Protel® INC. *INNOVATION IS OUR BUSINESS*

Pocket Reference Guide

Property Of: _____

7000PR002.0 [723]

Protel Technical Support: (800) 925-8881

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Installation Connection Check List

Make sure all connections pointed out below are properly connected after installing the phone.

Electronic Coin Validator
(Only present if optional ECSII interface or Mars Electronics® MS-16 interface is installed.)

Upper Housing Connector

Mechanical Trigger Switch

Escrow Relay Connector

Coin Box Alarm Connector

Telco Line RJ11 Connector

Enclosure Release Tab

Transmit Level Adjust

Program Button

Ni-Cad Battery Connector

Ground Tab

TCI Library: www.telephonecollectors.info

Initialization Card

1 **Enter the program mode.** (Go on hook & press the program button. Hold the button, come off hook. Wait for beep in handset. Release button.)

2 **Dial** **0 0** (B1 Line) _____ ✳
  OR   **(NPA) NXX-XXXX**
  0 1 (Coin line) Payphones telephone number including area code.

3 **Dial** **2 5** _____ ✳_ (Listen for beep.)
  Computer's telephone no. as dialed from the payphone.

4 **Dial** **1861**✳ For 1200 Baud FSK Communications
  (If the phone is to communicate at 300 Baud FSK or 1200 Baud DPSK, Dial 1860)

5 **Dial** **✳#3** (Listen for phone to repeat the phone no. and connect with computer. Go on hook.)

6 **Dial ✳#6** (This verifies the date and time of the last successful download. If the phone goes to dial tone immediately, reinitialize the phone.)

7 Perform diagnostic procedures and operational tests.

These tests may be used to verify proper operation of the hardware components of the phone and should be performed at the time of installation, after the phone has been initialized, and when troubleshooting the phone. If a diagnostic test fails, use the flowcharts that follow this section to troubleshoot the phone.

■ **Entering the Diagnostic Mode** ..... Enter program mode and then dial
[9] (pause) [0] (pause) [2] (pause).

■ **Keypad Test** .... Press each key except [✻] for voice verification (in handset) of the pressed key.

■ **Coin Recognition Test** .... Each coin deposit results in voice verification to handset.

■ **Escrow Relay Test** **(Refund)** .... Deposit coin, dial [✻] [1], voice prompt = *"Refunding,"* coin returns.

(Collect) .... Deposit coin, dial [✻] [2], coin is collected by phone.

[*Failed*] - Two beeps sound in handset.

■ **Loop Polarity Test** .... Dial [∗][3]. If tip & ring are properly connected, voice prompt sounds "*Thank you*."

             [*Failed*] -   Warble tone in receiver means tip & ring are reversed or loop current from C.O. is not detected by phone.

■ **Coin Box Alarm Switch Test** .... Coin box removal results in bong tone.
   (If Installed)

■ **Coin Ground Test** .... Deposit coin, dial [∗] [4], money in escrow is refunded (coin **(Coin Line Only)**   line only).

             [*Failed*] -   Voice prompt "*Error*" sounds in handset.
                               Two beeps indicate a bad relay.

■ **Exiting the Diagnostic Mode** .... Dial [∗] [#] to exit diagnostic mode. Three beeps are sounded in the handset.

Enter the reporting commands on the keypad to have the phone perform the following actions.

⁕#1 XXXX .... **Coin box emptied:** Resets the coin box totalizer in the remote computer. The phone reports to the computer that the coin box is empty. XXXX = the "Coin Collection Security Code" provided by the computer operator.

⁕#2 .... **General reporting status:** Causes the phone to report to the remote computer.

⁕#3 .... **Program update:** Causes the phone to sound (in the handset) the ANI number of the phone, and to call the remote computer for a complete download. This command works only in the program mode. *This command should be used only when performing a new installation, when replacing the firmware on the chassis assembly or when replacing the chassis assembly.*

⁕#4XXXX .... **Coin box totalizer by voice:** Causes the phone to report the value of the coin box totalizer to the phone's handset. XXXX = the "Coin Box Amount Security Code" provided by the computer operator.

⁕#5XXXX .... **Reset coin box totalizer:** Resets the *voice* coin box totalizer in the phone. XXXX= the "Coin Box Amount Security Code" provided by the computer operator.

Reporting Commands (continued)

*#6 **Time and date of last update:** Phone sounds the date and time of the last successful communication between the phone and the computer.

*#61(YYYY) **ANI verification:** Phone sounds the telephone number that the phone is initialized to.

*#62(YYYY) **Firmware/software revision:** Phone sounds its current firmware revision number. One of the following is sounded after the revision:
>   *"Number One"*: firmware is in EPROM chip
>   *"Number Two"*: firmware is in the download chip

*#64(YYYY) **Flags currently set in phone's memory:** Phone sounds voice flag codes for the flags currently set in the phone. See "*#64 Codes" section of the *Pocket Reference.*

*#65(YYYY) **Remote reporting number:** Phone sounds the telephone number the phone dials to reach the computer.

> **Note:** YYYY = Optional *#6 Security Code. If a security code is required or if a security code is required and improperly entered, error 32 will be heard in the handset

⁕#66(YYYY) **Option Boards Installed:** Sounds code indicating option boards installed in the phone.

<u>Option Board Codes</u>	
2 - 1200 Baud DPSK Modem	3 - Electronic Coin Scanner ECS II Interface
4 - MARS Electronics® MS-16 Interface	5 - Coin Line Board

⁕#67(YYYY)   **Battery Test:** Causes the phone to test the condition of the battery. The phone will reply with one of three responses..

- A single beep indicates that the battery is good
- Two beeps indicate a marginal battery
- Three beeps indicate a weak battery

⁕#68(YYYY)   **Manual Battery Charge:** Causes the phone to immediately charge the battery. It is important to note that the service tech must wait for the "please wait two minutes" prompt before placing the handset on-hook. This "manual battery charge" is recommended for phones that have a marginal or weak battery as indicated from the battery test. Once the manual battery charge routine has been invoked, it cannot be interrupted.

Standard Troubleshooting Process

These are general guidelines for troubleshooting a Protel phone. Your exact steps may vary depending on the conditions you find at the phone and your level of experience.

1. Physically inspect the phone and components. Fix any obvious problems.
2. Check the Voice Error Messages and *#64 flag codes.
    a. Come off hook and listen for a voice error message.
    b. Dial a local coin number and listen for a voice error message. Hang up without completing the call.
    c. Come off hook and dial "*#64" and listen for a flag code.

    NOTE: Do not perform step 3 before step 2. If you enter the diagnostic mode first, some of the *#6 flag codes stored in the phone will be reset.

3. Perform the diagnostic procedure. Use the "Flowcharts Section" of the *Pocket Reference* if there is an error, if there is no dial tone or if you cannot enter the diagnostic mode.
4. ALWAYS perform your standard company operational test before leaving the site.

Voice Error Messages

Error numbers are sounded in the handset when these conditions are detected by the phone.

- ● = Phone Hardware Related. Troubleshoot the phone.
- ▲ = Programming Related. Recreate the error & confirm programming with computer operator.
- ■ = User Error. Recreate the error & confirm programming with computer operator.

● **Error 1** **Ram Error -** Phone detected a discrepancy in the RAM checksum. Phone must be reinitialized.
● **Error 2** **Relay Jam -** Phone detected an error with the operation of the escrow relay.
● **Error 3** **ESC I Failure -** Phone detected an error with the operation of the ECS I.
● **Error 4** **ECS II Failure -** Phone detected an error with the operation of the ECS II.
● **Error 5** **ECS II Gate Failure -** Phone detected an error with the he coin accept/reject gate of the ECS II.
● **Error 6** **Key/Card Inactivity -** Handset off hook more than 25 sec. with no keypad or card reader activity
▲ **Error 7** **Invalid Speed Dial -** User pressed an unprogrammed speed dial button.
■ **Error 8** **Invalid Key Press -** Phone detected a key press that is invalid in the sequence of pressed keys.
▲ **Error 9** **Invalid Speed Dial -** The number programmed for the speed dial key pressed is not a valid number.
▲ **Error 10** **Volume Control Error -** Volume control using "#" is disabled (Opt. 117).
■ **Error 11** **Dialed Digits "11" -** The first two dialed digits are "11." This is an invalid sequence of dialed digits.
■ **Error 12** **Equal Access # NG -** User dialed a 10XXX number and then dialed "1."
▲ **Error 13** **Coin Call Denied -** User dialed a restricted number. The "Over Time Period" in the Rate Band = "0."
■ **Error 14** **User Didn't Pre-Pay -** Phone is programmed for continuous ground line and user didn't deposit enough coins before dialing local No.

Voice Error Messages (continued)

▲ **Error 15 Card Route NG** - The intralata route to be used for this type of call is not configured.

■ **Error 16 No Answer or Busy** - Call was not answered or busy & handset stayed off hook longer than expected.

▲ **Error 17 Store & Forward Limit** - User made a Store & Forward or a Super Collect call and the time limit for the call expired.

▲ **Error 18 Initial Period Time Out** - The initial time period for the call expired and no over time is granted.

▲ **Error 19 Over Time Expired** - The over time period set up for the call has expired (Mode 6).

● **Error 20 Insufficient Deposit** - Phone did not detect required over time deposit.

● **Error 21 Over Time Rate Error** - The phone has detected an error in the calculated overtime rate for the call.

● **Error 22 Call Rate Error** - The phone has detected an error in the calculated rate for an operator assisted call.

● **Error 23 Answer Not detected** - The phone didn't detect loop reversal when expected to indicate an answer .

■ **Error 24 Collect Call Refused** - Called party did not accept the Super Collect call.

▲ **Error 25 Route Not Programmed** - The alternate route to be used for this type of call is not configured.

▲ **Error 26 Call Denied** - Card call or international number was dialed and phone is set up to deny this type of call.

■ **Error 27 Program Mode Error** - The program mode access code "100001XXXX" was entered incorrectly.

● **Error 28 EPROM Error** - The phone detected a discrepancy in the calculated checksum of the EPROM.

▲ **Error 29 Invalid Speed Dial** - The user pressed an unprogrammed speed dial button.

● **Error 30 Stuck Key** - The keypad has a stuck key or the user pressed a key for too long.

▲ **Error 31 IXC Not Selected** - IXC button not pressed when phone expected it or button is not set up with an IXC code.

● **Error 32 Reporting Error** - Phone detected one of the following conditions during a "*#X" reporting attempt.
     a. Program button was down during attempt to report.
     b. Too much time passed before "Reporting" security code entry.
     c. The "Reporting" security code is not programmed in phone.
     d. 4-digit security code entered at keypad did not match the code programmed in the phone.

■ **Error 33 Keypress Time-out** - The phone expected a keypress and a keypress did not occur.

■ **Error 34 Invalid Number Dialed** - User dialed invalid PBX code ("0" or "1") or 10-digit 976-XXXX number.

■ **Error 35 Invalid Number Dialed** - The user dialed either a 1-900 phone number or an invalid area code.

▲ **Error 36 Invalid Number Dialed** - Office code of the 0+ or 1+ 7 digit number dialed not found in the NXX table.

▲ **Error 37 Card Group Denied** - Cost band used to process the call does not have a route number programmed.

▲ **Error 38 Card Group Denied** - The cost band used for the call is set up to deny this call. ["Ovt Period = 0"]

● **Error 39 Coin Mech/Relay NG** - Coin call denied due to coin scanner failure or relay failure [ECS II Only].

■ **Error 40 No Coin Deposit** - The phone did not detect deposited coins when it expected to.

▲ **Error 41 IXC Button NG** - The interexchange button pressed by the user has not been programmed.

▲ **Error 42 International No. NG** - The user has dialed an invalid international phone number.

■ **Error 43 No IXC Button Pressed** - User did not press an IXC button when the phone expected one to be pressed.

■ **Error 44 End of Price Quote** - User dialed *0 for price quote of last call & didn't hang up after the quote ended.

● **Error 45 Coin Gate Failure** - ECS II coin gate failed 3 times in a row. This error message is sounded immediately
     after the third attempt to accept or reject deposited coins.

Voice Error Messages (continued)

- **Error 46 Coin Track Failure** - Phone detected an error with the ECS's coin track.
- **Error 47 ECS Failure** - Phone detected error with the operation of the ECS. May be coin track or chassis assembly.
- ▲ **Error 48 Incoming Call Denied** - The phone has been set up to deny incoming calls.
- ▲ **Error 49 Call Denied** - Phone is set up to deny calls placed to this destination number.
- ▲ **Error 50 Call Denied** - Incoming call or coin call was made during a time that the phone is set to deny these calls.
- **Error 51 Coin Mech Failure** - Phone is not correctly detecting deposited coins (Incorrect coin frequencies).
- ■ **Error 52 Feature Group D Rest.** - The Feature Group D code (10XXX) entered is invalid.
- **Error 53 Debit Card Error** - Unable to debit the required amount from the debit card.
- **Error 54 Loop Reversal Restrict** - Phone detected loop reversal & is programmed to restrict local & 1+ coin calls.
- **Error 55 Opto Coupler Defective** - Phone detected an opto coupler hardware failure & will restrict coin calls.
- ▲ **Error 56 Destination Number NG.** - Phone did not find a match in the valid destination number table.
- ▲ **Error 57 Too Few NPA Tables** - Phone couldn't find enough tables to assign a cost band number (NANP).
- ▲ **Error 58 Too many NPA Tables** - The phone determined too many 100-byte tables assigned (NANP).
- ▲ **Error 59 No NPA located in tables** - The phone could not locate the desired NPA in its database (NANP).
- ▲ **Error 60 Range outside limit** - The calculated range is outside of the NPA/NXX limit (NANP).
- ■ **Error 61 Coin Tone Fraud** - The phone detected coin tones generated outside the payphone.
- **Error 62 Trigger Switch** - The phone detected a stuck coin (nickel, dime, quarter shorted).

Listed below are definitions of voice codes that may be sounded in the handset by dialing the *#64 reporting command. Only those flags currently set in the phone are sounded in the handset. These flag codes indicate specific operating conditions with the payphones and are normally reported to the computer during polling.

Numeric Code	Flag Code	DESCRIPTION
00	E$	**Coin Box Emptied (*#1):** Indicates that the coin box of the phone has been emptied and a repair person reported this information to the computer by entering the reporting command *#1 at the payphone keypad.
01	ST	**Status Check (*#2):** Indicates that a repair person entered the reporting command *#2 (General Reporting Status) at the phone keypad. This command causes the phone to call the computer and report the details of calls that have been made on the phone since the last time that the phone reported this information. The phone also verifies that the costing and options information stored in the phone is up to date, and if necessary requests a download of costing and options information from the computer.

02	PR	**Phone Repair (*#3):** Indicates that a repair person entered the reporting command *#3 (Program Update) at the payphone keypad. This reporting command causes the phone to call in to the computer and request a download of costing and options information in order to program or reprogram the phone.
03	PC	**Peg Count:** The number of calls made on the phone is equal to the number specified for the "Inactivity/Completed Calls peg counter" (Screen 2.3 - Options & Registers).
04	$V	**Coin Box Volume Reached:** Indicates that the volume of coins in the coin box has reached the percentage (%) full programmed for the payphone to report (Screen 2.3 - Options & Registers). The coin box should be emptied at this time.
05	RE	**Ram Error:** Indicates that an error was detected in the RAM used for storing costing and options information. Fix: Poll the phone. If this flag does not reset, the RAM or the chassis assembly must be repaired.
06	RJ	**Relay Jam:** Indicates that the coin relay is not operating properly. Possible causes are a stuck coin, faulty trigger switch, faulty coin relay or faulty circuitry on the chassis assembly. Fix: check for stuck coin; stuck relay; or bad relay connections.

07	LR	**Loop Reversed:** Indicates that the tip and ring wires connected to the phone are reversed.
10	VE	**Coin Box Volume Error:** Indicates that an error was detected in the coin box volume percentage reported to the computer. Fix: Have the technician empty the coin box and use the *#1 reporting command [Coin Box Emptied]. If this flag does not reset, the chassis assembly must be repaired.
11	$E	**Coin Total Error:** Indicates that an error was detected in the non-resettable coin totalizer in the phone. Fix: Poll the phone. If this flag does not reset, the RAM or the chassis assembly must be repaired.
12	TE	**Resettable Coin Totalizer Error:** Indicates that an error was detected in the "amount to date" reported to the computer. Fix: Poll the phone. If this flag does not reset, the RAM or the chassis assembly must be repaired.
13	BE	**Box Amount Error:** Indicates that an error was detected in the "coin box amount" totalizer. The "coin box amount" reported to the computer may not be accurate. Fix: Have the technician empty the coin box and use the *#1 reporting command [Coin Box Emptied]. If this flag does not reset, the chassis assembly must be repaired.

14	OE	**Over Charge Memory Error:** Indicates that an error was detected in the "overage amount" [amount deposited was more than the amount charged] reported to the phone. Fix: Poll phone. If flag doesn't reset, the RAM or the chassis assembly must be repaired.
15	AE	**Accounting RAM Error:** Indicates that an error was detected in the RAM used for call accounting. The information received from the phone may not be accurate. Fix: Poll the phone. If this flag does not reset, the RAM or the chassis assembly must be repaired.
16	CL	**Billing CDR Limit Reached:** This flag indicates that the number of Store & Forward calls made on the phone is equal to the number of calls specified in the option labeled "Number of Billable CDR Records bef Reporting." (Screen 2.3 - Options & Registers)
17	CF	**Billing CDR Full:** This flag indicates that there have been 52 Store & Forward calls made on the phone and the call detail records for these calls have not yet been transferred to the computer. The Store & Forward records must be reported to the computer, and the Store & Forward call counter must be reset before the phone will allow any further Store & Forward calls.
21	$F	**Coin Box Full:** Indicates that the volume of coins in the coin box has reached 100 percent. The coin box must be emptied to reduce the possibility of coins becoming jammed.

22	CG	**Coin Gate Failure:** Indicates that an error was detected with the operation of the collect/refund gate of the Electronic Coin Scanner II. This may be caused by a jam or failure in the coin gate circuit. Fix: replace ECS.
23	DE	**Inactivity:** This flag indicates that the payphone did not see deposited coins on ten consecutive attempts to process a call. This flag is automatically reset once a coin call is completed.
24	ME	**Coin Mech Error:** Indicates that a failure was detected with the operation of the Electronic Coin Scanner or associated circuitry. Possible causes: defective ECS, defective interconnect cable or chassis.
25	TR	**Time Report:** Indicates that the payphone has reported in to the computer during the "Remote Reporting Time." (See Screen 2.3 - Reporting Options).
26	NE	**Audit CDR Error:** Indicates that an error was detected in the data of the non Store & Forward call detail records (CDR) received from the phone. The records received from the phone may not be accurate. Fix: Contact your distributor or Protel for assistance. If this flag does not reset in the phone, the chassis assembly must be repaired.

27	CE	**Billing CDR Error:** Indicates that an error was detected in the Store & Forward call detail records (CDR) stored in the phone. The information transferred to the computer may not be accurate.
30	LB	**Low Battery:** Indicates that the chassis assembly detected that the voltage of the ni-cad battery is low and that the battery is in the process of being charged. Fix: If this flag reoccurs, replace the battery and test the incoming line for proper current and voltage.
34	HO	**Handset Off Hook:** Indicates that the handset was left off hook with no activity for approximately 15 minutes. Fix: check hookswitch operation.
36	LA	**Lower Alarm:** Indicates that the coin box was removed from the phone.
37	HG	**Handset Gone:** Indicates that there is improper resistance of the handset receiver. The handset may be missing or defective/incorrect wiring. Fix: check wiring, replace handset or chassis assembly.
40	NF	**Audit CDR Full:** Indicates that the number of non card CDR records stored in the phone is at maximum (500). This information should be transferred to the computer.

44	BG	**Bad Ground:** This flag indicates that the phone made four unsuccessful attempts to detect a collect or refund signal from the central office. This flag is reset after the phone successfully detects a collect or refund signal from the central office.
45	CR	**Clock Reset:** This flag indicates that the date and time in the phone has been reset due to a power-on reset condition.
46	EE	**EEPROM Error:** Indicates that the program stored in EEPROM within the payphone is corrupt. Replace EEPROM Chip(s).
47	TG	**Trouble Gone:** Indicates that a previously reported relay jam condition has cleared itself.
50	OC	**Opto-Coupler:** This error flag indicates a collect/refund hardware failure in the phone.
51	BR	**Box Removed:** This flag indicates that the coin box was removed from the phone during a time that is other than during the active coin box removal window.
52	RR	**Relay Refund:** This flag indicates that there is a problem with the escrow relay's refund function. This flag will become set if the phone makes six consecutive unsuccessful attempts to refund coins.

53	RC	**Relay Collect:** This flag indicates that there is a problem with the escrow relay's collect function. This flag will become set if the phone makes six consecutive unsuccessful attempts to collect coins.
54	SN	**Silicone Ser#:** This flag indicates that the phone detected a change in the serial number associated with the add-on board that is installed in the phone.
55	BM	**Box Missing:** This flag indicates that the coin box has been missing from the phone for at least 15 minutes.
56	DI	**Dial Inactive:** This flag indicates that the handset came off hook X number of times without a call ever getting to the point of call cut-through (phone dialed out, and transmitter/receive turned on). The value of X must be specified in the option labeled "Peg Coin/Inactivity" in the Options & Registers section of the payphone management system software. (Screen 2.3)

Cannot Enter Diagnostic Mode

↓

Confirm that the keypad connector and the handset connectors are properly connected. Then, confirm that the phone has the proper version of firmware installed.

↓

Are you able to enter the program mode?

N →

Hang up the phone. Press and hold the program button for 2 seconds. Release it for 1 second. Again, press and hold the program button for 2 seconds and then release it. Come off hook. Can you enter program mode?

Y ↓

Try to enter the diagnostic mode. Are you able to enter the diagnostic mode?

Y ↓

Trouble cleared.

N ↓

Replace the chassis assembly and initialize the phone.

→

Perform standard operational test as dictated by your company procedures.

N / **Y**

The phone was trying to call in to the computer. Confirm that you can enter the diagnostic mode.

Keypad Diagnostic Test Fails

Replace the keypad. Does the diagnostic keypad test now pass?

Y → Confirm that the phone is able to complete calls.

N → Replace the chassis assembly and initialize the phone.

↓

Perform all diagnostic tests and an operational test to ensure that the phone is operating properly.

Coin Recognition Diagnostic Test Fails

↓

| Electronic coin scanner installed? | Mechanical coin mech. installed? |

↓

Ensure that the coin scanner is plugged into the chassis. Inspect the scanner for stuck coins or a faulty coin gate.

Ensure the trigger switch is plugged into the chassis. Inspect the coin mechanism and trigger switch for stuck coins.

↓

Repair or replace the coin scanner. Perform the coin recognition diagnostic test. Does the test pass?

N   **Y**

Repair or replace the coin mechanism and trigger switch. Perform the coin recognition diagnostic test. Does the test pass?

Y   **N**

Trouble Cleared.

↓

Repair or replace the ECSII option board. Then, perform the coin recognition diagnostic test. Does the test pass?

Y   **N**

Replace the chassis & perform all diagnostic tests & an operational test to ensure the phone is operating properly.

Trouble Cleared.

Loop Polarity Diagnostic Test Fails

Ensure that the tip & ring wires from the C.O. are properly connected to the terminal block inside the lower housing of the phone.

Lift the handset off hook and listen for dial tone. Do you hear dial tone?

Connect a butt set to the tip & ring wires on the terminal block. Do you have dial tone on the butt set?

Y

N

Reverse the tip & ring wires.

Y

N

Use a butt set to check for dial tone on pins JB1 and JB2 on the chassis assembly. Do you have dial tone on the butt set?

N

Y

If not already connected, connect a butt set to the tip & ring wires on the terminal block. Then, disconnect the telephone line (RJ11 connector) from the connector marked JA on the chassis assembly. Do you have dial tone on the butt set now?

Y

N

Replace the chassis assembly and initialize the phone. Then, perform an operational test to ensure that the phone is working properly.

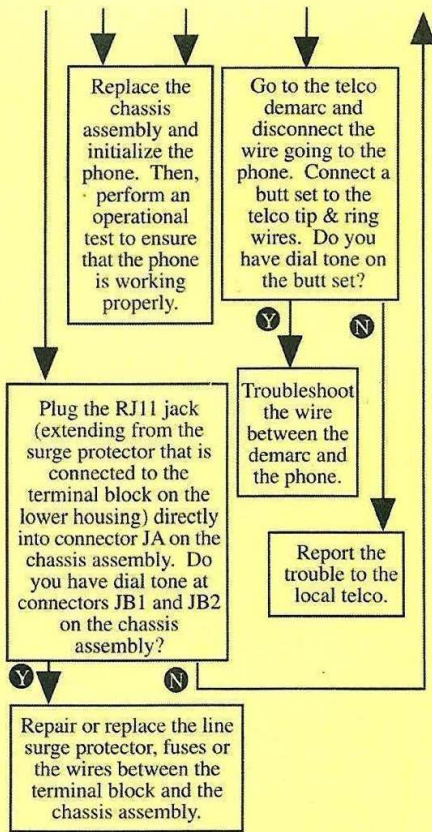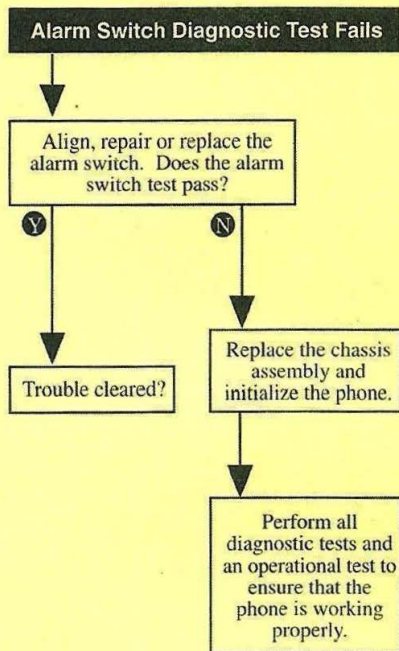Go to the telco demarc and disconnect the wire going to the phone. Connect a butt set to the telco tip & ring wires. Do you have dial tone on the butt set?

Y

N

Troubleshoot the wire between the demarc and the phone.

Plug the RJ11 jack (extending from the surge protector that is connected to the terminal block on the lower housing) directly into connector JA on the chassis assembly. Do you have dial tone at connectors JB1 and JB2 on the chassis assembly?

Report the trouble to the local telco.

Y

N

Repair or replace the line surge protector, fuses or the wires between the terminal block and the chassis assembly.

Alarm Switch Diagnostic Test Fails

↓

Align, repair or replace the alarm switch. Does the alarm switch test pass?

Y   **N**

↓   ↓

Trouble cleared?   Replace the chassis assembly and initialize the phone.

↓

Perform all diagnostic tests and an operational test to ensure that the phone is working properly.

Relay Diagnostic Test Fails

Verify that the coin recognition diagnostic test passes.

Repair or replace the coin relay. Then perform the relay diagnostic test again. Does the test pass?

Y → Confirm that refund and collect functions are operating correctly.

N → Repair or replace the hopper assembly. Does the relay diagnostic test now pass?

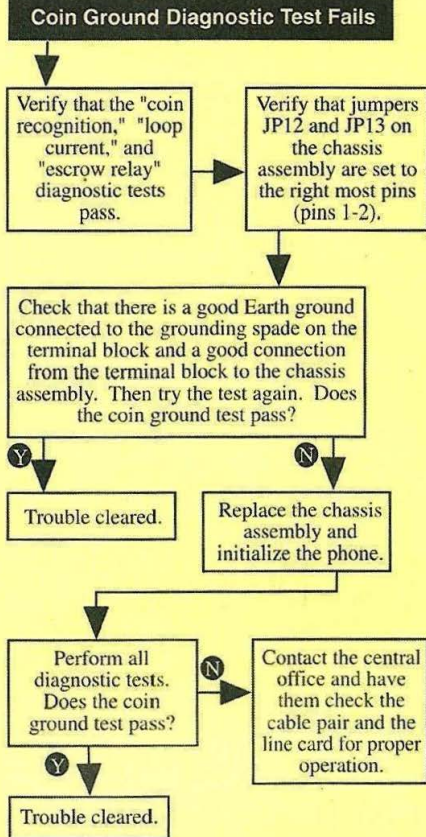**Y** → Confirm that the refund and collect functions are operating properly.

N → Replace the chassis assembly and initialize the phone.

Perform all diagnostic tests and an operational test to ensure that the phone is operating properly.

Coin Ground Diagnostic Test Fails

Verify that the "coin recognition," "loop current," and "escrow relay" diagnostic tests pass.

Verify that jumpers JP12 and JP13 on the chassis assembly are set to the right most pins (pins 1-2).

Check that there is a good Earth ground connected to the grounding spade on the terminal block and a good connection from the terminal block to the chassis assembly. Then try the test again. Does the coin ground test pass?

Y

Trouble cleared.

N

Replace the chassis assembly and initialize the phone.

Perform all diagnostic tests. Does the coin ground test pass?

N

Contact the central office and have them check the cable pair and the line card for proper operation.

Y

Trouble cleared.

Warble Tone Heard in Receiver or Voice Error Code "01" is Sounded.

↓

The phone is not properly programmed. Ensure that the lithium battery jumper JP10 is in the "IN" position.

↓

Ensure that the ni-cad battery connector is plugged in to the point labeled BT1 on the chassis assembly.

↓

Reinitialize the phone. Is the trouble cleared?

N ← → **Y**

↓ (Y) Finished.

↓ (N)

Replace the chassis assembly and then initialize the phone.

Phone Always Collects or Always Refunds

↓

Ensure that both the coin recognition diagnostic test and the escrow relay diagnostic test pass.

↓

Coin line operation? —N→ B1- Operation?

Y↓   Y↓

Ensure that both the loop polarity diagnostic test and the coin ground diagnostic test pass.

Replace the chassis assembly.

↓

Hang up and then enter the program mode. Dial 01, area code, phone number, and then press the * key. Dial 1371 and then press the * key. Hang up. Do local calls now complete? —N→ Replace the chassis assembly and initialize the phone. If a chassis assembly is not available, skip to the next step.

Y↓

Call the computer operator to change the setting of the option called "open loop coin check." to "gnd". This option is in the options & registers area of ExpressNet.

Use the *#2 reporting command to initiate communication between the phone and the computer. Wait for the communication to complete and then test the phone. Do local calls now complete?

Y

N

Trouble Cleared.

Begin the flow chart again from the beginning.

Possible line card is bad at the C.O. Check for proper collect/refund voltages of less than 130V, tip to ground.

The Test: Contact C.O. personnel to change to a different line group for the test or call the operator. Deposit 25¢ and then ask the operator to collect. Meter should read less than +130V. Complete the same test for refund. Meter should read less than -130V.

The Result: If you do not get the proper voltage on both collect & refund, the line card is bad at the C.O.

Phone Will Not Take Initial Download From Computer.

Perform the initialization procedure. Does the phone now take a download?

(Y)

(N)

Trouble cleared.

Using a butt set, connect across the tip and ring wires and then dial the telephone number to the computer exactly as you entered it during the initialization procedure.

Do you hear:

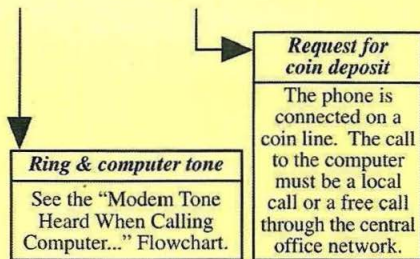*Ringing but no computer modem tone*

Call the computer operator and verify that the phone line is plugged into the modem connector marked "wall" or "line." Also verify that the computer modem is operational.

SIT tone

The number you just dialed is invalid or cannot be completed as dialed. Contact your computer operator for a valid telephone number.

Busy signal

Wait for the line to clear and then enter the program mode and dial ∗#3 for a download.

Ring & computer tone

See the "Modem Tone Heard When Calling Computer..." Flowchart.

Request for coin deposit

The phone is connected on a coin line. The call to the computer must be a local call or a free call through the central office network.

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

↓

Ensure the reporting number entered during initialization is the same number dialed during the "Phone Will Not Take Initial Download..." flowchart. Reinitialize the chassis. Does the phone & computer successfully communicate?

N ↓   **Y**

Confirm with the computer operator:
- that the computer modem is operational.
- that a site record is properly set up for this phone.
- that a costing record and an options & registers record are properly assigned to this site.
- the modem speed & type of communication (300, 1200FSK or 1200DPSK).
- that the "Modem Speed" and "1200 Baud FSK" fields are set properly in the options & registers record.

Enter the program mode & repeat steps 4, 5, & 6 of the initialization. Does the phone & computer successfully communicate?

N ↓   **Y**

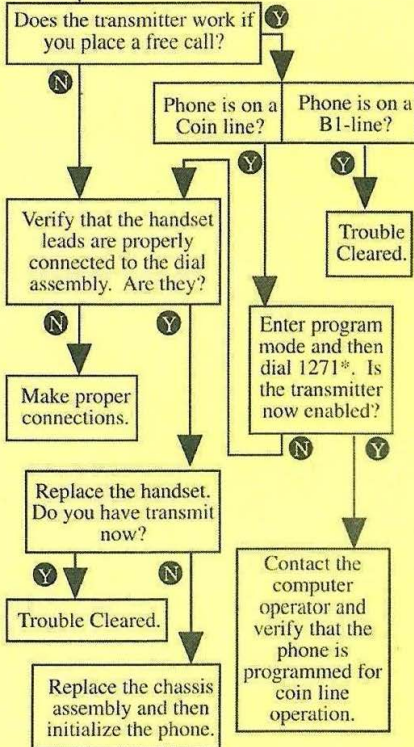Replace the chassis and initialize the phone. Does the phone and computer successfully communicate?

N   **Y**

Contact technical support.

Trouble cleared.

Phone Off Hook But Transmitter Dead

Does the transmitter work if you place a free call?

Y →

N ↓

Phone is on a Coin line?

Phone is on a B1-line?

Y ↓

Trouble Cleared.

Verify that the handset leads are properly connected to the dial assembly. Are they?

N ↓

Y ↓

Enter program mode and then dial 1271*. Is the transmitter now enabled?

N

Y

Make proper connections.

Replace the handset. Do you have transmit now?

Y ↓

N ↓

Trouble Cleared.

Contact the computer operator and verify that the phone is programmed for coin line operation.

Replace the chassis assembly and then initialize the phone.

Resetting a flag (error message, beeping)

Recommended manner to reset a flag:

- Go on hook and then press and hold the program button. Then, come off hook and wait for a beep. Then, press and release the "2" key and hang up.

Warning

- Do not change the chassis assembly or initialize the phone in order to reset a flag. This causes call accounting information to be lost.

- If the chassis assembly must be replaced or reinitialized, be sure to have the phone report in to the computer first (*#2).

- The *#3 reporting command should be used only immediately after initializing the phone.

Common coin line problems

If the phone does not collect and refund properly or if the phone always collects, check the following:

1) Check for reversal of tip and ring. (This is the most common cause.)

2) Verify a good ground connection.

3) Check central office line equipment.

Reminder

Ensure that the lithium battery jumper **JP10** on the chassis assembly is in the "IN" position.

Installing the ECS Option Board

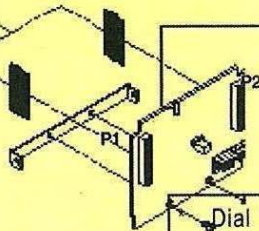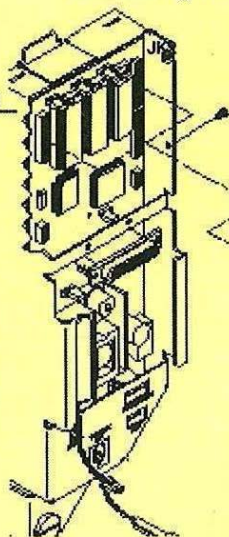✳ *Requires firmware specifically designed for Canadian applications.*

Canadian Loon

1 2 3

1-2 = U.S. Firmware
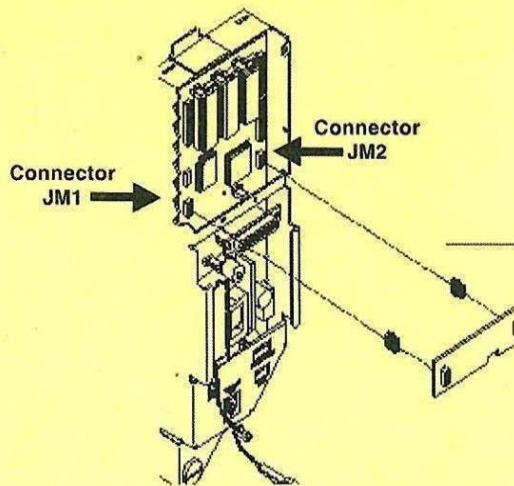2-3 = Canadian Firmware ✳
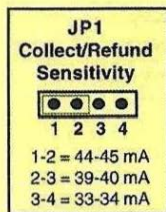
JK1

15-Pin Header

Install into the outer row holes on connectors JK1 and JK2 on the chassis assembly.

Dial *#2 before installing or removing option boards.

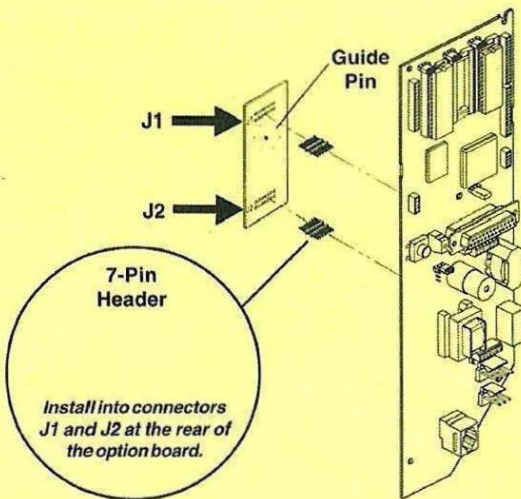* Reinitialize the phone after installing option boards.

TCI Library: www.telephonecollectors.info

Installing the Modem Option Board

10-Pin Header

Install into connectors JM1 and JM2 on the chassis assembly

Connector JM2

Connector JM1

* Dial *#2 before installing or removing option boards.

* Reinitialize the phone after installing option boards.

**JP1
Collect/Refund
Sensitivity**

1 2 3 4

1-2 = 44-45 mA
2-3 = 39-40 mA
3-4 = 33-34 mA

* Dial *#2 before installing or removing option boards.

* Reinitialize the phone after installing option boards.

Guide Pin

J1 ➤

J2 ➤

7-Pin Header

Install into connectors J1 and J2 at the rear of the option board.

* Dial *#2 before installing or removing option boards.
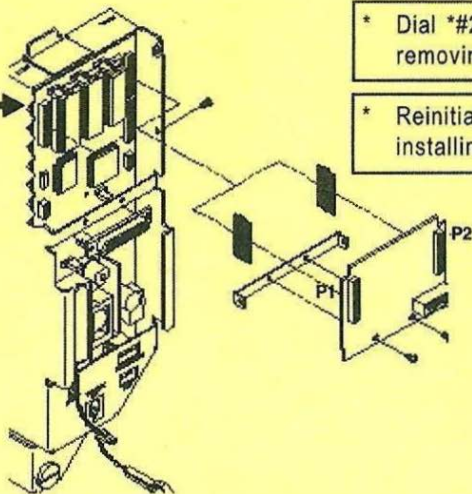
* Reinitialize the phone after installing option boards.

15-Pin Header

Install into the outer row holes of connectors JK1 and JK2 on the chassis assembly

P1

P2

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