

**Series-5**  
*Compact*  
*Field Guide*



The "Series-5 Compact Field Guide" is a supplement to the Elcotel Series-5 Product manual(s). It is intended to provide a fundamental overview of installation and troubleshooting procedures for the Elcotel PCM-5 smart payphone. It is organized into the following sections:



**OPERATIONAL** - Contains procedures arranged in a sequential manner to take you through the steps to initialize a phone for field operation. Each procedure may also be used individually to facilitate troubleshooting.



**TROUBLESHOOTING** - Contains flow charts and procedures which help diagnose and correct the most common occurrences that a field technician may encounter.



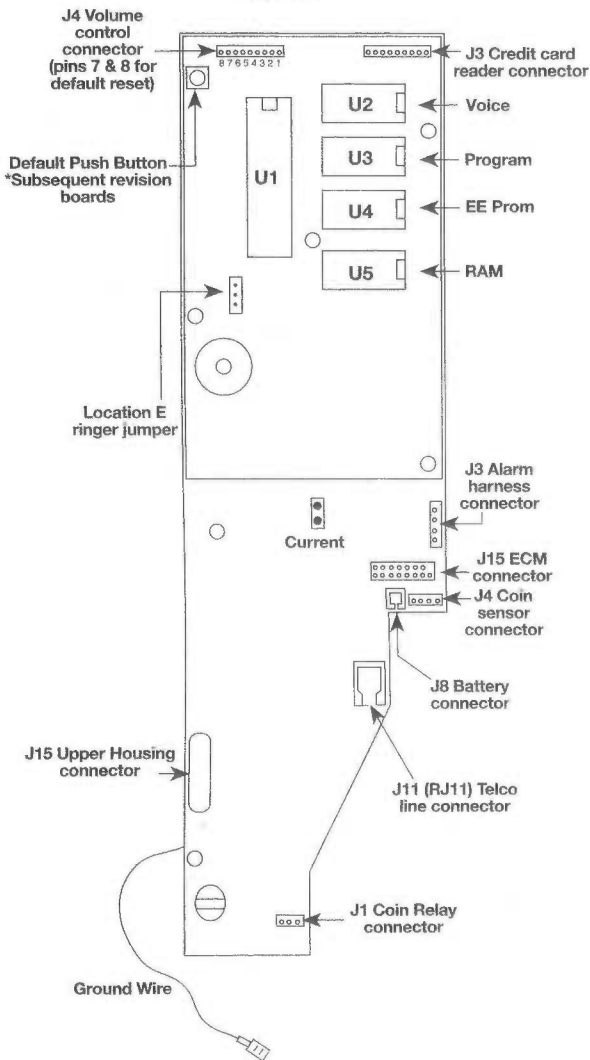
**UTILITIES** - Contains information on alarm codes, maintenance commands and programming through the keypad.

*The information in this manual has been carefully checked and is believed to be accurate. However, Elcotel Inc. assumes no responsibility for any inaccuracies that may be contained in this manual. In no event will Elcotel Inc. be liable for direct, indirect, special, incidental, or consequential damages resulting from any defect or omission in this manual, even if advised of the possibility of such damages.*

	Page
<b>OPERATIONAL:</b>	
PCM-5 Board Familiarization	1
Testing Line Voltage & Current	2
Grounding	3
Defaulting The PCM-5	4
Entering Local Voice Telemetry	5
Auto Downloading PCM-5	6
<b>TROUBLESHOOTING:</b>	
Testing For Excessive Current	7
Dial Tone Not Present On Handset	8
Testing Battery Conditions	9
Doesn't Collect Or Return Coins	10
Not Detecting Deposited Coins	11
Payphone Ringer Doesn't Ring	12
Checking Keypad Anti-Fraud	13
Frequent Coin Jams	14
Handset Microphone Doesn't Open	15
Payphone Won't Dial Out	16
<b>UTILITIES:</b>	
Alarm Codes	17
Common Maintenance Commands	18
Programming With The Keypad	19



FIGURE 1



1



Low line voltage may result in no or intermittent coin relay operation, while low line current may discharge and possibly damage the battery. Use a digital multi-meter (DMM) for these tests and make sure you are familiar with the operation of your equipment.

**CAUTION:** *The telephone line contains dangerous potentials. These tests should be performed by qualified personnel.*

**1. Voltage Test:** (Fig. 2a) With the payphone disconnected, set the DMM to DC voltage and connect it to the telco interface box tip and ring terminals. **Ensure that the reading is a minimum of 42 volts DC.**

**2. Current Test:** (Fig. 2b) With the payphone disconnected, set the DMM to milli-amperes (mA) and connect it in series between the butt set and the telco interface box. Go off hook with the butt set and **ensure the current reading is a minimum of 23 milli-amperes DC.**

*Call your local telco if the line fails to meet either of the test specifications above.*



FIGURE 2A

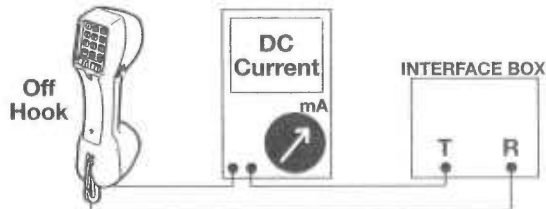


FIGURE 2B

2



**WARNING:** *The metal housing must be grounded! Failure to establish a proper ground may result in an electrical shock hazard, radio interference, Electro Static Discharge (ESD) or lightning damage to the PCM-5!*

A grounding wire of sufficient gauge must be connected directly from a cold water pipe or grounding rod to the center terminal of the strip located on the bottom left side of the Lower Housing (labeled "G"). If PVC plastic pipe is used between the incoming water line and the water meter, the water pipe will not be grounded. In such cases, a ground rod may be an effective substitute. Required length of ground rod and installation method may vary, depending upon conditions.

It is the payphone owner's responsibility to consult an electrician, duly licensed in the location where the payphone is to be installed, for proper grounding and installation. **Consult the Elcotel Series-5 Product manual(s) for more information on grounding.**

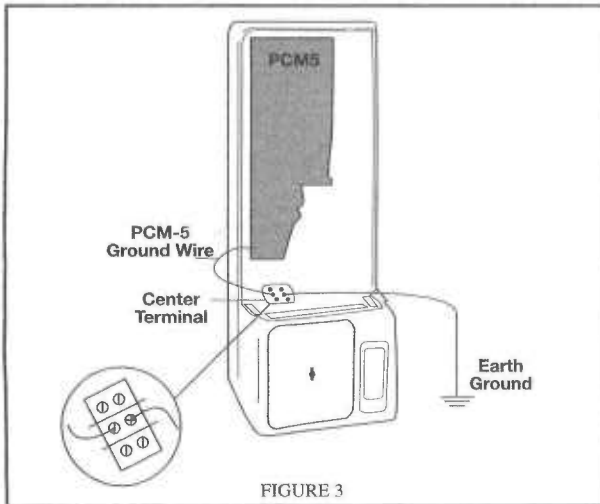


FIGURE 3



The PCM-5 needs to be defaulted prior to its initial download. It may also need defaulting when certain troubleshooting procedures are performed. Defaulting clears the system's EEPROM and RAM. **After the PCM-5 is defaulted, it must be downloaded with its operational files.**

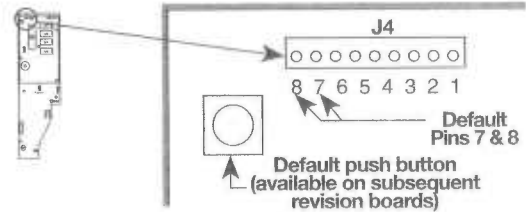


FIGURE 4

### Default Procedure

- 1 Place handset "on-hook" for at least 5 seconds.
- 2 Place a shorting jumper on pins 7 and 8 of J4. \*
- 3 Lift handset "off-hook" for at least 5 seconds.
- 4 Listen for the relays to fire.
- 5 Remove the shorting jumper. \*
- 6 Place handset back "on hook".

\* *Subsequent revision boards provide a push button switch that is used in place of the shorting jumper.*

### Verifying the Default Procedure

- 1 Enter <#99999999> and wait 4 seconds.
- 2 Enter <122> and wait for a voice response.
- 3 Enter <964>.
- 4 A response of "Five" indicates a successful default. A response of "Thank you", indicates the default procedure should be repeated.



## ENTERING LOCAL VOICE TELEMTRY

Local voice telemetry allows you to access the PCM-5s Maintenance Commands, Alarm Status, and Registers & Options.

**Entering Local Voice Telemetry**

- 1 Lift the handset "off-hook" and listen for dial tone.
- 2 Enter <# immediately followed by the 8 digit bypass code>. See Note below.
- 3 Wait 4 seconds.
- 4 Enter <the register number>.
- 5 Voice repeats the register number, then its content.

*Note: A new or defaulted board's bypass code is <#99999999>*

**Example**

- 1 Lift the handset "off-hook" and listen for dial tone.
- 2 Enter <#XXXXXXXX >.
- 3 Wait 4 seconds.
- 4 Enter <122>.
- 5 Voice says "One twenty two.. on / off", relative to content.



## AUTO DOWNLOADING PCM-5

The PCM-5 can be programmed to call home to the PNM to download its operational files. **Downloading of the operational files is necessary any time the PCM-5 has been defaulted or it is moved to a new location.** After the PCM-5 is downloaded you should make test calls to verify correct pricing, routing and anti-fraud operation.

**Auto Downloading Procedure**

- 1 Ensure the PNM is configured to accommodate this procedure.
- 2 Enter Local Voice Telemetry. (See Operational pg 5)
- 3 Set the following registers and options: (In This Order)
  - Register 333 = Enter <# PNM phone number as dialed from the payphone \*>.
  - Register 402 = Enter <# sites four digit ID number \*>.
- 4 Enter <961> Forced Call Home maintenance command then go "on-hook".
- 5 Wait at least 2 minutes then verify the download & perform test calls †.

† Time may be more, dependent on the selection of files downloaded.

*Note: The procedure above describes one particular method for downloading the PCM-5's operational files. Other methods are described in the Elcotel Series-5 Product manual(s).*



## TESTING FOR EXCESSIVE CURRENT

If the PCM-5 draws too much current, it may have an internal circuit problem that may eventually result in a dead or damaged battery. **The PCM-5 incorporates a test point with a built-in shunt resistor that allows you to determine current consumption via a voltage measurement.** Use a digital multi-meter (DMM) for these tests and make sure you are familiar with the operation of your equipment.

1. With the receiver "on-hook" or the upper housing completely disconnected, read the voltage (in microvolts) across the two pins labeled "CURRENT" located approximately in the center of the main board. **The reading should be less than 40  $\mu\text{V}$  (microvolts).** (Note: Your meter may not be capable of reading this low. For all practical purposes, a reading of less than 0.1 mV (milli-volts) should suffice.

2. With the upper housing connected, live phone line connected and receiver "off-hook", again measure across the two pins labeled "CURRENT." **This reading must not exceed 16.5 mV (milli-volts).**

**Replace the PCM-5 if it fails to meet the above test specifications.**

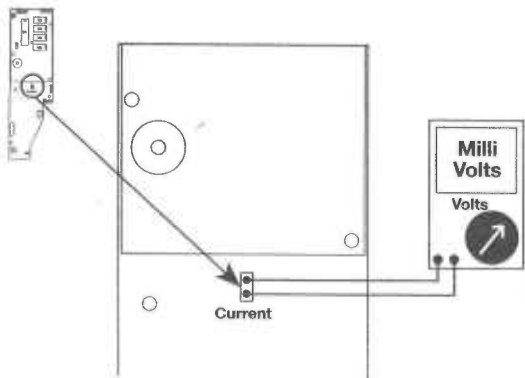
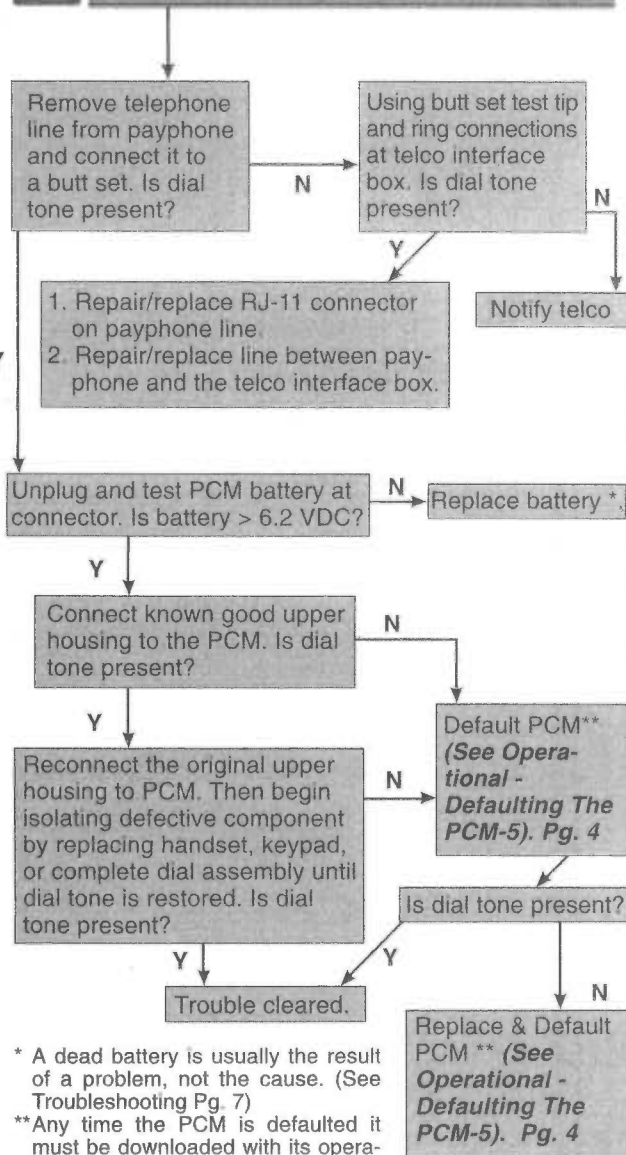


FIGURE 5



## DIAL TONE NOT PRESENT ON HANDSET

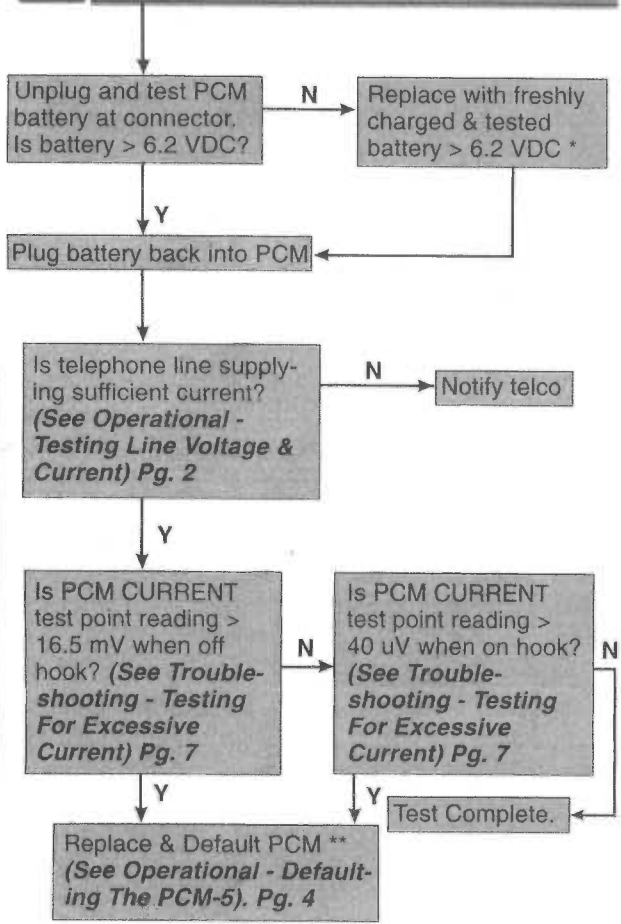


\* A dead battery is usually the result of a problem, not the cause. (See Troubleshooting Pg. 7)

\*\* Any time the PCM is defaulted it must be downloaded with its operational files.



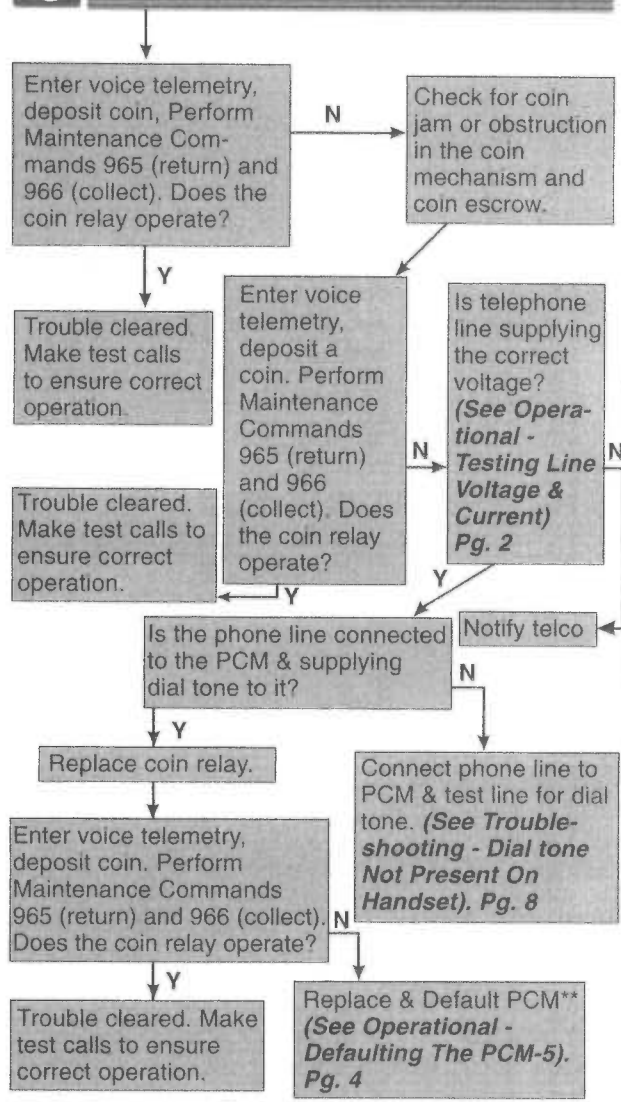
# TESTING BATTERY CONDITIONS



\* A dead battery is usually the result of a problem, not the cause. (See Troubleshooting Pg. 7)  
 \*\*Any time the PCM is defaulted it must be downloaded with its operational files.



# DOESN'T COLLECT OR RETURN COINS

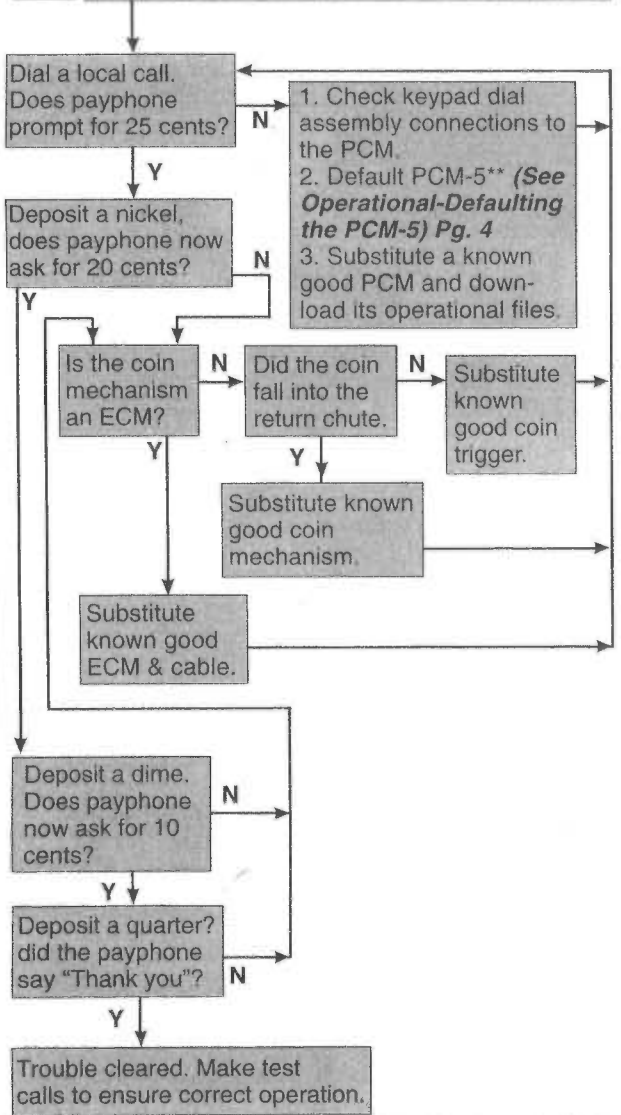


\*\*Any time the PCM is defaulted it must be downloaded with its operational files.

TRROUBLESHOOTING

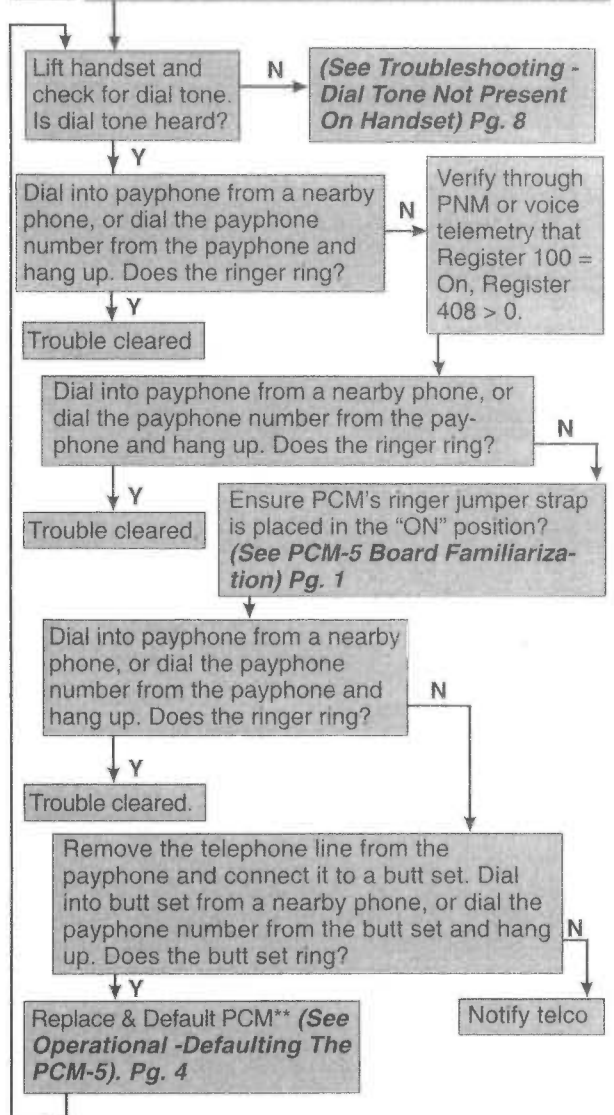
TRROUBLESHOOTING

# NOT DETECTING DEPOSITED COINS



\*\*Any time the PCM is defaulted it must be downloaded with its operational files.

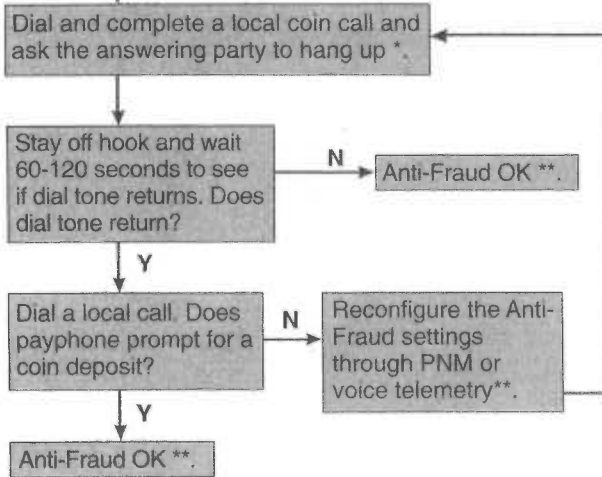
# PAYPHONE RINGER DOESN'T RING



\*\*Any time the PCM is defaulted it must be downloaded with its operational files.



## CHECKING KEYPAD ANTI-FRAUD

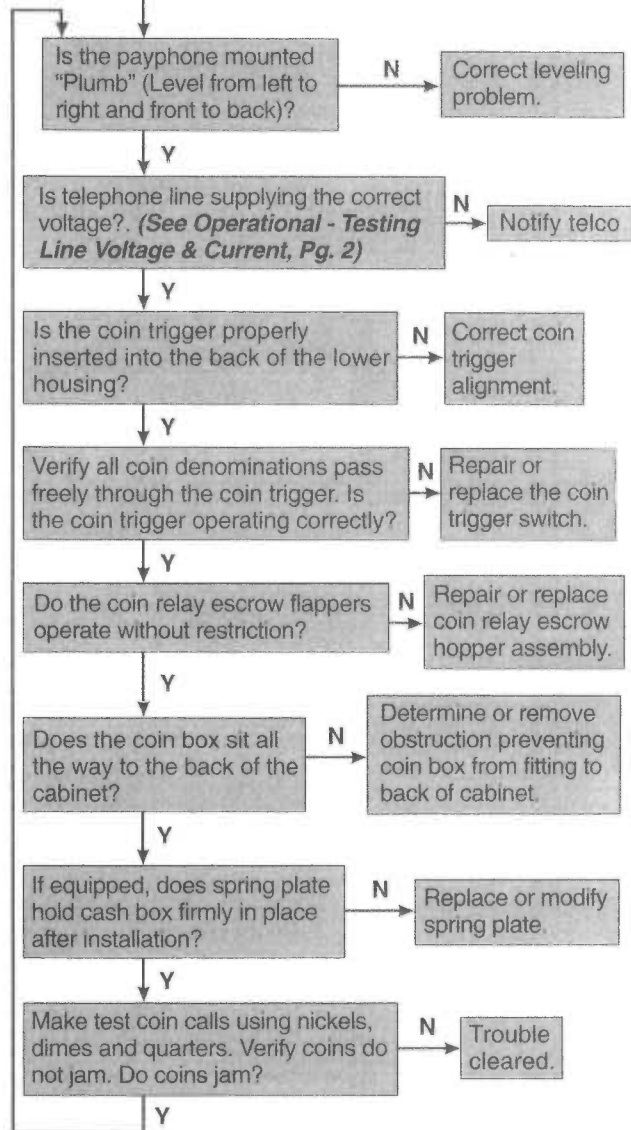


**CAUTION:** Local Central Office operations may cause changes to Anti-Fraud functionality and testing. It is the payphone owners responsibility to configure and test the Series-5 to prevent fraud.

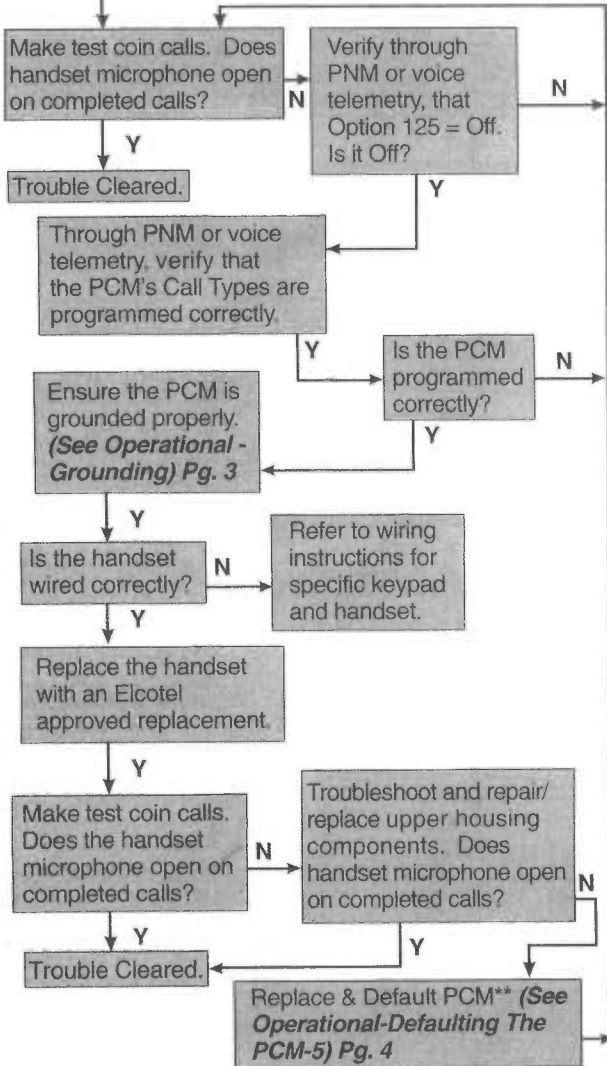
\* To ensure Anti-Fraud operation, it is recommended to make test calls from each call type, i.e. 0-, 0+, 1+, 800, etc.

\*\*The PCM-5 allows various levels of Anti-Fraud to be selected. Refer to the Series-5 product manuals for additional Anti-Fraud configurations.

## FREQUENT COIN JAMS

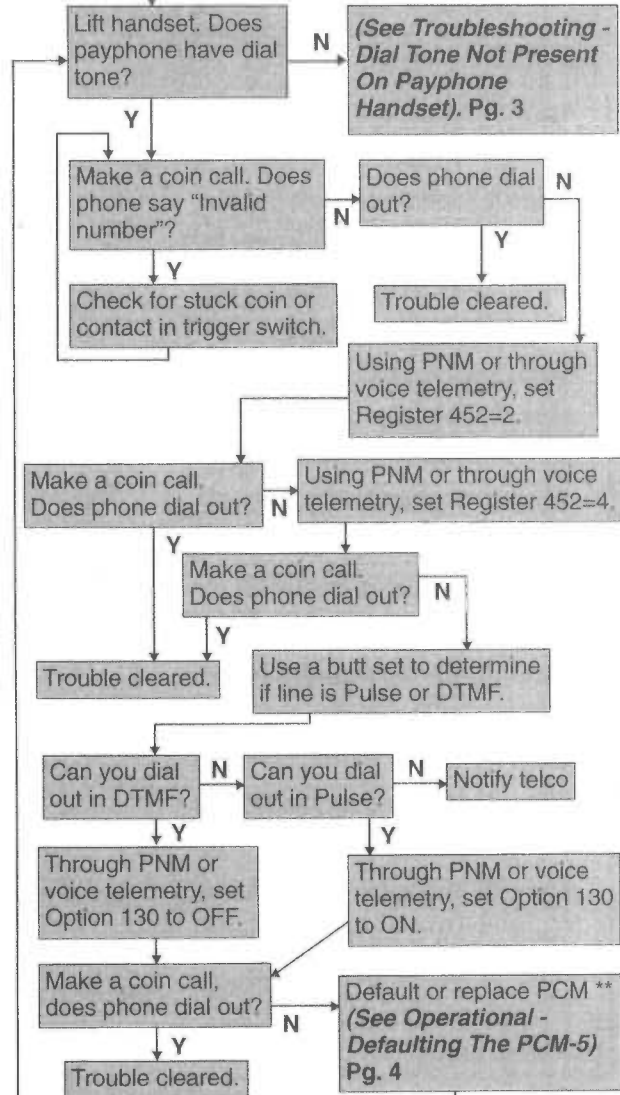


## HANDSET MICROPHONE DOESN'T OPEN



\*\*Anytime the PCM is defaulted it must be downloaded with its operational files.

## PAYPHONE WON'T DIAL OUT



\*\*Any time the PCM is defaulted it must be downloaded with its operational files.



## ALARM CODES

A voice report of active alarms can be obtained by accessing voice telemetry and entering the " 967 " maintenance command.

- Alarm 1, SMDR Buffer Damaged
- Alarm 2, Handset
- Alarm 3, Cash Box / Vault Bypass
- Alarm 4, Program running from ROM
- Alarm 5, Rate Ram Reload
- Alarm 6, Cash Box Trigger
- Alarm 7, Cash Box Full
- Alarm 8, Inactivity
- Alarm 9, Coin Jam / Walk Away
- Alarm 10, Bad Rates
- Alarm 11, Call Counts Cleared
- Alarm 12, Change in Master Block
- Alarm 13, Entry into Voice Telemetry Mode
- Alarm 14, Bad Downloaded Program
- Alarm 15, SMDR Buffer 80% Full
- Alarm 16, SMDR Buffer 100% Full
- Alarm 17, Bad Registers and Options
- Alarm 18, Force Call Home
- Alarm 19, Validation System Alarm
- Alarm 20, VDC Buffer 100% Full
- Alarm 21, Low Battery Alarm\*

\*Revision I Boards



## COMMON MAINTENANCE COMMANDS

The PCM-5 contains registers that provide for maintenance, and testing associated payphone components. Below are the common maintenance command registers which can be accessed by entering voice telemetry. For more Maintenance Command listings, consult the Series-5 "Registers & Options" manual.

- |     |                                 |
|-----|---------------------------------|
| 960 | Call home to VDC                |
| 961 | Forced Call Home to PNM         |
| 963 | Terminate telemetry mode        |
| 964 | Reload battery backed ram       |
| 965 | Flip coin relay to RETURN coin  |
| 966 | Flip coin relay to COLLECT coin |
| 967 | Report any alarms that are set  |
| 972 | Clear Active Alarms             |
| 987 | Report size of last wink        |



Programming through the keypad can be performed after accessing Voice Telemetry (*See Operational Entering Local Voice Telemetry, Pg. 5*). This type of programming provides you the ability to make basic site specific changes. The Elcotel Series-5 Product manual(s) provide detailed information on the changes that are possible. **When programming through the keypad, always make sure that these changes are updated within the PNM.**

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---