIT FOR DIALTONE

After a short pause, you will see:
Step 03 INSTR XX

Following our protocol, the next step is Dial Destination Number. Enter 05.
Step 03 INSTR 05
DIAL DEST. NUMBR

Step 04, the screen will show:
Step 04 INSTR XX

Enter 09. The screen reads:
Step 04 INSTR 09
WAIT FOR DTMF "B"

This was the last step, so press 99 to end this script. You are now ready to program the last script.

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AOS #3 = Script 3, AOS Number 3

Press *46. Enter AOS access number: 1010789. Again, no authorization code is needed.

Press *42. The display will respond:
SCRIPT NUMBER X

Enter a 3 to program script 3. The display will then show:
Step 01 INSTR XX

Enter 00, just as in the two previous scripts.
Step 01 INSTR 00
DIAL AOS NUMBR X

Enter a 3. Step 1 of this script will now dial AOS phone number 3.
Step 02 INSTR XX

The leading 0 is not dialed by the pay telephone. Therefore, when using 101XXXX access, it must be added back in. See the access protocol for AOS #3. So, step 02 is to enter 03. The screen shows:

Step 02 INSTR 03
DIAL DTMF DIGIT X

Enter 0, so the phone adds it in:
Step 02 INSTR 03
DIAL DTMF DIGIT 0

Step 3 reads:
Step 03 INSTR XX

Enter 05. The screen shows:
Step 03 INSTR 05
DIAL DESTINATION NUMBR

After a pause, the screen shows:
Step 04 INSTR XX

Again, we enter 09. The screen displays:
Step 04 INSTR 09
WAIT FOR DTMF "B"

Enter 99 to stop script editing.

Using Script 0

Script 0 is designed to send 0+ and 0- call to your presubscribed carrier. That is, the phone will dial out a 0+ number as a 0+ number. There is one option for script 0. Press *42 to program a script. Select 0 for script 0. The phone will ask:

ADD # TO ANY 0-?
0=NO 1=YES X

If you say yes, then 0, 10102880, and 101028800 will be dialed out as 0#, 10102880#, and 1-2880#, respectively. A # in most connecting offices (COs) will represent a termination string. Unfortunately, some CO's do not like the #, so saying no to this option dials out 0, 10102880, and 101028800.

Finally, you will want to use your new scripts. Press *43. The display will show:

LOCAL X: Enter 0
INTRALATA X: Enter 1
INTERLATA X: Enter 1
INTERSTATE X: Enter 2
0- X: Enter 2
INTL X: Enter 3

Thus, local 0+ calls go to Script 0 (LEC); Interlata and Intralata 0+ call go to Script 1 (AOS #1); Interstate 0+ and 0- call go to Script #2 (AOS #2); and International 0+ calls go to Script 3 (AOS #3).

FUNCTION 47 Open Keypad Time

When selected, the display will show:

OPEN KEYPAD TIME
XX.XX

Enter the time you want the keypad to be in the "open" mode.

The time can not be more than 99:99 minutes. If you enter 99.99 the keypad will stay open for the entire duration of each call.

The recommended value if this function is used, is 00.30 to 01.00.

FUNCTION 48 Local Rate Over Ride

For states that have only one set of local charges, this function can be used to over ride the local primary and secondary time periods and the charges for these time periods, that are in the

override table. The following states have more than one local charge and should only have the local times and charges set in the rate file. This function should not be used in these states.

ARIZONA ILLINOIS MASSACHUSETTS
NEW YORK PENNSYLVANIA

If unsure if this function can be utilized in your state, call the Public Service Commission.

When selected, the display will show:

RATE OVERRIDE
0=NO 1=YES X

If you select 0, the rate table will be used to set local rates. If you enter 1, the display will show:

RATE OVERRIDE
D.CC/MM D.CC/MM

FUNCTION 48A Local Initial Amount

The charge for the initial period. (D) represents the dollar amount, usually "0". (CC) represents the amount rounded to the nearest five cents. i.e. 0.45, 0.25, 0.10

FUNCTION 48B Local Initial Time

The minutes of the initial period (MM). i.e. 03, 10, 15. When Functions 48A and 48B are programmed like this example (0.25/05), your phone will be overriding the normal rate to charge \$.25 for the initial five minutes talked.

FUNCTION 48C Local Second Amount

The charge for each additional period. 48A charges for the first increment of time, say five minutes. This function charges for each additional increment of time.

FUNCTION 48D Local Second Time

The minutes for the secondary period (MM). When Functions 48C and 48D are programmed like this example (0.25/01), your phone will charge \$.25 for each additional minute talked after the initial five minute period.

FUNCTION 49 Operator Message

When selected, the display will show:

OPER MSG. (0-5)
X

Enter the number of times you want the message "Operator this is a public telephone, this is not a billable number", to repeat. If you enter 0, the function is disabled. The purpose of this message is to eliminate collect calls being charged to the pay phone.

FUNCTION 50 Add Home NPA

If answered YES, the phone will add the home area code to any call dialed as 7 digits or 1+ 7 digits provided the call is routed through the PIC (not through option 38).

FUNCTION 52 Instant Refund

Suppose a caller loses his coins in the payphone and requires a refund and he dials "211". The payphone then speed dials to the Vendor's office. The Vendor, using the touchtone pad on his office phone, can query the payphone and find out the last number dialed that collected coins, and the duration of the call. He can then make a decision of mailing a refund check or instructing the payphone using the touchtone signals to issue a credit equal to the last coin collection or refusing to make a refund. The following is only activated for "211" calls. The following commands should be recognized by the phone during a "211" call:

- ##0 Authorize a credit for the next call from \$0.05 to \$9.95. The phone will respond with a "ready" tone, then enter a three digit number followed by the "#" key. (For a \$.25 refund enter ##0 025#, the credit amount must be in nickel increments.)
- ##1 Reports back the phone# of the last call that collected coins followed by the amount collected for the initial period.
- ##2 Reports back the duration of the call in command "##1".
- ##3 Reports the phone number of the last call that required coins followed by the amount requested. (This is to be used in case of a coin jam in the coin mechanism.)
- ##4 Reports the location phone number.

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##5 Reports back the ID number of the phone.

##6 Initiate coin escrow return.

##7 Hangs up the Payphone.

The phone will mute the earpiece and the microphone when the first "#" is heard and remain so until the command is fully recovered or if no digits are entered. The caller will not hear the voice synthesizer as it reports back the above commands.

211 OPER REFUNDS

0 = NO 1 = YES

This selection either enables or disables the credit command ##0, all other commands are unaffected.

FUNCTION 52B Number of Instant Refund Calls

RFND CALLS=XXXX

\$0000.00

FUNCTION 52C Instant Refund Amount

This option counts the total Number of refunded calls and the amount of credit issued.

NOTE: If the operator entered an incorrect amount of money to be credited, the phone will respond with three tones followed by a voice message "zero dollars and zero cents". If it is correct, the phone will respond with a voice message repeating the dollar amount followed by a single tone.

FUNCTION 56 FNPA 7-Digits

If your payphones are in an area where you can dial from one area code into another area code by dialing 7 digits, answer Yes in this option.

FUNCTION 61 Credit Card Activating

61a: **American Express?** – Answer YES if your phone has a credit card reader and you want to enable American Express credit cards.

61b: **Master Card?** – Answer YES if your phone has a credit card reader and you want to enable Master Card credit cards.

61c: **VISA?** – Answer YES if your phone has a credit card reader and you want to enable VISA credit cards.

61d: **Discover Card?** – Answer YES if your phone has a credit card reader and you want to enable Discover credit cards.

FUNCTION 62A Interdigit Time Outgoing

This feature determines the amount of time between each digit as they are slowly dialed out to the exchange. It is necessary to dial them out slowly in order to allow more time for the caller to enter the correct amount of coinage. This time should be programmed to the default setting of 8 seconds. Some exchanges may require this setting to be lower.

FUNCTION 62B Dialing Timer #1

This feature determines the time a caller has to enter the number to be called. If no numbers are entered by the end of this time, the phone will hang-up and refund any money deposited. If the caller has not completely entered the number, the phone will begin dialing the predial digits programmed into option 62d in order to allow more time for the caller to enter the number and deposit the correct coinage.

FUNCTION 62C Dialing Timer #2

This timer determines the time between the predial digits of option 62d being dialed out to allow more time for the caller.

FUNCTION 62D Predial Digits

Digits dialed out after Dial Timer #1 ends in order to maintain the line connection. Enter “#” to separate digits dialed out. Default is 1800#4#4#4#4#4##

FUNCTION 63A Delayed Dialing All

This feature when answered YES will cause the phone to speed dial the number being dialed after all the money has been collected for any type of call. If answered NO, it will cause the phone to dial out normal as described in option 62.

FUNCTION 63A Delayed Dialing International Only

This feature when answered YES will cause the phone to speed dial the number being dialed after all the money has been collected for international calls only. If answered NO, it will cause the phone to dial out normal as described in option 62.

FUNCTION 65A Enable SMDR

SMDR (Station Message Detail Report) tracks all outgoing calls made from phone. The categories tracked include date, number called, amount of time talked, amount deposited, and type of call (1+, 0+, 800 , 950, 101XXXX, etc.). This function does NOT include local calls. SMDR is useful for tracking dial-around calls. However, the file holds only 150 calls, so the SMDR needs to be cleared on a regular basis.

FUNCTION 65B Enable SMDR/ Local Calls

Function 65A now adds local calls to long distance SMDR. Occasionally there will be an error message reported that SMDR is full. This is an alert to empty the file so that information from new calls can be recorded.

Note: Options 65A and 65B are useless unless operating Telelink for Windows. SMDR can only generate reports through the management software.

FUNCTION 66 Incomming Calls

66a: --- **Incoming Free Time** –Enter the initial free time period in seconds. Enter 000 to allow free incoming calls. Default is 000.

66b: --- **IC 2nd Period Amount** –Enter the amount you want to charge for the additional time on incoming calls shown in option 66c. Enter “0.00” to allow free additional incoming call time. This amount charged on the time period set in option 66c after the time in 66a has expired. Default is \$0.00

66c: --- **Incoming Free Time** –Enter the secondary time period in minutes for incoming calls. Enter “00” to allow free additional time on incoming time. Default is 00

FUNCTION 67 10 Digit Override

Note: 67a-d --- Generally should not be used and should normally be set to all “*”s.

67a: --- **10 Dgt O’rde 1st Amt** – 10 digit override initial amount. Default is \$*.*

67b: --- **10 Dgt O’rde 1st Per** – 10 digit override initial period. Default is **

67c: --- **10 Dgt O’rde 2nd Amt** – 10 digit override secondary amount. Default is \$*.*

67d: --- **10 Dgt O’rde 2nd Per** – 10 digit override secondary period. Default is **

FUNCTION 68 Call Blocking

68a – **Call Blocking Digits** – Enter the number of Call Blocking PIN to be dialed stored in option 68c. To disable Call Blocking, enter “00”.

68b – **Call Blocking Delay** – Enter the delay in seconds the phone should wait between dialing the phone number and dialing the Call Blocking PIN.

68c – **Call Blocking PIN** – Enter the PIN (digits to be dialed) for the Call Blocking Feature.

68d – **Send PIN on LD Only** – Answer YES to send the PIN on long distance calls only.

FUNCTION 72A Enable 10102880+

This is AT&T's access number, allowing customers to "dial-around" any other long distance company. This option must be enabled. It is illegal to block access to AT&T.

FUNCTION 72B Enable 101XXXX0+

This function unblocks all 101XXXX numbers. This function must also be enabled. It is now illegal to prevent a caller from reaching any operator via a 101XXXX number. (This is referred to as "dialing around")

FUNCTION 73 7-Digit Override and Default

Note: 73a-d --- Generally should not be used and should normally be set to all “*”s.

73a: --- **7-Dgt O’ride 1st Amt** – 7 digit override charge amount for the initial period set in option 73b. Default is \$*.*

73b: --- **7Dgt O'ride 1st Time** – 7 digit override initial period. Default is **

73c: --- **7-Dgt O'ride 2nd Amt** – 7 digit override charge amount for the secondary period set in option 73d. Default is \$*.**

73d: --- **7Dgt O'ride 2nd Time** – 7 digit override secondary initial period. Default is **

73e: --- **7 Digit Default** -- Allows any seven digit (local) number dialed, not recognized by the phone, to be treated as a local call. This feature would be useful when a rate table is outdated, and prefixes have been added to the area that are not covered by the rate table in use.

FUNCTION 74 1+Override

This feature is very similar to Function 48. Function 74 can be programmed to override normal rates and time increments for 1+, long distance, calling. Programs such as "\$.25 Anywhere in America" or "Three Minutes for \$1.00" can be utilized with this function.

When selected, the display will show:

RATE OVERRIDE
0=NO 1=YES X

If you choose 0, the rate table will be used to set long distance rates. If you enter 1, the display will show:

RATE OVERRIDE
D.CC/MM D.CC/MM

FUNCTION 74A 1+ Initial Amount

The charge for the initial period. (D) represents the dollar amount. (CC) represents the amount rounded to the nearest five cents. i.e. 0.25, 1.00, 2.50, etc.

FUNCTION 74B 1+ Initial Time

The minutes of the initial period (MM). i.e. 03, 10, 15. When Functions 74A and 74B are programmed like this example (.25/01), your phone will be overriding the normal rate to charge \$.25 for the initial one minute talked.

FUNCTION 74C 1+Second Amount

The charge for each additional period. 74A charges for the first increment of time, say one minute. This function charges for each additional increment of time.

FUNCTION 74D 1+ Second Time

The minutes for the secondary period (MM). When Functions 74C and 74D are programmed like this example (1.00/03), your phone will charge \$1.00 for each additional three minutes talked, after the initial one minute period.

FUNCTION 74E Intralata Override

If you choose to enable this function all Intralata calls will be overridden with the same time and charges as the 1+ override (Function 74A-74D).

FUNCTION 75A Voice Branding?

75a: --- **Voice Branding?** – Answer YES if your board has been specially configured for voice branding and you want to enable this feature. Otherwise answer NO.

FUNCTION 75B Allow Spanish?

75b: --- **Allow Spanish?** – Answer YES if your board is equipped with Spanish voice and you want to enable this feature.

FUNCTION 75C Allow French?

75c: --- **Allow French?** – Answer YES if your board is equipped with French voice and you want to enable this feature.

FUNCTION 75D Default Language

75d: --- **Default Language** – Enter the number corresponding to the language you want to use as the default. English = 00, Spanish = 01, and French = 02.

FUNCTION 76A Volume Control = “#”?

76a: --- **Volume Control = “#”?** – Answer YES if you want to use the “#” key as a volume control button. The phone will generate the “#” tones no matter which way option 76 is set.

FUNCTION 98A Ni-CAD Battery?

Answer YES if you are using a Ni-CAD battery with your phone.

FUNCTION 98B AC Adapter Mode?

Answer YES if your board is configured for an AC adapter.

FUNCTION 98C 4th Column Keypad?

Answer YES if your phone uses a 4th column keypad.

FUNCTION 98D DISPLAY TYPE

Enter "00" if no display, enter "01" for 2x16 display, enter "02", enter "03" for 2x20 VF display.

FUNCTION 98E Electronic Coin Mech?

Answer YES if you are using a MARS – MS16 or QVEX QV electronic coin scanner.

FUNCTION 98F Board Serial Number

This function requires no programming. It reports the serial number programmed into the board.

FUNCTION 99 Firmware Version

This function requires no programming. It reports the version of software currently operating in the telephone. Useful when talking with Ernest Telecom technical support staff. Allows them to trouble-shoot phone more accurately.

3-5 PROGRAMMING AND MONITORING THROUGH THE KEYPAD

3-5.1 Coin Box Total

The contents of the resettle money counter (Coin Box Total) can be obtained from the outside of the phone using the voice synthesizer. To get this, follow the steps listed below:

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- (1) Take the phone off-hook
- (2) Press "*"
- (3) Press "#"
- (4) Press the 6-digit ID number of the phone
- (5) Press "#"
- (6) Press "1"

Example: Suppose the total money collected is \$151.45. The voice synthesizer will say:

"THE CURRENT TOTAL IS ONE HUNDRED FIFTY ONE DOLLARS AND FORTY FIVE CENTS."

3-5.2 Resetting the Coin Box Total

You will want to reset the Coin Box Total back to \$0.00 each time you collect the phone. To do this, follow these steps:

- (1) Take the phone off-hook
- (2) Press "*"
- (3) Press "#"
- (4) Press the 6-digit ID number of the phone
- (5) Press "#"
- (6) Press "2"

Each time the coin box total is reset, the paystation will place a call to the phone number programmed into function 02. The voice synthesizer will say:

"SERVICE ENTRY CODE 1". followed by the amount collected in dollars and cents and then "I. D. NUMBER XXXXXX".

This will be repeated (3) times. If the number is busy, or does not answer, it will retry every (10) minutes until the call is completed. This callback feature is defeated if the callback number programmed in function 02 is all zeroes or if a zero is entered in function 40.

3-6 AUTOMATIC CALLBACK

There are several situations in which the phone will call the owner to convey necessary service or collection information. This can be done by either of two modes. These are by voice and by the use of a modem and serial printer (a computer is not required). The service codes used are as follows:

SERVICE ENTRY CODE 1 Coin box total being reset.

SERVICE ENTRY CODE 2 Inactivity callback.

SERVICE ENTRY CODE 3 Coin switch jam callback.

SERVICE ENTRY CODE 4

SERVICE ENTRY CODE 5

3-6.1 VOICE MODE CALLBACK OPERATION

Coin Box Full

The phone will attempt to call when the coin box total exceeds the amount programmed in function 05. It will call twice a day until the Coin Box Total has been reset to \$0000.00. The paystation will call once during the hours of midnight to 5 P.M. and once during the hours of 5 P.M. to 11:59 P.M. The voice synthesizer will say:

"THE MAXIMUM DOLLAR AMOUNT IS EXCEEDED ID NUMBER XXXXXX"

It will repeat it (3) times. In the event of a busy number, it will try again every (10) minutes. The Call Back on Coin Box Full Feature can be disabled by programming function 05 to \$0000.00.

Coin Box Total Reset (Collection)

The phone will attempt to call once each time the Coin Box Total is reset to zero to alert the owner of exactly when collection is taking place. When the call is answered, the voice synthesizer will say:

"SERVICE ENTRY CODE 1 followed by the amount collected in dollars and cents and then I.D. NUMBER XXXXXX".

This will be repeated three times. If the call is unanswered or busy, it will be retried every (10) minutes until completed.

NOTE: A zero entered into function 40 will disabled this callback.

Inactivity

The phone will attempt to call once every 24 hours when the number of calls serviced in a (24) hour period is less than the number programmed in function 31. This is checked at midnight each day. When the call is answered, the voice synthesizer will say:

"SERVICE ENTRY CODE 2 I.D. NUMBER XXXXXX",

This will be repeated three times. If the call is unanswered or busy, it will be retried every (10) minutes during the inactivity callback window set in Option #31. The call will be made between the "Start" and "Stop" hours set in Option #31.

NOTES: "00" entered into function 31 will disable this callback function.

Inactivity alert is also useful when a coin jam occurs in the coin mechanism or the handset is broken.

The number of calls counted by the payphone are coin deposited calls. Free calls are not counted.

Coin Switch Jam

The paystation will attempt to call when a mechanical coin jam occurs in the coin switches. When the call is answered, the voice synthesizer will say:

"SERVICE ENTRY CODE 3 I.D. NUMBER XXXXXX",

This will be repeated three times. If the call is unanswered or busy, it will be retried every (10) minutes until completed. A call will be made every day until the coin jam is cleared.

NOTE: A zero entered into function 41 will disabled this callback.

Callback Defeat

The Callback feature can be totally defeated by entering all zeroes in the function 02 callback phone number or disabled individually as shown above.

3-6.2 MODEM AND PRINTER CALLBACK MODE

The modem and serial printer mode of callback reception will provide a printed copy of the information described above for the voice mode of callback operation. The required equipment is:

- a. A telephone line (must not have call waiting option).

- b. An external Hayes 1200 baud Smartmodem (substitutions are not recommended or supported by Ernest Telecom).
- c. A serial printer with serial cable.

To install this equipment follow these steps.

- a. Connect the telephone line to the modem.
- b. Connect the serial cable to the modem and printer.
- c. Set the Serial printer operating parameters as follows:
 - 1. 300 baud
 - 2. 7 data bits
 - 3. 1 stop bit
 - 4. Even Parity.

Consult the printer hand book for instructions on setting these parameters.

- d. Set the dip switches on the Hayes modem as follows:
 - 1. Switch 1 down.
 - 2. Switch 2 down.
 - 3. Switch 3 up.
 - 4. Switch 4 down.
 - 5. Switch 5 up.
 - 6. Switch 6 down.
 - 7. Switch 7 up.
 - 8. Switch 8 up.
 - 9. Switch 9 up.
 - 10. Switch 10 up.

- e. Program your pay phones to callback in the modem (digital) mode. (See function 2).

3-7 REMOTE ACCESS OF COINBOX TOTALS

The coin box total can also be obtained by calling the pay phone from a touch tone phone and allowing it to ring until the paystation answers. A short "Beep" tone will be heard at which time the caller should depress the "*" key and the Phone I.D. Number (programmed by function 01). The pay phone will respond with the coin box total using the voice synthesizer to give the total.

This will be followed by a "Beep". The Cumulative Total can be obtained by depressing the "*" key immediately after the "Beep". The Cumulative total will be quoted followed by a "Beep". The coin box total and the cumulative total can be obtained alternately by pushing the "*" key after each "Beep". This can be repeated as many times as desired.

3-8 CONFIGURING THE ETX BOARD'S JUMPERS AND DIP SWITCHES

3-8.1 SW1 7-Pole Dip Switch

Switches 1 – 6 correspond to the 6 channels on the MARS MS-16. The "ON" position enables the corresponding channel. Switch 7 selects the coinset. Switch 7 "ON" selects coinset1 of the MARS MS-16. Switch 7 "OFF" selects coinset2 of the MARS MS-16.

3-8.2 S3 5-Pole Dip Switch

Switches 1 and 2 should be "OFF" for a 12v relay. "ON" for a 48v relay.

Switches 2 and 3 should be "ON" for a 12v relay. "OFF" for a 48v relay.

Switch 5 should be "ON" for a 12v relay. "OFF" for a 48v relay.

However some older 12v relay may require little more energy to fire than a newer 12v version. To give this added boost to the older 12v relay, switch 5 can be turned "OFF". There will be a small trade-off in that the time required to fire the relay will be slightly longer. How much longer depends on the line conditions of the site.

3-8.3 JUMPERS JP-15, JP-17, and JP-9

When using a handset with the standard carbon composition mic element, the jumper for JP-15 should be installed across Pins 2 and 3, and JP-17 should be installed.

When using a handset with an eletret mic element, the jumper for JP-15 should be installed across pins 1 and 2 and JP-17 should be removed.

JP-9 should always be removed. It is only used for specific testing at the factory.

SECTION 4

REMOTE PAYPHONE COMMUNICATIONS

4-1 GENERAL

This section covers downloading (sending) data to the payphone, and uploading (receiving) data from the payphone.

4-2 TYPES OF DOWNLOADING

- a. Rate table updates.
- b. Programmable options.
- c. Downloadable Program Memory

4-3 TYPES OF UPLOADING

- a. Rate tables and programmable functions.
- b. Coin collection information
- c. SMDR records

4-4 DOWNLOADING OF RATE TABLE UPDATES

The pay phone, when purchased, comes with a rate table installed in memory. If rate table updates are required, they should be ordered directly from PJJ, Inc. (Call Ernest Telecom for details). The following information will need to be supplied by the customer.

- a. The area code where the phone will be installed.
- b. The exchange and number where the phone will be installed.
- c. The data for the override file (time periods and charge amounts) unless the standard values are acceptable.
- d. The phone's I.D. number.

The paystation may be unattended during the downloading process, but must be On-Hook at the start of downloading.

4-5 DOWNLOADING OF PROGRAM UPDATES

This feature means that as ET introduces new firmware upgrades for your ETX board, each payphone can be upgraded by simply downloading the firmware to the payphone board via the management software. In the past this required a visit to the site to physically change the firmware chip.

4-6 TELELINK (TM)

The TELELINK (tm) Payphone Management System software was developed to allow direct access to the pay phone. TELELINK (tm) will allow downloading and uploading of rate tables and other programmable functions using an IBM PC (or compatible) computer containing a minimum of 8MB of RAM and a 1200 baud modem. Rate tables and functions may be stored on disk for later downloading. TELELINK (tm) Software can be purchased directly from Ernest Telecom.

SECTION 5 TROUBLESHOOTING

5-1 Troubleshooting Table

Symptom	Check These
-No Dial Tone	-Hookswitch not connected at keypad assembly. -Keypad not connected properly.
-Loud Buzz in Earpiece.	-Improper case grounding. -Bad handset cord.
-Keypad Inactive.	-Upper cable not connected. -PCB defective. -Keypad defective.
-Missing Tones on the Keypad	-Defective Keypad.
-Voice Synthesizer says "The number you have an invalid number."	-Customized Special dialed is Numbers have been incorrectly programmed -Real time clock has not been programmed.
-All rates are incorrect.	-Rate table not programmed or corrupted. -Real Time clock has not been set correctly. -Rate Table Prefix is incorrect. -Override Table is incorrect.

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Symptom	Check these.....
-Rates for certain prefixes are incorrect	-These Prefixes are missing from the rate table. (Can be added using the CSN function.)
-Local rates for the "Initial" and "Secondary" period are incorrect.	-Customized Override table was not specified when the phone was purchased. -Customized Override table is incorrect. -Improper programming for function 47. (Local Override)
-Phone will not detect coins being deposited.	-Coin Switches have not been connected. -Coin Switch contacts are dirty or bent. -PCB defective.
-Phone will not dial out after the proper amount has been deposited.	-The Telco line has been disconnected or is inactive. -PCB defective.
-Phone dials out but the called number never rings.	-Noise on the line. -Central Office does not accept Touchtone dialing. -PCB defective.
-The microphone unmutes immediately after the phone dials out	-Noise or hum on the line. Hum can be caused by installation problems or by the Central Office -Answer detection is set too sensitive.

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Symptom	Check these.....
-Phone will not recognize recorded intercept messages	-The Central Office did not precede the message with Special Information Tones". -Distorted "Special Information Tones" are being sent by the Central Office. -PCB defective.
-Phone will not unmute or is delayed when the called party answers. (Contact Customer Service)	-Local or Long Distance Delays have been set too long (see programming section). -"ATK" AND "DCY" Delays are incorrectly set. (Too high) -Telco line levels are low. -PCB defective.
-Unmutes on a "Busy" signal and collects coins.	-Distorted Busy signal from the Central Office.
-The Microphone unmutes on "Ringback" before the called party answers.	-Loud clicks, noise, or hum present on the line. -"ATK"/"DLY" improperly set. -Distorted or out of cadence signal from Central Office. -"ATK"/"DCY" improperly set.
-Refunds coins after call has been established and conversation has taken	-Loud clicks, noise, or hum present on the line. -"GRACE PRD." set too long. -Coin relay defective or

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place.

improperly connected.

Symptom	Check these.....
-Coin Collect and Refund of coins is reversed	-Relay wiring reversed.
-Collect and Refund of coins intermittent.	-Relay requires maintenance. -Coin Relay is defective.
-Individual coins jam in the coin acceptor or pass through to the coin return.	-Coin Acceptor requires maintenance or replacement. -Phone case needs to be aligned.
-Earpiece volume is extremely loud or distorted.	-Sidetone Level has been adjusted improperly.
-The Clock in the phone has to be reset regularly or the phone itself has to be reprogrammed from time to time.	-PCB defective.

SECTION 6 GLOSSARY

"0+" Calls	Calls that are dialed 0 + the phone number that require operator assistance such as collect or credit card calls.
"0-" Calls	Calls where the caller dials 0 and waits for operator assistance.
"1+" Calls	Normal long distance calls.
AOS	Alternate Operator Service. Any operator service other than AT&T, MCI, and Sprint. Term not used much today.
ANI	Automatic Number Identification
AT&T	American Telephone and Telegraph company. Provides long distance services.
BOC	Bell Operating Company
C.O.	Central Office. The switching equipment that provides local exchange telephone service for a given geographical area, designated by the first three digits (NNX or NXX) of the telephone number.
COCOT	Customer Owned Coin Operated Telephone.
Crossbar	An electro-mechanical switching machine utilizing a relay mechanism with horizontal and vertical input lines.
Crosstalk	Undesired voice band energy transfer from one circuit to another.
D.A.	Directory Assistance.
DTMF	Dual Tone Multi-Frequency. The tones used to dial phone numbers.
ESS	Electronic Switching System. A type of telephone central office circuitry.
EPROM	Erasable Programmable Read Only Memory. A semi-conductor memory integrated circuit used to store computer data.
Ground	An electrical connection to the earth or to a common conductor which is connected to the earth at some point.

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GTE	General Telephone and Electronics. Manufactures phone equipment and provides phone service.
I.D.#	Identification number. Used to identify specific payphones.
IXC	Interexchange Carrier, i.e. AT&T, MCI.
LATA	Local Access and Transport Area
LEC	Local Exchange Carrier, i.e. Southern Bell, Pacific Bell.
LCD	Liquid Crystal Display. Used to show data to help program payphones.
Loop Start	The usual method of signaling an Off-Hook or line seizure, where one end closes the loop and the resulting current flow is detected by the switch at the other end.
MCI	Microwave Communications Inc. Provides long distance service.
Modem	Modulator/Demodulator. A device that transmits and receives tones that are encoded to carry digital data for computers.
NPA	Number Plan Area. The area code part of a phone number.
NXX	The prefix part of a phone number.
NTS	National Telephone Services. Provides operator services using live operators and giving a commission to COCOT phone owners who subscribe to that service.
OCC	Other Common Carrier
Off-Hook	The condition that indicates the active state of a telephone circuit. The opposite is On-Hook.
PBX	Private Branch Exchange. A switchboard typically used in business offices.
PCB	Printed Circuit Board. An electronic circuit board that uses etched copper interconnections between the devices mounted on the board which is often made of fiberglass.
POLARITY	

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RAM	Random Access Memory. A semiconductor integrated circuit that is used for data storage.
Ring	One wire in a telephone line. The other is called Tip, (usually the more negative of the two).
Ringback	The alerting signal to the subscriber or terminal equipment.
Sidetone	A portion of audio energy produced by the telephone microphone which is fed back to the receiver.
Tip	One wire of a telephone line. The other wire is called Ring, (usually the more positive of the two).
TNI	Terminating Number Identification. The destination number.
Telco	An abbreviation for telephone company.
Wild	A character that can be used to replace any number. * and # are wild digits in Ernest Telecom payphones.
Wink	A momentary loss of loop current which usually precedes the return dial tone after the called party goes on-hook. The detection of a "wink" signal improves the ability of the phone to know when return dial tone will be restored, and thereby prevent fraud in the form of "chain-dialing".

SECTION 7 ACCESSORIES

210-00001-00 Coin Relay Dust Cover
210-00002-00 Coin Switch Dust Cover
210-00003-00 Window Lower
210-00004-00 Window Upper
210-00005-00 Window Number
260-00002-00 Transmitter Cap (Black)
260-00003-00 Receiver Cap (Black)
260-00006-11 Key for Upper Housing (BJ Series)
260-00007-00 PCB Back plate
260-00032-00 Handset Cradle
260-00033-00 Face Plate for GTE Housing
300-00001-00 Receiver Coil Assembly
320-00008-00 Instruction Insert Upper
320-00009-00 Instruction Insert Lower
520-00001-00 IC Extractor
520-00002-00 Processor Extractor
520-00004-00 T Wrench
600-01240-00 Case (GTE 120B)
650-00001-11 Upper Housing Lock (BJ Series)
650-00003-00 Lower Housing Lock & Key
650-00004-00 Service Hinge

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650-00006-00 Coin Mechanism (Coinco - GTE case)
650-00010-00 Coin Box Assembly
650-00011-00 Coin Chute Assembly
650-00012-00 Coin Escrow Chamber Assembly
650-00014-01 Anti-Stuffing Device (coin return door)
650-00020-00 Coin Return Lever Assembly
650-00021-00 Coin Vault Door Assembly
650-00022-00 Coin Box Cover Assembly
650-01240-01 Upper Housing Assembly
660-00002-00 Ringer Assembly
660-00004-00 PC Board Complete
660-00005-00 LCD Programming Display Assembly
660-00006-00 Wrist Strap Grounding Assembly
660-00007-00 Handset Assembly
660-00007-01 Transmitter Capsule
660-00007-02 Receiver Capsule
660-00007-03 Handset Shell Assembly
660-00010-00 Coin Switch Assembly
660-00011-00 Keypad (only) Assembly
660-00025-00 Handset Cord Subassembly
660-00036-00 Hookswitch & Keypad Assembly

APPENDIX A

PAYPHONE GROUNDING PRACTICES

General

Grounding is the single most important aspect of a proper payphone installation. Proper grounding will insure long term reliable operation of the payphone. Grounding provides the following protection for the payphone electronics:

1. Lightening
2. Electrostatic Discharge
3. Shock Hazard
4. Radio Frequency Interference

The ideal ground would be a perfect conductor connected directly to the Central Office. The real world solution is to have a ground connection to the central office with as low a resistance as possible (less than 50 ohms). This can be accomplished in most geographic areas by driving a **6 to 8 foot copper plated ground rod** into the earth next to the payphone. The resistance of the earth varies depending on moisture and chemical content for the geographic area.

A second best ground would be connecting directly to the ground rod used by the electrical power service coming into the building. **Do not connect to the neutral at the circuit breaker box. Using a clamp connect directly to the ground rod itself.**

Recommended Ground Conductor size from Phone to Rod:

12 to 14 AWG

Ground Resistance Measurement (using a 6 to 8 foot grounding rod):

Equipment needed:

- Digital Multimeter w/ DC milliamps scale
- Calculator

1. Measure voltage between Tip and Ring on the telephone line.

Example: 48 Volts DC

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2. Measure the available loop current between Tip and Ring using the milliamp meter scale.

Example: 38 milliamps DC

3. Calculate the total loop resistance by dividing the loop voltage by the loop resistance:

$$\text{-----} = \frac{48 \text{ VDC}}{38 \text{ MA DC}} = 1263 \text{ ohms}$$

4. Calculate the resistance of each of the two conductors (Tip and Ring):

$$\text{-----} = \frac{1263 \text{ ohms}}{2} = 631 \text{ ohms}$$

5. Measure the available ground current between Ring and Earth Ground using the DC milliammeter scale:

Example: 72 mA DC

6. Calculate the combined ground and Ring conductor resistances:

$$\text{-----} = \frac{48 \text{ VDC}}{72 \text{ mA DC}} = 667 \text{ ohms}$$

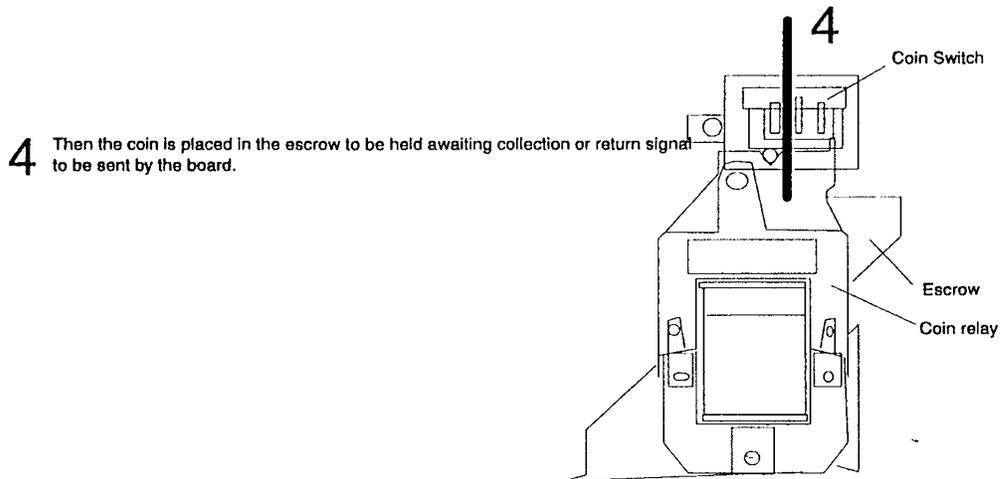
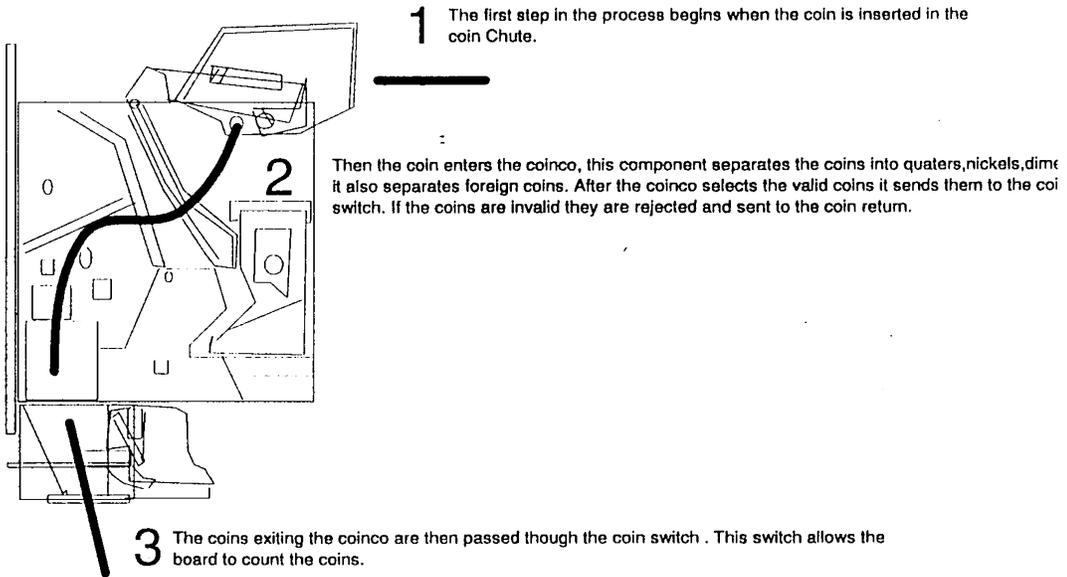
Calculate the Local Ground Resistance:

$$667 \text{ ohms} - 631 \text{ ohms} = 36 \text{ ohms}$$

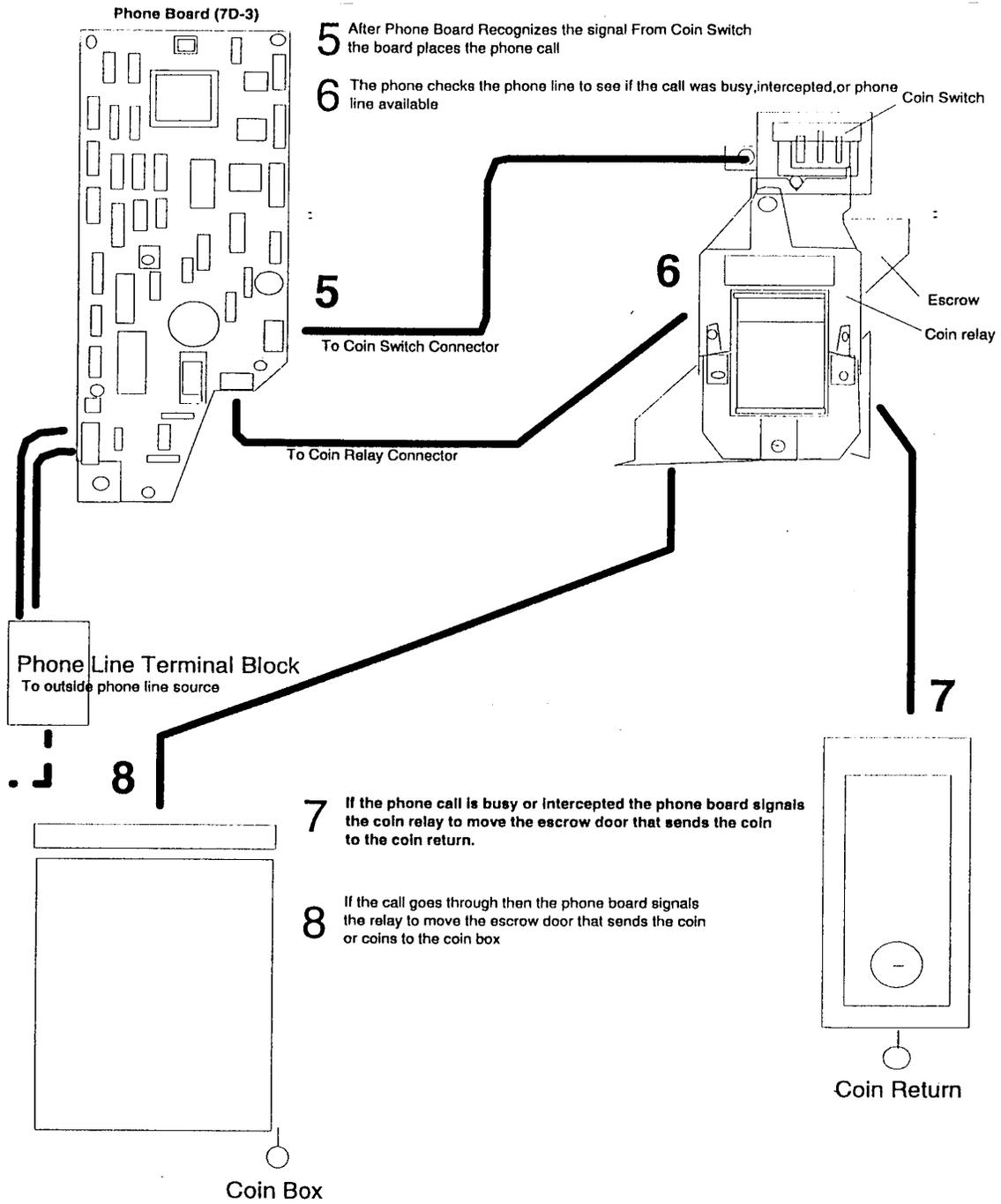
The Local Ground Earth Resistance must be less than 50 ohms to provide an adequate ground for the Payphone.

NOTE: A negative resistance indicates a measurement error due to additional currents present on the ground rod other than the measurement test current. Make sure there are no other connections to the ground rod.

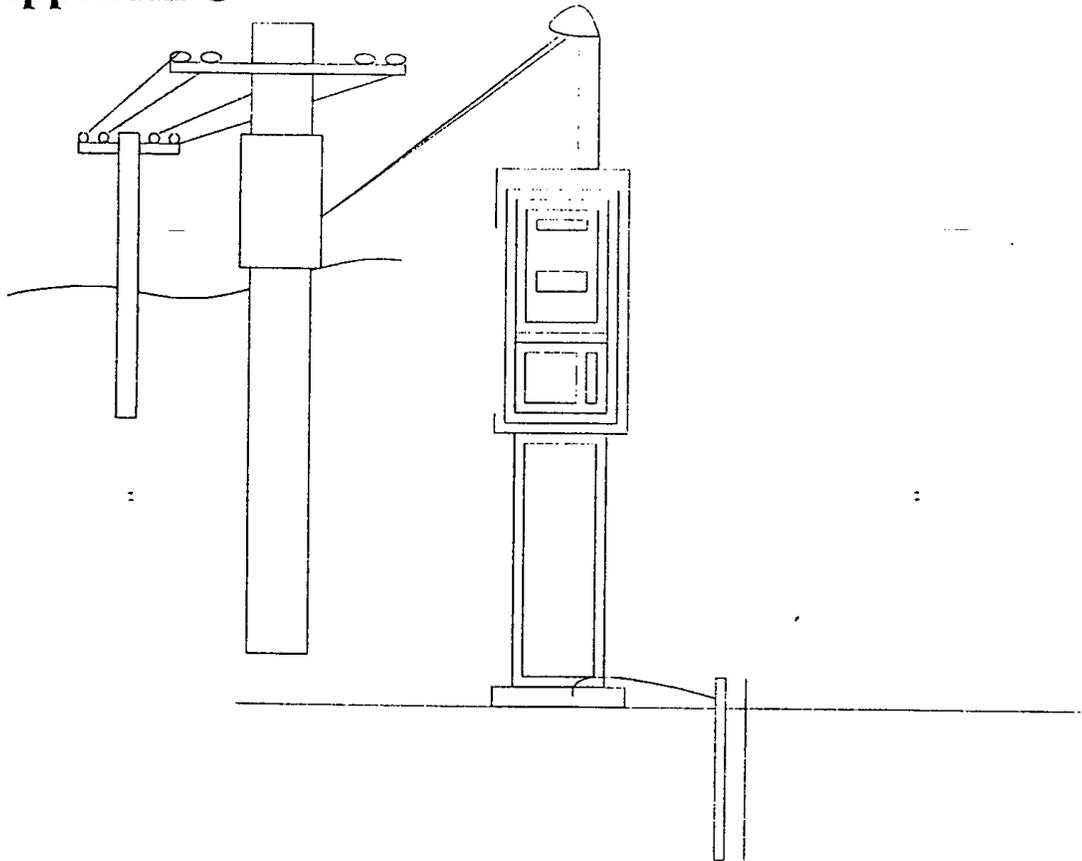
Appendix B

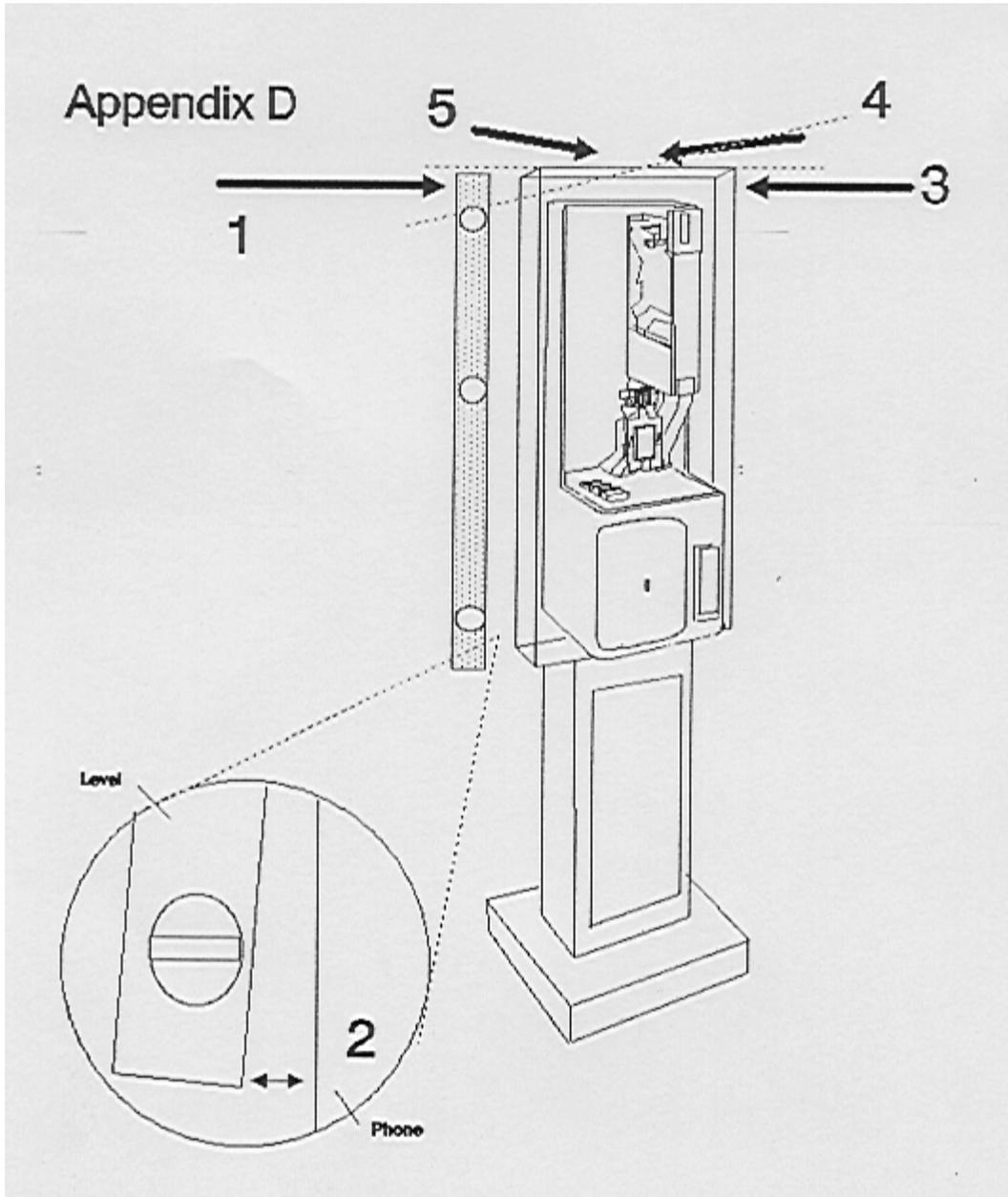


Appendix B



Appendix C



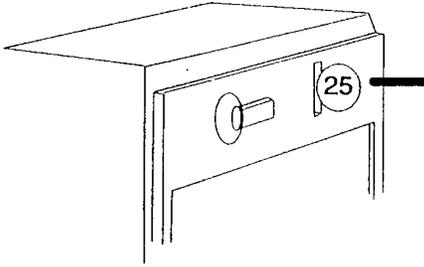


1. Place a spirit level vertically against the side of the mounting surface, the top of the spirit level should be aligned with the top of the phone.
2. Move the top or bottom end of the level away from the mounting surface as required to obtain a vertical reading. When the reading is obtained, the end of the level opposite the point of contact should be no further from the mounting surface than the distance shown below.

Spirit Level Length (inches)	Distance (inches)
18	15/32
24	5/8
30	25/32
36	15/16

3,4,5 Repeat the process for each side of the phone.

Appendix E



List Of Components

- 1.....Coin Chute
- 2.....Coinco
- 3.....Coin Switch
- 4.....Coin Relay
- 5.....Phone Line Terminal Block
- 6.....Coin Box
- A.....Phone Board
- 10..... RUN / Program Switch

List Of Connectors

- 7.....Phone/Ringer(Jp-2/Jp-5)
- 8.....Coin Switch (Jp-1)
- 9.....Coin Relay(Jp-3)
- 11.....LCD Display Connect(Jp-4)
- 12.....Keypad Connecto(p-1)

