GOLD PHONE

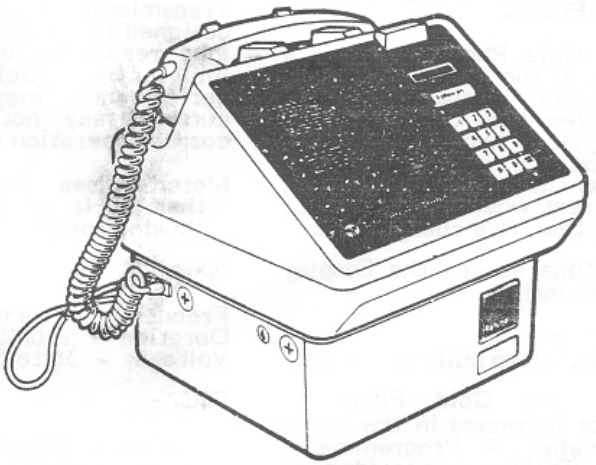


Figure 1 GOLD PHONE

GOLD PHONE

INTRODUCTION

The Gold Phone is a coin telephone designed as an ultimate replacement for the Red Phone. It has limited security against vandalism and is designed to be used in a generally supervised location. Good security is provided against manipulation to obtain free calls in all the known forms.

GENERAL

Single Coin Slot. The single coin entry slot will accept 10, 20, 50 cent and $1 coins. The validation circuit and coin slot may be readily modified to accept other coin denominations. Acceptable denominations are engraved on the coin entry slot.

Manually Assisted Trunk Calls. The Gold Phone is NOT equipped to generate coin identification signals to an operator so no manually assisted trunk calls can be made when the KS key is set in position 'C' or 'D'. In position 'L', the customer is given access to the Subs Trunk Operator (if available) using a category change facility provided in the Gold Phone.

Call Warning. The Gold Phone provides a 900Hz warning tone in the receiver for 0.5 seconds when the credit in the instrument has been reduced to less than the value of a single charge unit (price charged per meter pulse). On long distance calls where the meter pulses are less than 10 seconds apart, the warning tone is sent when the credit has been reduced to less than five charge units.

When the warning tone sounds the Display will continue to flash until:

- The call is cut off; or
- More money is inserted to build up credit.

Tariff Flexibility. The Gold Phone is designed to allow for increases in the tariff structure for all calls. A Programmable Read Only Memory (PROM) is provided on the network unit containing the tariff settings for local, STD and ISD calls.

The PROM can be easily changed to suit increases in the call tariffs.

Handset and Hearing Aid Coupler. The Gold Phone handset weighs 450 grams and contains a small amount of lead weight to fully restore the switchhook when the handset is gently replaced in its cradle. The handset caps are tightly screwed on but can be removed to allow the transmitter, receiver, hearing aid coil or handset cord to be replaced.

The transmitter and receiver are both standard 4T receivers. The hearing aid coil is used to magnetically couple to a hearing aid. It consists of wire wound around a plastic former in series with the receiver.

Types of Calls

The following types of calls may be ma from the Gold Phone.

- Calls with Coins ('C' position)

  LOCAL
  STD
  ISD (if available in the exchange)
  EMERGENCY (no coins required)

- Calls Without Coins ('D' position)

  LOCAL
  STD
  ISD (if available in the exchange)
  EMERGENCY

- Calls without Coins ('L' position)

  LOCAL
  STD
  ISD (if available in the exchange)
  TRUNK OPERATOR CONNECTED CALLS
  EMERGENCY

Transmission Limits The Gold Phone is designed to operate on a maximum exchange loop resistance of 1100 ohms. Over this limit the Gold Phone transmission performance may degrade or the line current may not be sufficient to allow correct operation of the telephone.

Meter Pulses The Gold Phone can dete either 50Hz or DC meter pulses of t following specifications:

50Hz

Frequency - 50Hz +/- 1%
Duration - 120mS or greater
Voltage - 38 to 50V RMS

D.C.

Duration - 120mS or greater
Voltage (operate) - 19.5 to 55V DC
(Non-operate) - 16V DC or less

Storage Capacity The Gold Phone can store the following number of coins prior to collection

6 x 10 cent coins or
5 x 20 cent coins or
5 x 50 cent coins or
6 x $1 coins or
a mixture of all four coins. Any coin inserted after the maximum capacity has been reached will be returned to the refund chute.

Follow-On-Call Button. The Follow On Call Button allows the user to make a follow-on-call and use up any remaining credit from a previous call. Further coins may be inserted to extend this call. It is NOT necessary to hang up the handset and recover the coins between calls. If an error is made during dialling, a caller can simply press the Follow On Call Button to re-establish dial tone before commencing to dial the number again.

Dial. The Gold Phone is fitted with a decadic pushbutton dial with a DTMF dial available if required. A raised point on the digit 5 aids blind users to locate the centre button. * and # buttons are not used on the dial. The dial mounts onto the dial and ringer mounting plate and can be readily removed. Six wires from the dial terminate on the terminal board at the left hand side of the Gold Phone. (Three wires are used for the DTMF Dial). The colour code for the dial wires is printed on the terminal board for ease of connection.

Credit Display. A 5 segment LCD display with a $ sign which is switched on or off by the microprocessor as required. The display is mounted on a small circuit board which also contains the Follow-On-Call button. When the KS Key is set to the 'C' position the Credit Display shows the remaining credit (which is stored in the Gold Phone memory) as a call proceeds. The display will flash when the credit is reduced to one charge unit for calls whose meter pulse spacing is greater than 10 seconds, or five charge units where the meter pulse spacing is less than 10 seconds. If further coins are inserted to extend the call, the display will show the increased credit. When the KS Key is set to the 'D' position the display can be set to record the total number of meter pulses received (or the cost) of a call or calls made. Subsequent calls may be made using the Follow-On-Call button or by first replacing the handset and making a call in a normal manner. The display is NOT cleared if the handset is restored at the end of a call and will continue to total the number of meter pulses (or the cost) on any subsequent calls. The display can only be cleared if the handset is replaced and the KS Key is turned to the 'L' or 'C' position. If the coin box is full, the credit display will indicate 'F' when the KS Key is turned to the 'L' position and the handset is lifted.

Network Unit. The network unit shown in Figure 8 contains the transmission circuit, meter pulse receiver and a microprocessor which controls the coin collection. Credit is stored in the microprocessor as a call proceeds and this is displayed on the Credit Display.

Tariff charges are set by the Programmable Read Only Memory (PROM) in socket PM 1 and may be easily changed to provide new tariff charges. Several movable straps are provided at the top of the board to allow selection of the required Gold Phone options. Sockets are used to connect the various wiring forms from other sub-assemblies including the Coin Mechanism. The incoming telephone line terminates on the left hand upper edge of the network unit with quick connect tags.

Coin validation Coins are checked by four validation coils and associated validation circuitry for correct thickness, diameter and alloy content and must pass all three tests before being accepted. When a coin is recognised as genuine, the SM magnet lever is released allowing the coin to push the lever aside and enter the storage channel. Validated coins are stored in the storage channel before being collected into the coin box in the order they were inserted. The total credit remaining is stored and shown on the Credit Display.

Coins which fail any of the checks are refunded. A sensing coil beneath the coin collecting mechanism performs the Coin Box Full and Coin Collection Error detection. If a coin is held at this coil either because the coin box is full or for any other reason, the call in progress is cut off after the credit of the last collected coin is used up.

A coil located at the entry of the coin storage channel detects when the storage channel is full and prevents the SM magnet lever from being released. Additional coins that are inserted are refunded.

When the handset is lifted, the Coin Stopper is operated by the switchhook mechanism to hold the first coin inserted at the point where it enters the coin box.

When a coin is to be collected, the collection magnet (CM) operates causing the ST stopper to move to the operated position. The first coin is deposited into the coin box while successive coins are held in place by the stopper on the stopper lever.

The collection magnet then releases allowing the ST stopper to return to its normal position and remaining coins move downwards to replace the collected coin.

If no coins remain when the next coin is to be collected, the call in progress is cut off.

When the handset is replaced, the coin stopper is released allowing any coins remaining in the coin storage channel to be refunded.

GOLD PHONE

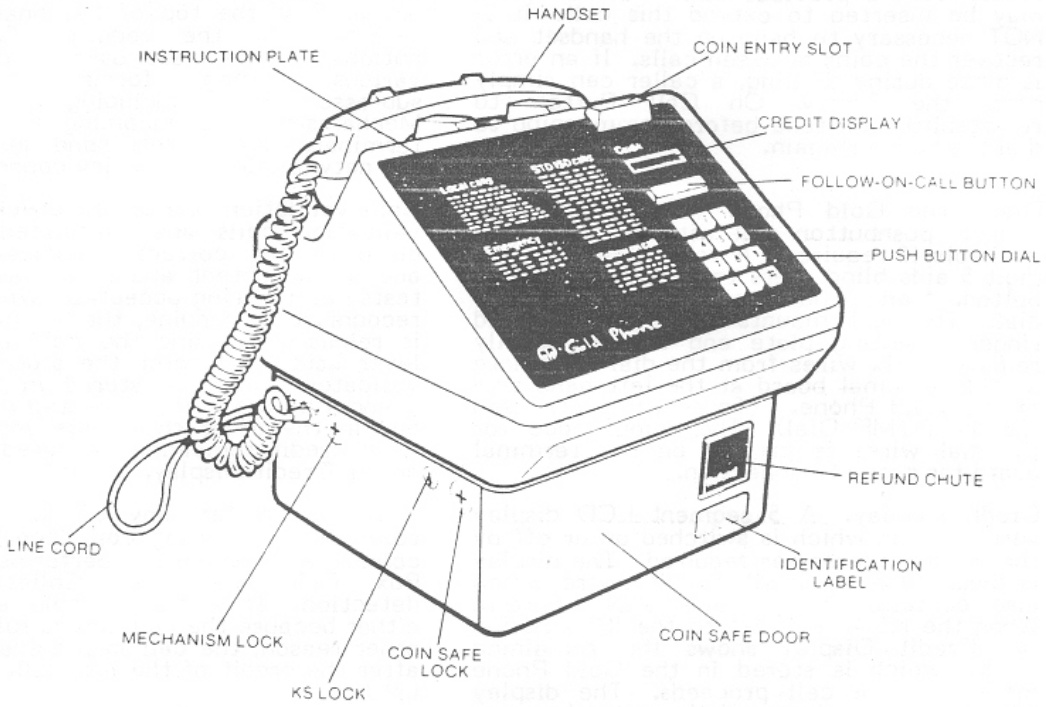


Figure 2 GOLD PHONE CONSTRUCTION

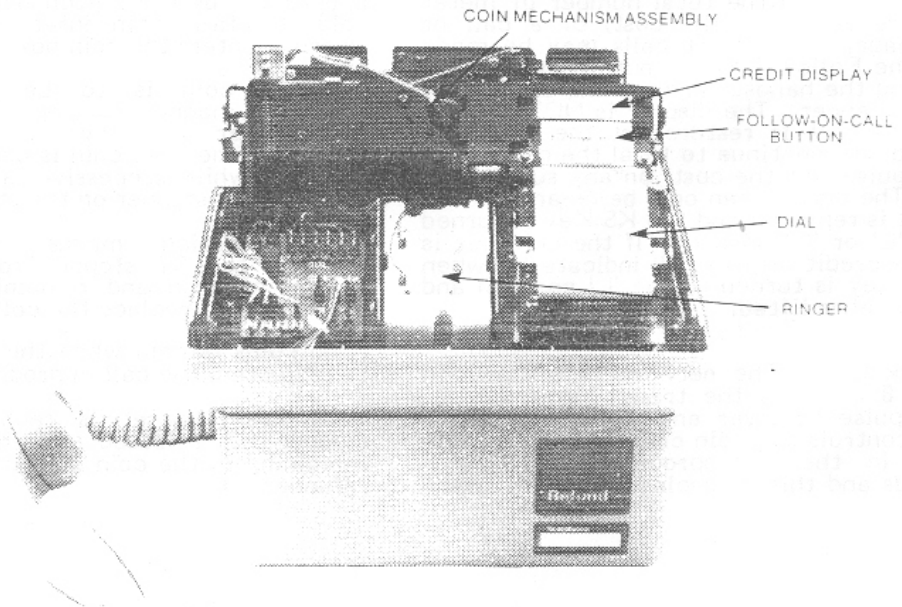


Figure 3 COIN MECHANISM COMPARTMENT

GOLD PHONE

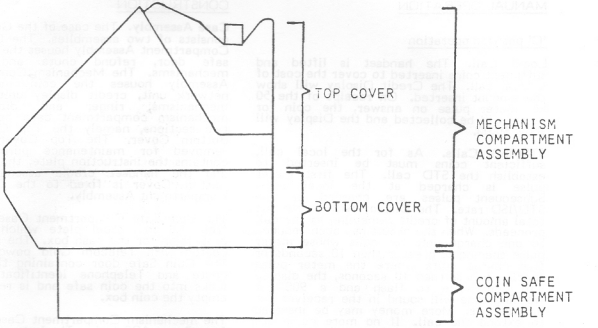


Figure 4 CASE ASSEMBLY

Locks and Keys There are three locks on the Gold Phone.

Mechanism Lock. One standard combination is provided on all Gold Phones. One mechanism key is provided with each Gold Phone. If required, the Gold Phone can be fitted with a lock with a unique combination.

KS Lock. There are 100 combinations available for the KS lock. This lock has three positions designated on the outside of the lock. These are:

C. Coins Position Allows users to make calls using coins.

D. Display Position Allows the total cost or the number of meter pulses to be displayed. Coins are not required when making calls and the display can only be reset when the KS key is inserted and turned to either the "C" or the "L" position (handset replaced).

L. Lessees Position
Allows the lessee or customer to make unrestricted calls without coins.

Two KS Keys are supplied with each Gold Phone.

Coin Safe Lock. Each Gold Phone is fitted with a Coin Safe Lock with a unique combination.

Two Coin Safe Keys are supplied with each Gold Phone.

Keys. The mechanism and coin safe keys have four blades and can be inserted in only one of four orientations with the letters "UP" stamped on the key, facing upwards.

Lock Identification and Duplicate Keys. Each lock number will be recorded on a label located inside the Gold Phone as well as on the keys. Duplicate keys for each Gold Phone may be ordered from the State Locksmith - the lock number (key number) must be quoted to obtain a duplicate key.

Coin Box Full Detector A coil mounted at the bottom of the coin mechanism near the entrance to the coin box is used to detect when the coin box is full.

Earth Monitor This circuit detects whether or not the earth wire (connected to the line terminal, E) is connected to an earth. If not, chargeable calls will be forcibly cut off by the output of the earth monitor. Non-chargeable calls are not interrupted. In addition, if a metering signal is not detected within 3.3 seconds +/- 10% after the line polarity reversal, the call is cut off.

Loop Current Monitor This monitor detects whether or not a loop current is flowing in the telephone loop and, if so the polarity of the current.

Coin Box Switch This switch disables the Gold Phone if the coin box is removed from the Coin Safe Compartment.

MANUAL OPERATION

'C' position operation

Local Call. The handset is lifted and sufficient coins inserted to cover the cost of a local call. The Credit Display will show the amount inserted. On receipt of the 50 Hz meter pulse on answer, the coin (or coins) will be collected and the Display will show $0.00.

STD/ISD Calls. As for the local call, sufficient coins must be inserted to establish the STD call. The first meter pulse is charged at the local rate. Subsequent pulses are charged at the STD/ISD rate. The Display will record the total amount of credit remaining as the call proceeds. When the credit has been reduced to one charge unit for calls whose meter pulse spacing is greater than 10 seconds or five charge units where the meter pulse spacing is less than 10 seconds, the display will commence to flash and a 900 Hz warning tone will sound in the receiver for 0.5 seconds. More money may be inserted to extend the call. If no more coins are inserted by the time the credit has been reduced to less than one charge unit, the call will be cut off when the next meter pulse is received.

Non Chargeable Call. If a non chargeable call is made coins are not required. Any coins inserted are refunded when the handset is replaced.

'D' position operation

Local Call. Coins are not required. The Gold Phone may be strapped internally to display the number of meter pulses or the call cost.

Non Chargeable Call. Coins are not required. The Display will show $0.00 if the call cost option is selected or remain blank if the meter pulse option is selected.

'L' position operation

The lessees can make unrestricted calls without coins. The Display is not operative (except to show 'F' when the coin box is full and the handset is lifted).

Reverse Charge Call To make a reverse charge call, it must be booked through the Public Trunk Operator (PTO) on one of the following numbers:
National - 0176
International - 0101

Credit Card Access The call must be booked through the Public Trunk Operator (PTO).

CONSTRUCTION

Case Assembly. The case of the Gold Phone consists of two assemblies. The Coin Safe Compartment Assembly houses the coin box, safe door, refund chute and locking mechanisms. The Mechanism Compartment Assembly houses the coin mechanism, network unit, credit display unit, locking mechanisms, ringer and dial. The mechanism compartment case consists of two sections, namely the Top Cover and Bottom Cover. The Top Cover can be removed for maintenance purposes and contains the instruction plate, the coin slot and the handset cradle assembly. The Bottom Cover is fixed to the Coin Safe Compartment Assembly.

The Coin Safe Compartment Case is made from 1.6 mm steel plate which provides protection for the cash box. The surface is coated with Telecom Gold powder paint. The Coin Safe door containing the refund chute and Telephone Identification label locks into the coin safe and is removed to empty the coin box.

The mechanism Compartment Case is made from 3 mm ABS resin. The Instruction Plate (which is attached to the Top Cover by six nuts), is a 2mm anodised aluminum plate with the protective cover for the Credit Display mounted on it.

Coin Box and Safe. Entry to the Coin Safe compartment is obtained by operating the 'S' Key in the front lock on the left hand side of the Gold Phone. This will allow the Coin Safe Door Assembly to slip down and be removed to provide access to the coin box. Any blockages in the refund chute may be easily cleared when the coin safe door is removed.

The coin box must be removed to gain access to the thumb nut which secures the Gold Phone to the mounting plate as shown in Figure 5.

A microswitch mounted on the left hand side of the Coin Safe Compartment places a short circuit across the line when the coin box is removed.

Coin Telephone Identification Label. A label is provided beneath the Coin Refund Chute on which to note the Coin Telephone Identification Number.

Access to the label is achieved from inside the coin safe door. The label is easily removed and replaced. It is held in position by a label holder.

Ringer. The ringer contains an electromagnet which causes a plunger to alternately strike two metal sounding plates. The plastic box, housing the ringer motor, acts as a resonator. The ringer is designed to operate on 16-2/3 Hz and WILL NOT OPERATE ON 50 Hz. Two wires for the ringer terminate on the terminal board.

Switchhook. The Switchhook mechanism is mounted underneath the top cover. A lever projecting from the rear of the coin mechanism operates two microswitches when the handset is lifted. The handset is weighted with lead to ensure the switchhook mechanism operates correctly.

Coin Mechanism Module. The coin mechanism module consists of a coin channel mechanism and electronic coin validation circuitry as shown in Figures 8 and 9. The validation circuitry is tuned to the coin channel mechanism and CANNOT BE SEPARATED WITHOUT REQUIRING READJUSTMENT.

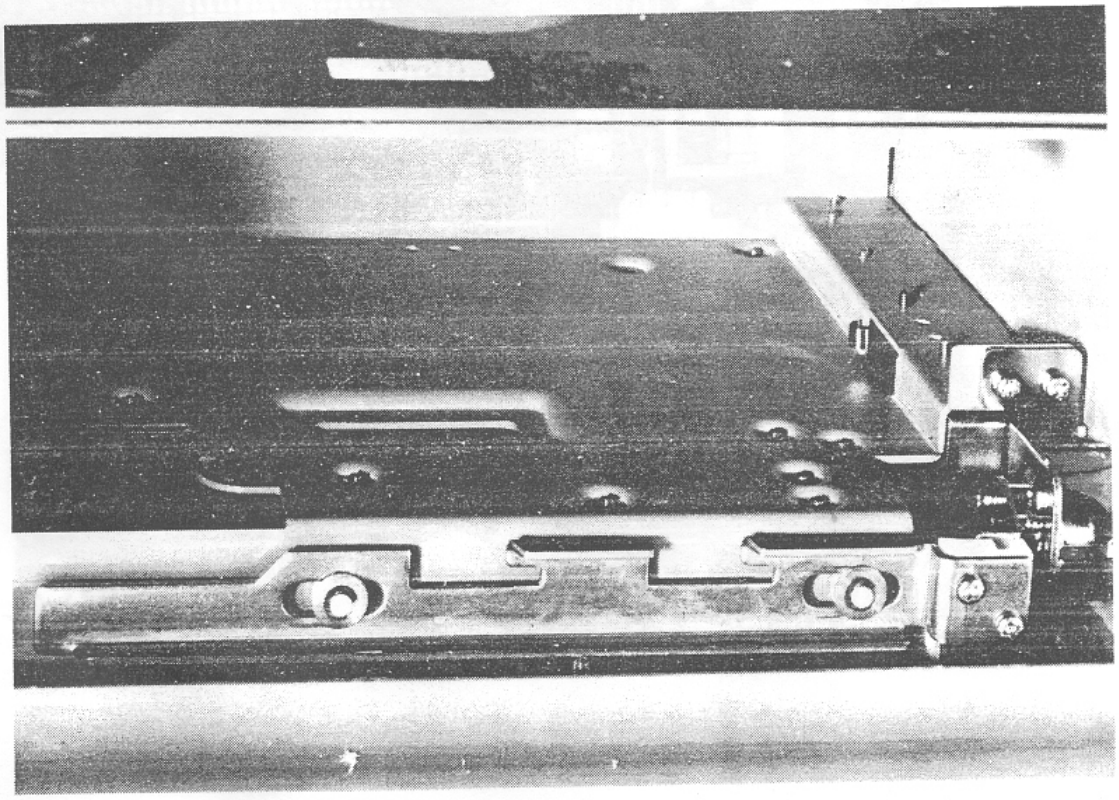


Figure 5 ACCESS TO COIN SAFE

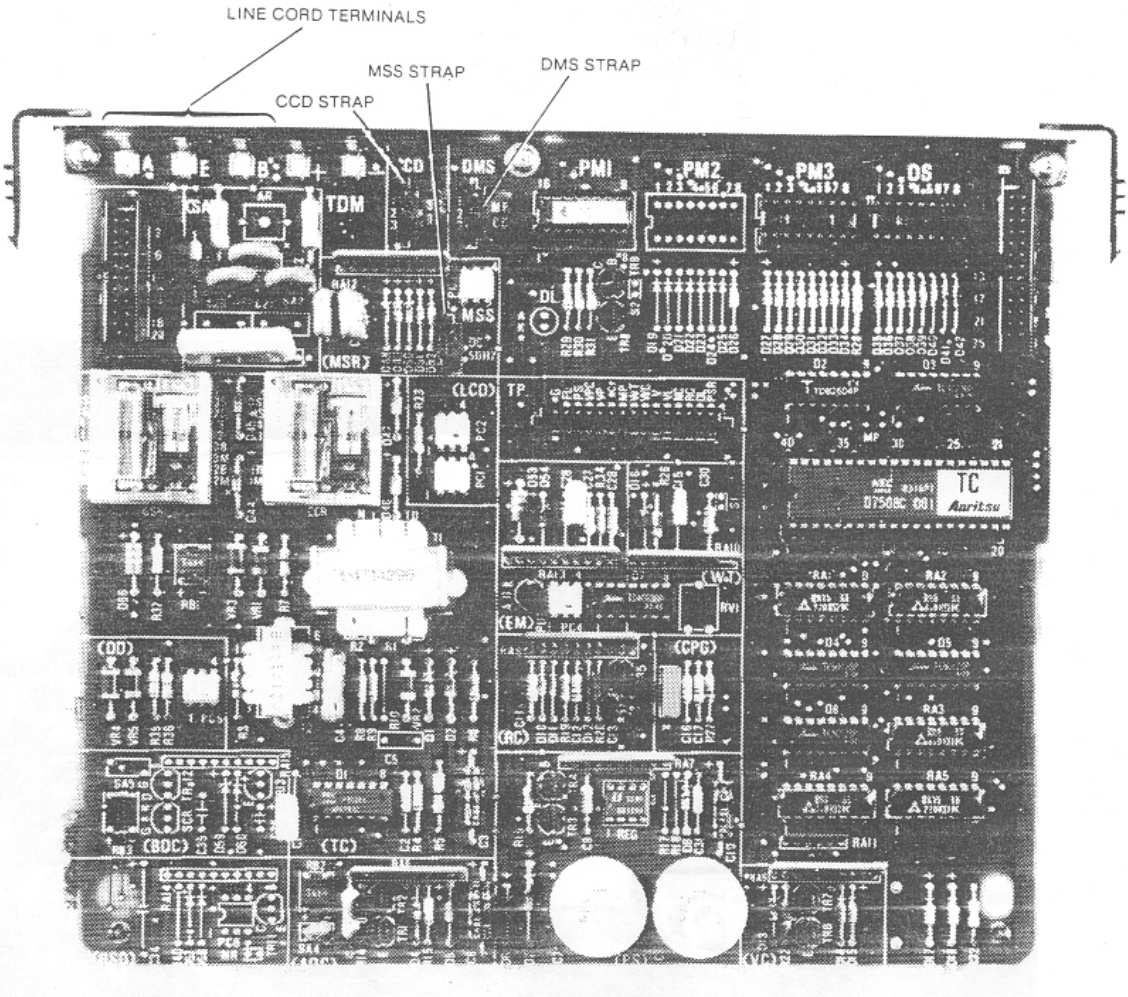


Figure 6 NETWORK UNIT

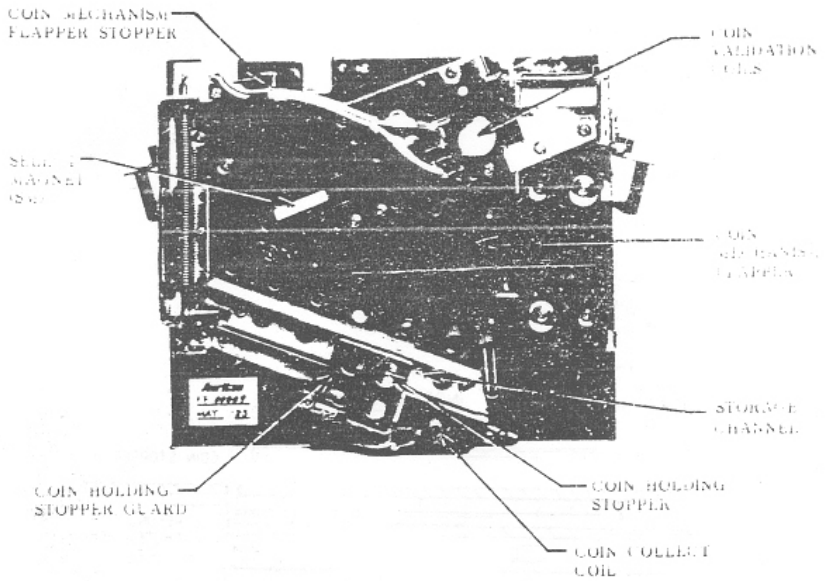


Figure 7 COIN MECHANISM (FRONT)

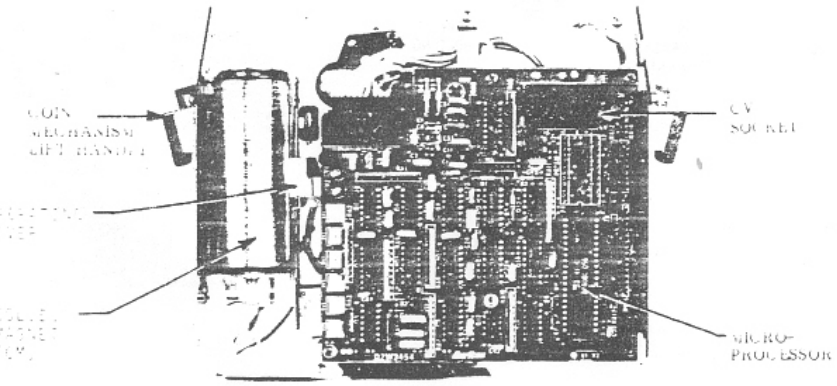


Figure 8 COIN MECHANISM (REAR)

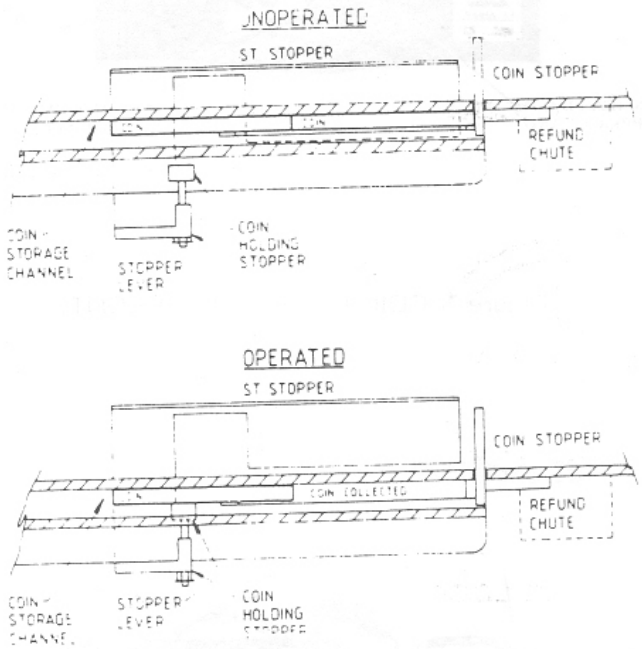


Figure 9 COIN COLLECTION

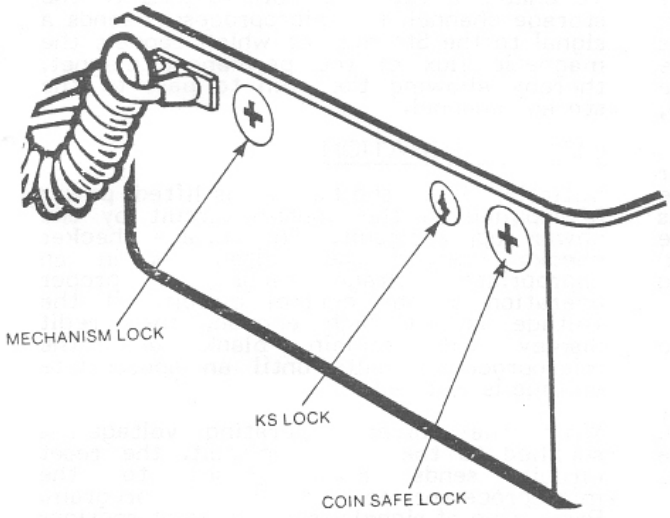


Figure 10 LOCKS

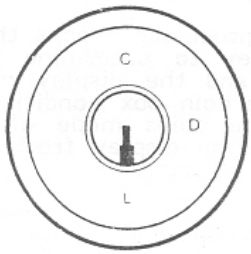


Figure 11 KS LOCK

Figure 12 KEY INSERTION

BLOCK DIAGRAM DESCRIPTION

Microprocessor "uPD7508C with the following features:

CMOS	Max current 900uA
ROM capacity	4096 X 8 bits
RAM capacity	224 X 4 bits
40-pin DIP	
Single power supply	2.7 - 5.5V DC
RC oscillator	

Field PROM For setting acceptable coin denominations (1D, 2D, 3D and 4D), the charge unit for local calls (Cu-LT) and the charge unit for each STD or ISD meter registration (Cu-SI).

Power Supply Circuit The power to operate the Gold Phone is taken from the telephone line. Power is supplied by the power supply circuit as follows:

- When the GSR relay is unoperated, line-charged capacitors are charged from the line at a rate below 3mA via a current limiting resistor.
- Automatic quick charge circuitry is used to short the current limiting resistor and speed up charging of the line-charged capacitors when the Gold Phone is initially plugged in.
- Two Zener diodes are positioned between the power source and ground to protect the line-charged capacitors and CMOS IC's against voltages above their operating limits.
- When the GSR relay is operated, the line charged capacitors are placed in series with the speech loop and are directly charged from the line.

Reset Circuit Sends a reset signal to the microprocessor when the handset is lifted. The microprocessor recognises this signal and resets itself.

Loop control circuit When the handset is lifted, the GSR relay is operated by the microprocessor connecting the transmission circuit to the telephone line forming a speech loop.

Voltage checker The voltage across the line charged capacitors changes depending on the charge of the capacitors. The voltage checker ensures that the control circuit is supplied with a voltage permitting normal operation. (The control circuit is all the circuitry on the network board except the transmission circuit, and the power supply circuit).

When the Gold Phone is installed for the first time, or is reconnected to the telephone line after a prolonged period, the voltage of the line charged capacitors will be low. The control circuit is inhibited until the voltage reaches a predetermined level.

If the voltage across the line capacitors falls below the operating voltage during operation (even though charging is performed through the telephone line), the output of the voltage checker will force the microprocessor to release the GSR relay, causing the call to be cut off.

Surge Absorber Absorbs a surge or abnormal voltage induced in the telephone line by lightning, etc. A gas arrestor is fitted externally to the Gold Phone (mounted in a Lightning Arrestor Block) since the line cord is not capable of carrying a lightning fault current.

Meter Signal Receiver The MSR is used to detect meter pulses sent from the exchange.

Transmission Circuit Used to effectively couple the handset to the telephone line. This circuit incorporates a passive balance network (LCR) and a transmitter amplifier to provide handset decoupling.

Electronic Coin Validation Circuit (ECVC) The Gold Phone can validate a maximum of four coins designated 1D, 2D, 3D and 4D which corresponds to the 10 cent, 20 cent, 50 cent and $1 coins. The ECVC performs the validation of coins on the basis of thickness (T), material (M), and diameter parameters.

When a coin is inserted, the four high frequency coils each produce an AC signal which is proportional to one of the coin parameters. These AC outputs are then amplified and converted to DC signals and fed to a differential amplifier for temperature compensation. The compensated output is fed to a peak hold circuit, the signals are then converted from analogue to digital signals to be fed into the microprocessor. The microprocessor then compares the input data with prespecified values for T, M, and D stored in the microprocessor ROM to judge whether a coin will be rejected or accepted. If a coin is accepted, a signal is sent to the SM magnet allowing the coin to pass to the storage channel. The value of the accepted coin is sent to the coin collection microprocessor for later use.

Magnets Two magnets, CM (Collection Magnet) and SM (Select Magnet) are mounted on the coin mechanism. The CM magnet is used to collect coins in the order they were inserted. When the CM magnet is operated, only one coin is collected into the coin box, subsequent coins are held by a stopper.

The SM magnet assembly is used for directing the coin either to refund or to the storage channel depending on whether the coin is accepted. The assembly consists of a lever and magnet which is normally held in the operated position by a permanent magnet.

To enable a validated coin to pass to the storage channel, the microprocessor sends a signal to the SM magnet which cancels the magnetic flux of the permanent magnet, thereby allowing the coin to pass to the storage channel.

CIRCUIT OPERATION

Initiation When the handset is lifted, power is supplied to the control circuit by the power supply circuit. The voltage checker checks whether the voltage is in an appropriate voltage range for proper operation of the control circuit. If the voltage is not high enough, the credit display will remain blank and the microprocessor halts until an appropriate voltage is supplied.

When the correct operating voltage is supplied to the control circuit, the reset circuit sends reset pulses to the microprocessor to initialise its program. Processing of signals from different sections of the network board can then be performed.

Approximately one second after the handset is lifted (with the line capacitors charged), the mircoprocessor will force the GSR relay to operate. The transmission circuit is connected to the telephone line and a speech loop is formed.

The microprocessor checks the position of the KS key to determine the mode of operation and the display mode. It also checks the coin box condition and if full, disables the coins mode of operation by preventing the display from operating and not accepting coins.

The operation of the Gold Phone after this stage is covered in the following sections.

Non-chargeable calls The required number is dialled and on answer, conversation is possible.

The user can make non-chargeable calls without inserting coin(s) since the metering signal is not sent from the exchange. If coins are inserted they will not be collected. Line reversals are not sent from the exchange on non-chargeable calls.

When the handset is replaced "ON-HOOK" to terminate the call, the microprocessor output immediately causes the GSR relay to release.

The mechanical wiper of the coin mechanism operates when the handset is replaced "ON-HOOK" and any stored coins are returned to the refund chute.

Chargeable calls (Local calls and STD/ISD calls)

Line Polarity. In case of chargeable calls, the line polarity is reversed after the called party answers. The polarity is detected by the loop current monitor.

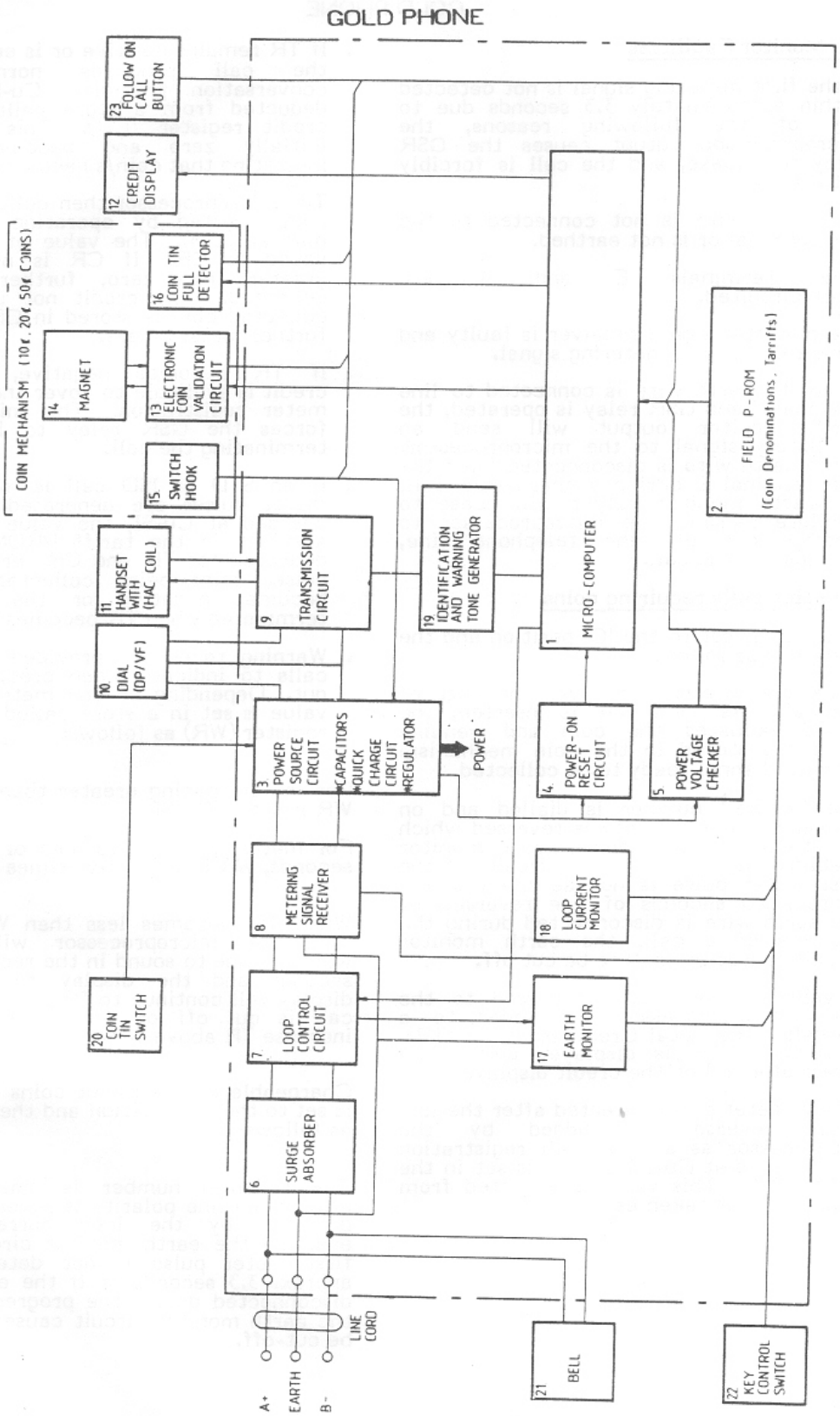


Figure 13 BLOCK DIAGRAM

Earth Monitor Facilities

- If the first metering signal is not detected within approximately 3.3 seconds due to any of the following reasons, the microprocessor output causes the GSR relay to release, and the call is forcibly cut off.
- The earth wire is not connected to the line terminal or is not earthed.
- Line Terminals E and A are short-circuited.
- The metering signal receiver is faulty and cannot detect the metering signal.
- When the earth wire is connected to line terminal E and GSR relay is operated, the earth monitor output will send an oscillatory signal to the microprocessor. If the earth wire is disconnected from the line terminal E during a chargeable call, the earth monitor output will cease to oscillate causing the microprocessor to forcibly cut off the telephone line, terminating the call.

Chargeable calls requiring coins

The KS key is set to the 'C' position and the operation is as follows:

- Coins are inserted to cover the cost of the call. As each coin is inserted, the ECVC validates the coin and genuine coins are stored in the coin mechanism storage channel ready to be collected.
- The required number is dialled and on answer the line polarity is reversed which is detected by the loop current monitor enabling the earth monitor circuit. If the first meter pulse is not detected within approx. 3.3 seconds of line reversal, or the earth wire is disconnected during the progress of a call, the earth monitor circuit causes the call to be cut off.

The value of each coin is passed to the network microprocessor and added to a store called the Total Credit Register (TR). The value of TR is displayed during the progress of a call on the credit display.

The first meter pulse detected after the line polarity reversal is judged by the microprocessor as a local call registration and is charged at Cu-LT (which is set in the tariff PROM). This value is deducted from TR and action is taken as follows:

- If TR remains positive or is equal to zero, the call proceeds normally with conversation possible. Cu-LT is also deducted from a store called the logic credit register (CR). This register is initially zero and becomes negative indicating that coin/s need to be collected.

  The microprocessor then collects the first coin inserted by operating the collect magnet (CM). The value of this coin is added to CR. If CR is not equal or greater than zero, further coins are collected. Any credit not used from a collected coin is stored in CR to pay for further meter pulses.
- If TR becomes negative, insufficient credit is available to cover the cost of the meter registration. The microprocessor forces the GSR relay to be released, terminating the call.
- If an STD or ISD call is made, further meter pulses are generated. These are charged at Cu-SI, the value of which is also set in the tariff PROM. Cu-SI is deducted for TR and CR for each meter pulse, coins being collected when CR becomes negative or the call being terminated when TR becomes negative.
- Warning tones are provided on STD/ISD calls to indicate when credit is running out. Depending on the meter spacing, a value is set in a store called the warning register (WR) as follows:

For meter spacing greater than 10 seconds, WR is set at Cu-SI.

For meter spacing less than or equal to 10 seconds, WR is set at five times Cu-SI.

When TR becomes less than WR during a call, the microprocessor will cause a warning tone to sound in the receiver for 0.5 seconds and the display to flash. The display will continue to flash until either the call is cut off or coins are inserted to increase TR above WR.

Chargeable calls without coins The KS key is set to the 'D' position and the operation is as follows:

The required number is dialled and on answer the line polarity is reversed which is detected by the loop current monitor enabling the earth monitor circuit. If the first meter pulse is not detected within approx. 3.3 seconds or if the earth wire is disconnected during the progress of a call, the earth monitor circuit causes the call to be cut-off.

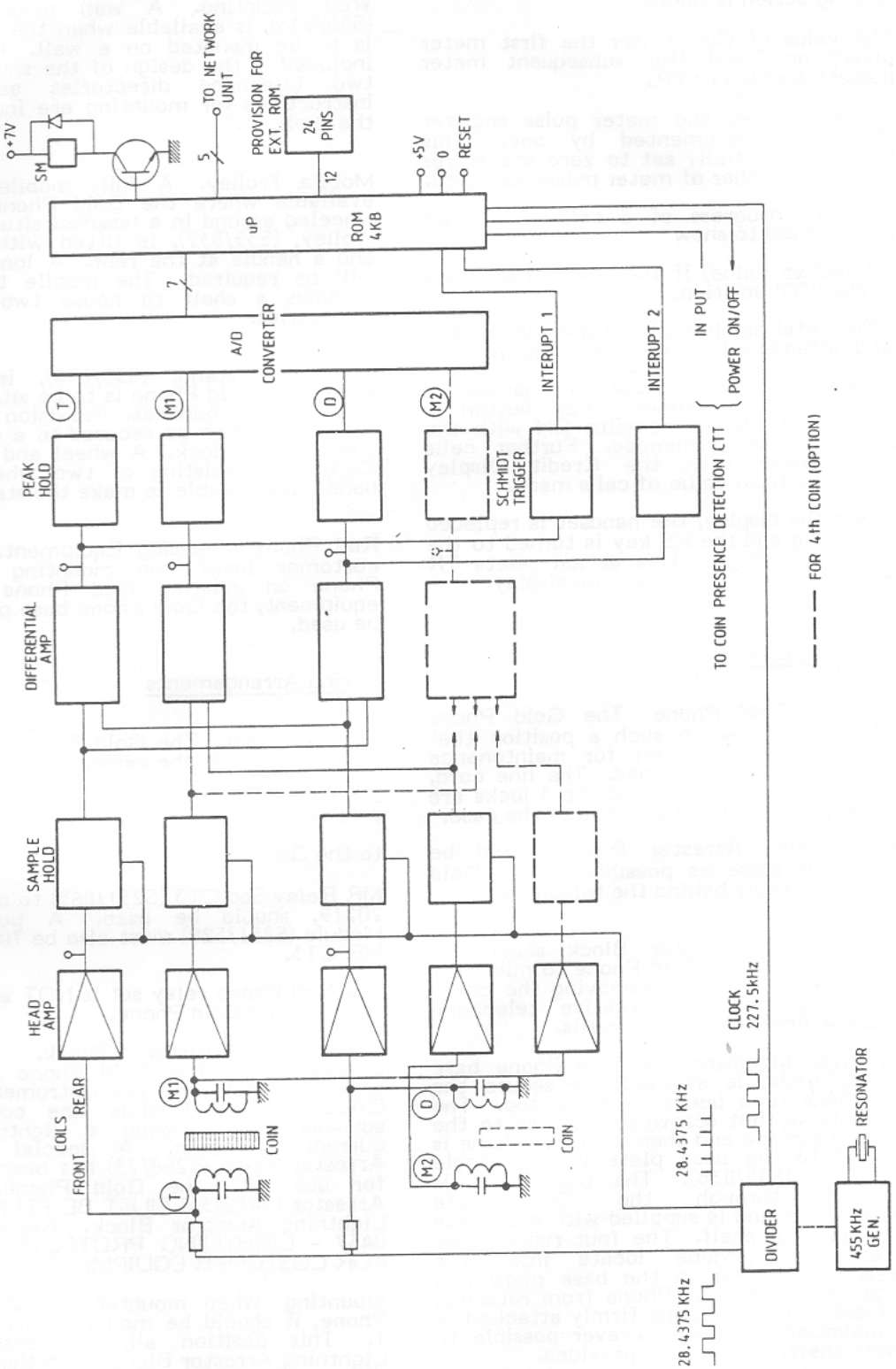


Figure 14 ELECTRONIC COIN VALIDATION CIRCUIT

When a meter pulse is detected the following action is taken:

- The value of Cu-LT (for the first meter pulse) or Cu-SI (for subsequent meter pulses) is added to TR.
- A store called the meter pulse register (MPR) is incremented by one. This register is initially set to zero and stores the total number of meter pulses received.

During the progress of a call, the credit display is used to show

- TR (dollar Value) if the DMS strap is set to the 'CC' position.
- MPR (total number of meter pulses) if the DMS strap is set to the 'MP' position.

The call is terminated when the handset is replaced or the follow-on call button is pressed. The display remains ON with the displayed value unchanged. Further calls can be made with the Credit Display showing the total value of calls made.

To clear the display, the handset is replaced in its cradle and the KS key is turned to the 'C' or 'L' position. This action resets TR and MPR to zero and blanks the display.

INSTALLATION

Siting the Gold Phone The Gold Phone should be installed in such a position that access to the instrument for maintenance purposes is readily obtained. The line cord, handset cord entry point and the 3 locks are all located on the left hand side of the case.

The Lightning Arrestor Block should be mounted as close as possible to the Gold Phone, preferably behind the telephone.

The Lightning Arrestor Block should be mounted behind the Gold Phone to minimize the chance of someone removing the cover and connecting an alternative telephone across the line to make free calls.

Base Plate Mounting. A Gold Phone base plate (S35/839) is available to secure the Gold Phone to a bench or table top. The base plate is first screwed or bolted to the mounting surface and then the Gold Phone is attached to the base plate with a single thumb nut (S35/838). The thumb nut is accessible through the Coin Safe Compartment and is supplied with each base plate, stand or shelf. The four rubber feet on the Gold Phone locate into four corresponding holes in the base plate and this prevents the Gold Phone from rotating. The Gold Phone should be firmly attached to the mounting surface wherever possible to prevent theft. Screws are provided.

Wall Mounting. A wall mounting shelf, (S35/835), is available when the Gold Phone is to be mounted on a wall. Provision is included in the design of the shelf to house two telephone directories as required. Instructions for mounting are included with the shelf.

Mobile Trolley. A fully mobile trolley is available where the Gold Phone is to be wheeled around in a hospital situation. This trolley, (S35/837), is fitted with 4 casters and a handle at the rear. A long line cord will be required. The mobile trolley also includes a shelf to house two telephone directories.

Stand. A stand, (S35/836), is available where the Gold Phone is to be situated away from walls or benches. Provision is included for the stand to be secured to a wall with a chain and padlock. A wheel and handle kit (S35/920) consisting of two wheels and a handle is available to make the stand mobile.

Red Phone Mounting Equipment. Where a customer insists on mounting the Gold Phone on existing Red Phone mounting equipment, the Gold Phone base plate should be used.

Wiring Arrangements

MR Relay Set. The Gold Phone requires an MR Relay Set in the exchange to transmit:

- 50Hz Metering pulses
- Line reversal on answer

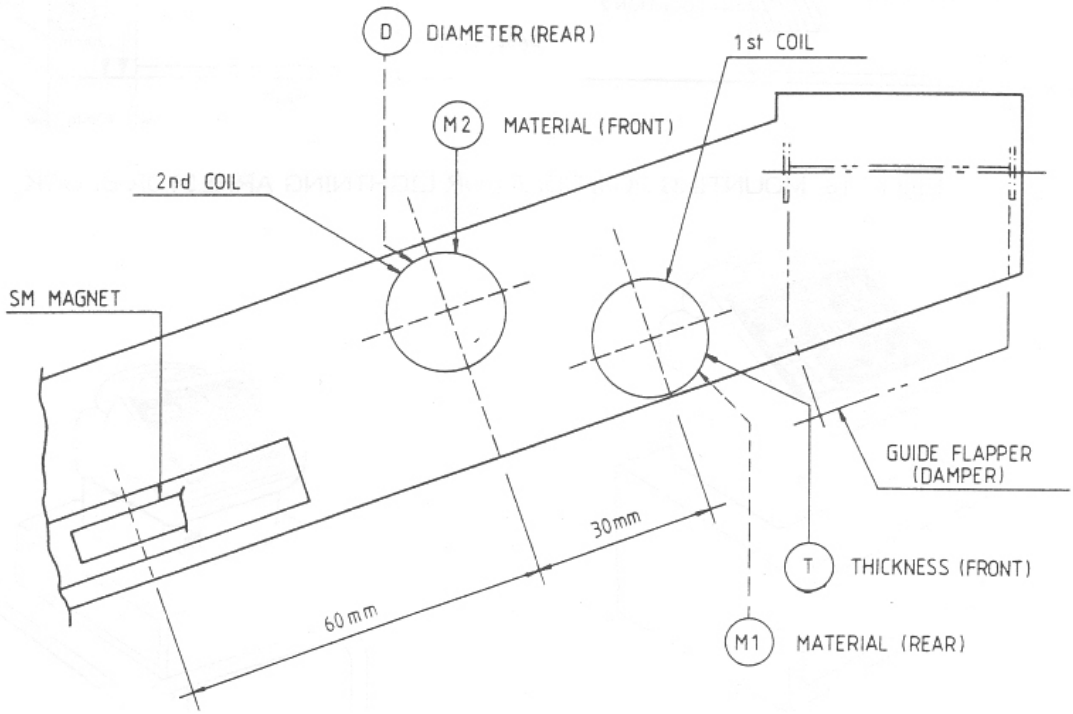
to the Gold Phone.

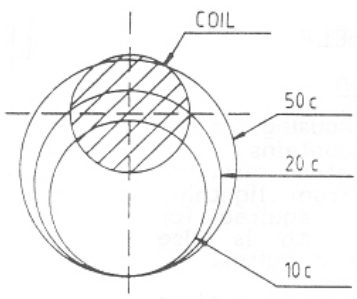
MR Relay Set CT3 (S251/865) to drawing CE 20219, should be used. A pulse Delay Module (S251/529) must also be fitted to the MR CT3.

The Red Phone relay set is NOT suitable for use with the Gold Phone.

Lightning Arrestor Block. Lightning protection for the Gold Phone has to be provided external to the instrument IN ALL CASES as the flexible line cord is not suitable for carrying a lightning fault current to earth. A special Lightning Arrestor Block (S268/73) has been designed for use with the Gold Phone. A Gas Arrestor (S442/34) MUST BE FITTED in the Lightning Arrestor Block. Refer to TPH 0467 - LIGHTNING PROTECTION BLOCK FOR CUSTOMER EQUIPMENT.

Mounting When mounted behind the Gold Phone, it should be mounted in LOCATION 1. This position allows access to the Lightning Arrestor Block when the top cover is removed.





DIAMETER MEASUREMENT

Figure 15 ELECTRONIC COIN VALIDATION

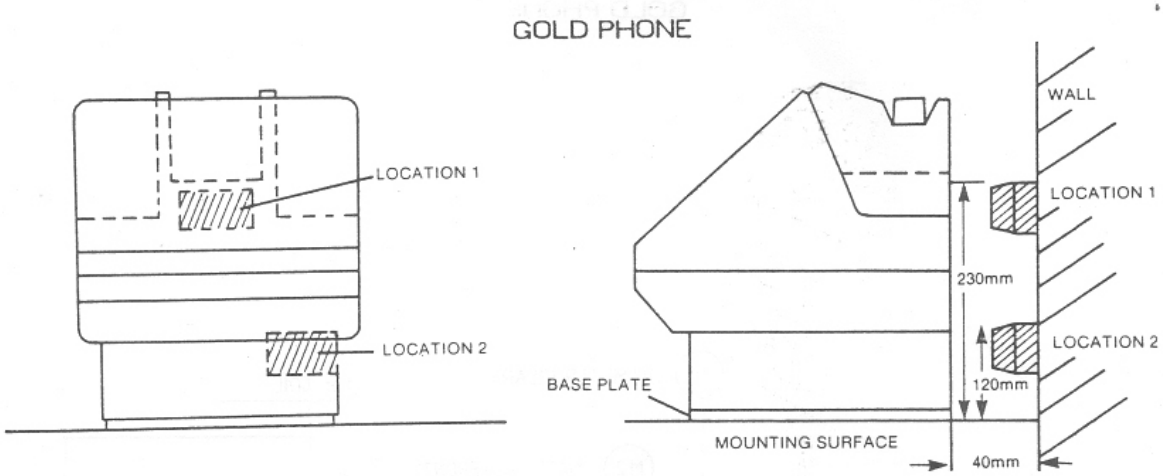


Figure 16 MOUNTING POSITIONS FOR LIGHTNING ARRESTOR BLOCK

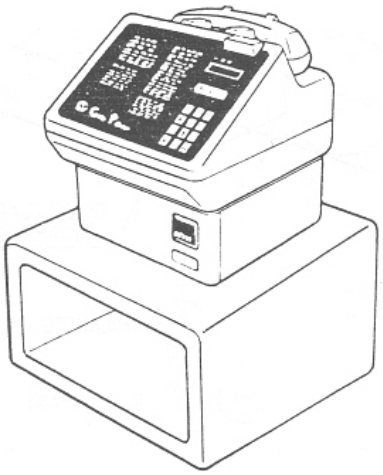


Figure 17 WALL SHELF

Earth and Lightning Protection

The Gold Phone has a steel housing for the coin safe. It also contains two microprocessors and associated circuitry which must be protected from lightning damage. A local earth is required for protection purposes. The earth is also required to recognise 50Hz meter pulses.

A Telecom earth should be provided as close to the installation of the Gold Phone as practicable. The earth wire is to be terminated on the Lightning Arrestor Terminal Block mounted near the Gold Phone.

Refer to Technical Publication TPH 0265 - LIGHTNING PROTECTION AT CUSTOMERS PREMISES for installation of the earth.

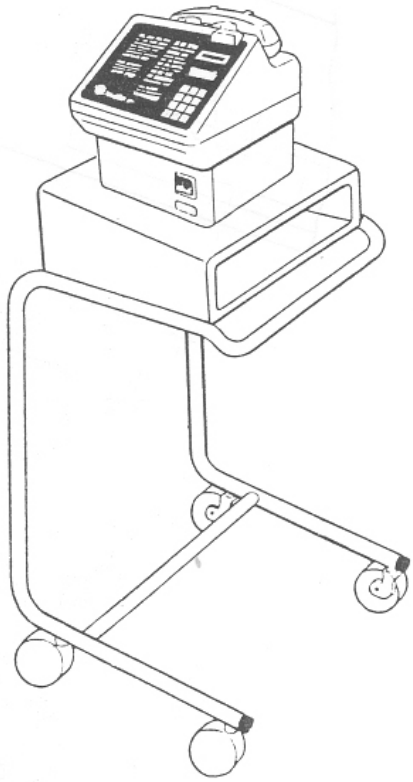


Figure 18 MOBILE TROLLEY

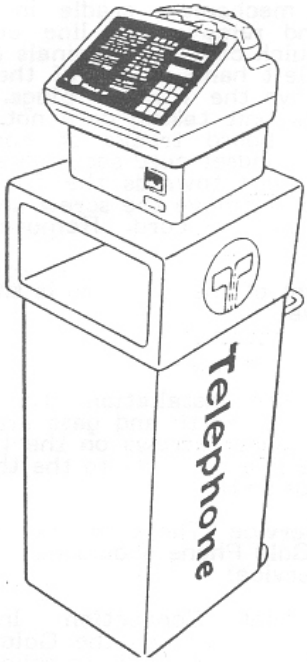


Figure 19 STAND

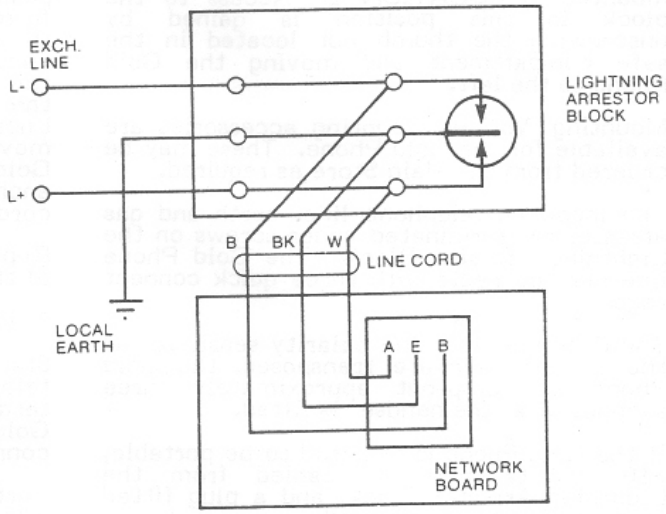


Figure 20 LIGHTNING ARRESTOR BLOCK CONNECTIONS

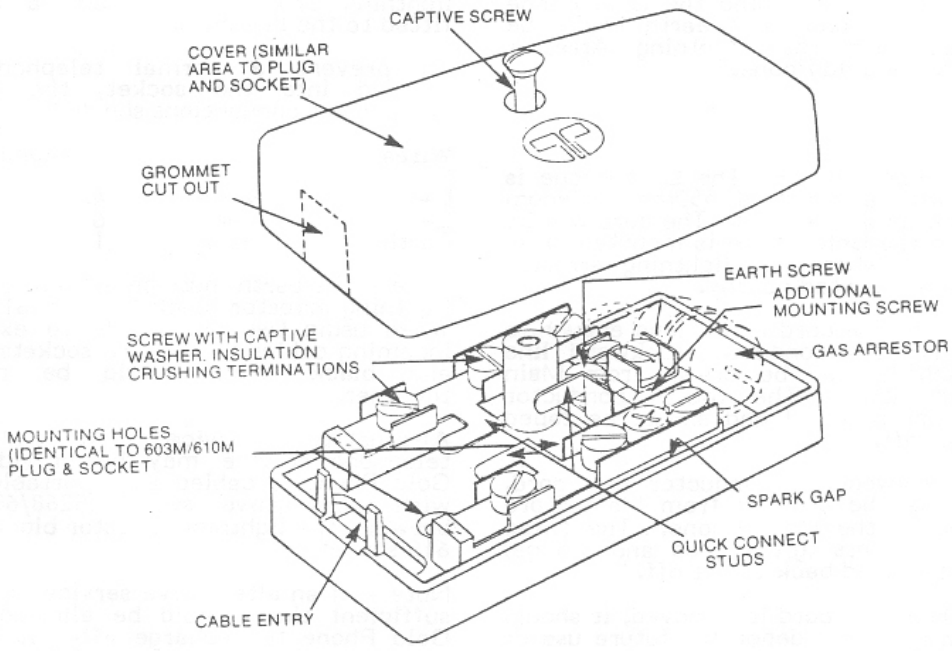


Figure 21 LIGHTNING ARRESTOR BLOCK S268/73

If the Lightning Arrestor Block cannot be mounted in this position, it should be mounted in LOCATION 2. Access to the block in this position is gained by unscrewing the thumb nut located in the safe compartment and moving the Gold Phone to the left.

Mounting Various mounting accessories are available for the Gold Phone. These may be ordered from the Main Store as required.

The incoming telephone line, earth and gas arrestor are terminated under screws on the Lightning Arrestor Block. The Gold Phone line cord connects with three quick connect tags.

The Gold Phone is line polarity sensitive. If the L+ and L-ve are transposed, the Gold Phone will drop-out approximately three seconds after the handset is lifted.

If the Gold Phone is required to be portable, 610 sockets must be cabled from the Lightning Arrestor Block, and a plug fitted to the Gold Phone line cord.

If a separate earth wire cannot be easily cabled to the selected Gold Phone site, the Lightning Arrestor Block may be installed as follows:

- Install the Lightning Arrestor Block as near as possible to where the exchange line enters the premises or, in the case of a PABX, near the main frame.
- The Gold Phone should be wired as a portable service, the plug and socket should be located behind the Gold Phone wherever possible. The earth MUST be extended from the Lightning Arrestor Block to the Gold Phone.

Line Cords

Types and Applications. The Gold Phone is supplied with a standard 350mm Telecom Gold 3 conductor line cord. The cord will be used where the Gold Phone is mounted close to a wall or where the lightning arrestor block can be mounted nearby.

If the 350mm line cord is not long enough, a standard 1.8m, 4 conductor teakwood line cord (S309/76) may be drawn from Main Store and fitted. The fourth conductor (RED) is not required and should be taped back or cut off.

A 3.0m teakwood, 6 conductor line cord, (S30/78), may be ordered from Main Store and fitted to the Gold Phone. The three unused conductors (green, red and orange) should to be taped back or cut off.

If the 350mm line cord is removed, it should be held in the local depot for future use or returned to Main Store.

Replacement. To remove the line cord, place the mechanism cradle in the test position and remove the line cord wires from the quick connect terminals located in the upper left hand corner of the network unit. Remove the T and P plugs. Remove the network unit taking care not to touch the circuit board tracks or components. Loosen the handset cord securing screw and move this cord towards the front of the Gold Phone. Remove the screw and bracket anchoring the line cord. Remove the line cord.

Replacement of the line cord is the reverse of the above.

Cabling

Standard fixed installation The incoming telephone line, earth and gass arrestor are terminated under screws on the LAB. The Gold Phone line connects to the three quick connect tags on the LAB.

Portable Service There are two situations when the Gold Phone should be cabled as a Portable Service:

Multiple Point Connection In certain situations such as when the Gold Phone is installed in a hospital, the telephone will be required to be moved from point to point.

In this situation the lightning arrestor block should be installed in a secure location as near as practicable to where the exchange line enters the premises.

610 sockets should be cabled from the lightning arrestor block and a 605 plug fitted to the line cord.

To prevent a normal telephone being plugged into the socket, the following plug/socket connections should be used -

Wires	Colour	Pin numbers
L+	white	4
L-	blue	6
Earth	black	1

Note - The earth must be extended from the lightning arrestor block to each 610 socket. When using two pair cable to extend the incoming cables to the 610 sockets, the red and black wires should be paralleled together.

Alternative Service An alternative telephone service may be provided. The Gold Phone is cabled as a portable service with a changeover switch (S268/60) cabled between the lightning arrestor block and the 610 socket.

Note - If an alternative service is provided, sufficient time should be allowed for the Gold Phone to recharge after it has been reconnected to the exchange line.

Extension Bell An extension bell(s) can be provided with the Gold Phone if required. A 25 PS extension bell set, (S12/40), should be wired into the Lightning Arrestor Block.

The extension bell must be fitted with an Anti-Tinkle Module (S311/330) and a luF capacitor.

Bell circuits fitted with Anti-Tinkle Modules may not respond to ring back from Automatic Line Testers eg. APR. A ring back through the network should be used to check circuit operation.

If a plug and socket are required for portable services, the extension bell may be wired from a socket or from the Lightning Arrestor Block.

Cabling Difficulties The Gold Phone should also be cabled as a portable service where a separate earth wire cannot be cabled to the Gold Phone site or the lightning arrestor block cannot be located behind the Gold Phone.

The cabling method previously outlined should be used with the following exceptions:

. only one 610 socket to be installed

. the 610 socket and 605 plug to be located behind the Gold Phone.

Network Unit Strapping Options

There are three straps located at the top of the network board that must be set at installation. These straps are shown in Table 1.

DMS Strap. The DMS strap is used to select the display mode when the KS Key is in the 'D' position. With the strap in the:

MP POSITION: Number of meter pulses received is displayed.

CC POSITION: The call cost is displayed.

MSS Strap. The MSS strap is used to select either 50 Hz or DC meter pulse detection. With the strap in the:

50 Hz POSITION: 50Hz meter pulses.
DC POSITION: DC meter pulses.

In some locations, 50 Hz metering is not practical therefore DC meter pulse recognition is provided.

If DC metering is selected, connection of the metering wires is as follows:

. Equipment with +ve earth battery feed: A single meter pulse lead has to be extended to the Gold Phone. It must be connected to the TDM '-' terminal located at the top left of the network board.

. Equipment with -ve earth battery feed: two meter pulses wires must be connected to be the TDM terminals.

A step transformer is required to isolate the meter pulse from the Gold Phone earth. Arrangements must be made to provide this isolation.

CCD Strap. In many of the older type exchanges, ie. Step X Step, ARK etc, access to the proper classifications when the category change facility is used is not possible. Therefore, it is sometimes necessary to strap-out the category change diode (CCD) in the Gold Phone.

The CCD strap enables or disables the category change facility as follows:

SC POSITION: Diode short-circuited, category change facility disabled.

DC POSITION: Diode unaffected, category change facility enabled.

The exchange access categories are briefly outlined in Table 2. Column 4 shows the correct position for the CCD strap. The PTO and STO entries stand for Public Trunk Operator and Subscriber Trunk Operator respectively.

NOTE 1: The exchange categories for each exchange type may vary from that stated and should be checked with the local engineering group.

NOTE 2: The diode in the Gold Phone is strapped out by the CCD strap, the category marking diode and ABRAD are provided at the exchange.

NOTE 3: Gold Phones must only be connected to these exchanges if a state solution is available to bar access to STD - Allowable access is then that stated for the SXS (ISD/MM).

NOTE 4: For new service, GOLD PHONE must be connected to the cross-bar section of the exchange

For an existing coin telephone service, GOLD PHONE will require a number change and connection to the cross-bar section of the exchange

. access to ISD and PTO depend on exchange register type.

NOTE 5: When the category change facility is available in the exchange, the CCD strap is put in the "OC" position. When the CCD strap is in the "SC" position, the category change diode is short circuited.

INSTALLATION FEEDBACK LABEL

A white label will be provide with each Gold Phone. This label MUST be filled in at the time of installation and returned to the address marked on it. (Note - include any faults found, or for no faults write NIL.) The returned labels will provide statistics on the number of installations, faults and fault types to enable the quality level at manufacture to be monitored.

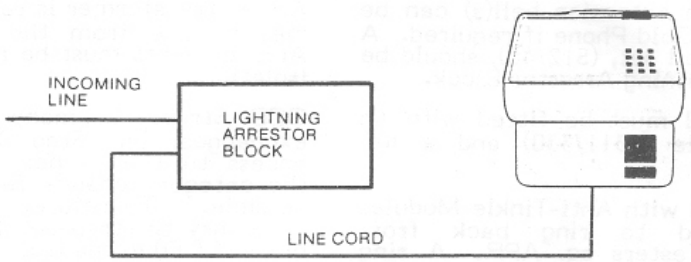


Figure 22 FIXED INSTALLATION

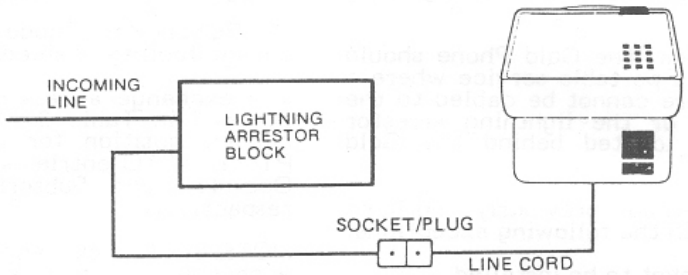


Figure 23 PORTABLE SERVICE

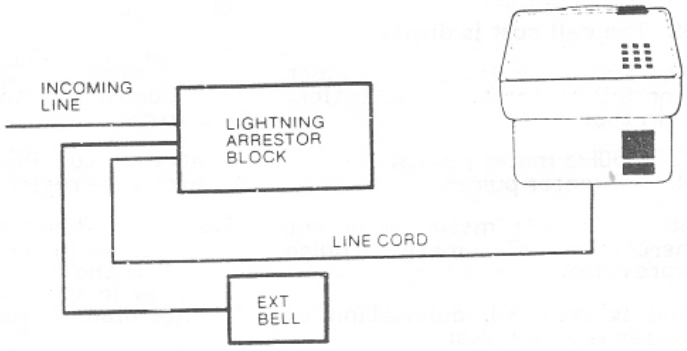


Figure 24 GOLD PHONE WITH EXTENSION BELL

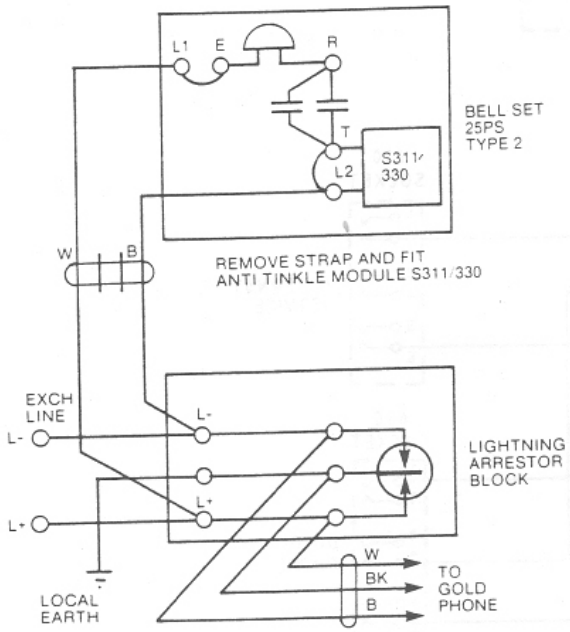


Figure 26 CONNECTION TO EXTENSION BELL SET

Quick Charge Facility

The Gold Phone does not require an external power supply. Two large capacitors are charged over the line and these provide the power necessary to operate the coin collection sequence.

When the Gold Phone is first connected to the line, an automatic quick charge circuit operates to charge the capacitors to the operating potential. Charging time varies from 30 seconds (short line) to 40 seconds (long line) with the handset on hook.

When the handset is lifted and the Credit Display shows $0.00 (with the DS lock switched to the Coin 'C' position), the Gold Phone is ready to accept coins. Any coins inserted before the capacitors are fully charged are refunded.

If the Gold Phone is disconnected and moved from one position to another the capacitors may become discharged and must be charged before the Gold Phone can be used again.

Transmission Limits The Gold Phone is designed to operate on a maximum exchange loop resistance of 1100 ohms.

Instruction Plate There are four main instruction plates available for the Gold Phone, as shown in Figure 31. These are:

INSTRUCTION PLATE NO. 1 For areas with ISD and Emergency (000) access (S35/847).

INSTRUCTION PLATE NO. 2 For areas without ISD or Emergency (000) access. (S35/848).

INSTRUCTION PLATE NO. 3 For areas without ISD but with Emergency (000) access (S35/889).

INSTRUCTION PLATE NO. 4 For areas with ISD and without Emergency (000) access (S35/890).

Gold Phones are supplied with Instruction Plate No. 1 fitted. If the Gold Phone is installed in an area with different access, the correct instruction plate must be fitted.

The Instruction Plate is attached to the top cover assembly with 6 nuts and washers. The protection cover for the LCD Credit Display is mounted underneath of the Instruction Plate. It must be removed from the original plate and fitted to the new Instruction Plate.

Coin Telephone Identification Number A label is provided beneath the Coin Refund Chute on which to note the coin telephone identification number.

The Customer should be discouraged from displaying the telephone line number and encouraged to display ONLY the coin telephone identification number to prevent fraudulent reverse charge calls being made.

For fault reporting purposes the identification number must be displayed on each Gold Phone.

This number should either be typed on the label or added neatly by hand and should be provided by the Coin Telephone Office in the District prior to installation.

Access to the label is achieved from inside the coin safe door. The label is easily removed and replaced and is held in position by a label holder.

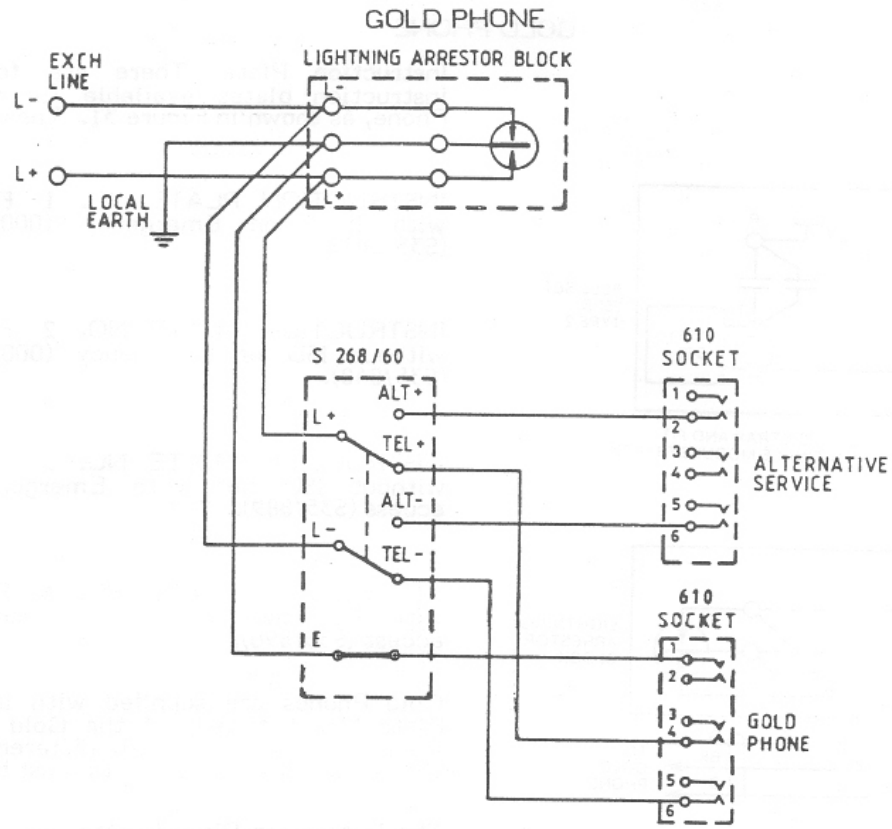


Figure 25 ALTERNATIVE SERVICE

NETWORK UNIT STRAPPING OPTIONS		
STRAP	POSITION	FUNCTION
DMS	MP	METER PULSES DISPLAYED IN "D" POSITION OF KS KEY
	CC	CALL COST DISPLAYED IN "D" POSITION OF KS KEY
MSS	DC	DC METER SIGNALLING
	50 Hz	50 Hz METER SIGNALLING
CCD	SC	CATEGORY CHANGE DIODE SHORT CIRCUITED
	OC	CATEGORY CHANGE DIODE NOT SHORT CIRCUITED

Table 1 NETWORK STRAPPING

EXCHANGE TYPE	MR TYPE	CATEGORY NOTE 1	CCD STRAP POSITION NOTE 5	KS KEY POSITION	ALLOWABLE ACCESS				
					LOCAL	STD	ISD	PTO	STO
AXE	SE-PRM	217	OC	L C,D	YES YES	YES YES	YES YES	NO NO	YES NO
ARE-11	MR-CT3	217	OC	L C,D	YES YES	YES YES	YES YES	NO NO	YES NO
REG-LP (REMO)	MR-CT3	8 8 D	OC	L C,D	YES YES	YES YES	YES YES	YES NOTE 6 YES NOTE 6	YES NO
REG-LP (PRE-REMO)	MR-CT3	8 (CT3 CATEGORY)	SC	L, C, D	YES	YES	YES	YES NOTE 6	NO
REG-LP (PRE-REMO) (PRE-ISD)	MR-CT3	(CT3 CATEGORY)	SC	L, C, D	YES	YES	NO	YES	NO
REG-LM	MR-CT3	(CT3 CATEGORY)	SC	L, C, D	YES	YES	NO	YES	NO
ARK-M (ISD/MM)	MR-CT3	6 (CT3 CATEGORY(	SC	L, C, D	YES	YES	YES	YES	NO
ARK-M (PRE/ISD) ARK-D	MR-CT3	(CT3 CATEGORY)	SC	L, C, D	YES	YES	NO	YES	NO
SXS (ISD/MM)	VD 5848	CT3 CATEGORY)	SC NOTE 2	L, C, D	YES	YES	NO	YES	NO
SXS (PRE/ISD)	VD 5848	NOTE 3							
SR-B	VD 5848	NOTE 4							
RAX	GOLD PHONE NOT AVAILABLE FOR USE ON THIS EXCHANGE								

Table 2 EXCHANGE ACCESS

GOLD PHONE

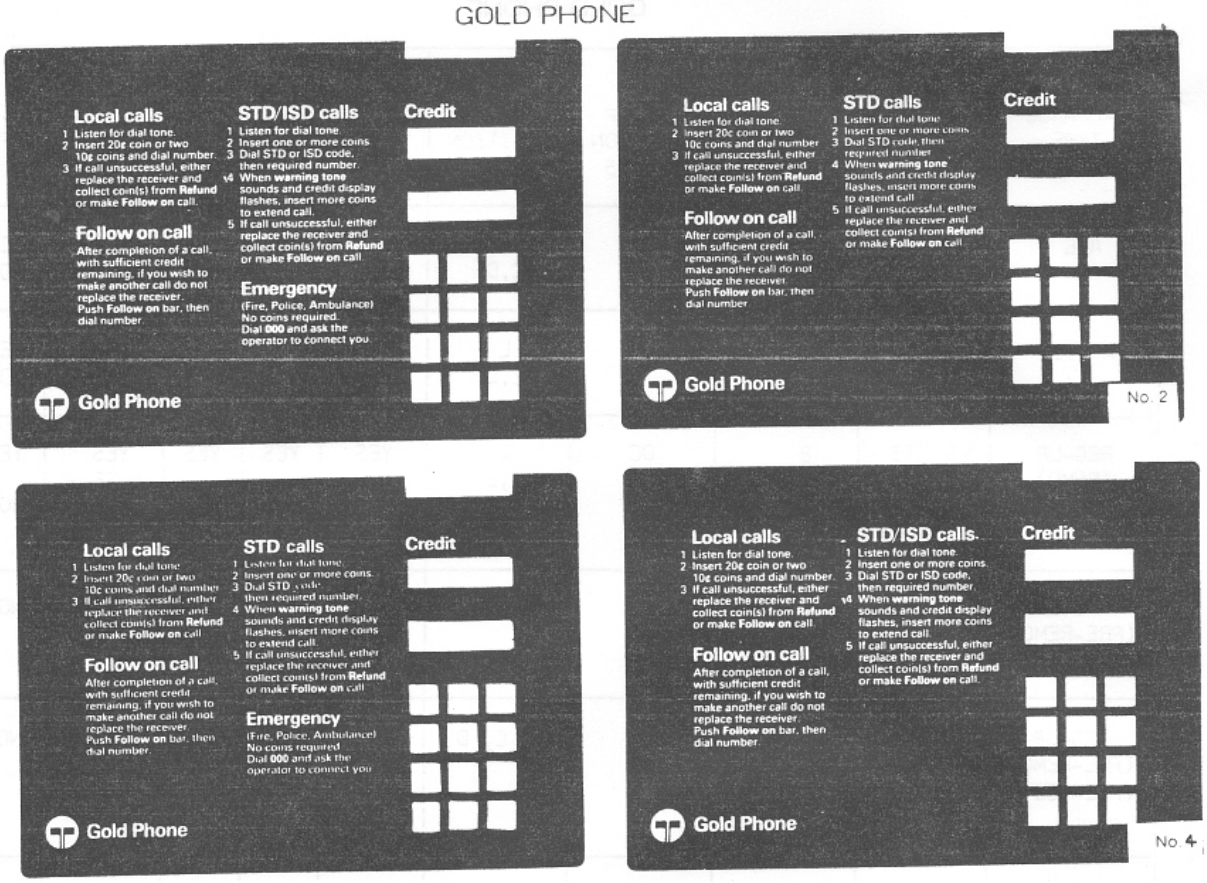


Figure 27 INSTRUCTION NOTICES

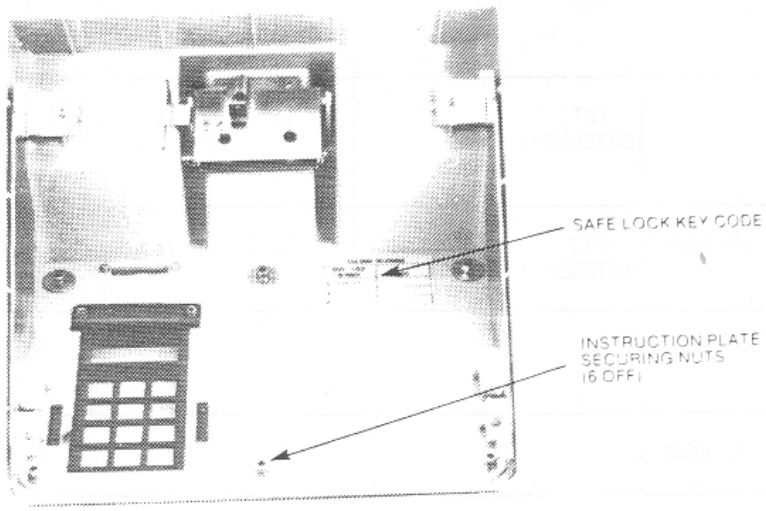


Figure 28 INSTRUCTION PLATE SECURING METHOD

- When the next meter pulse is received, the 50c coin should be collected - the credit display should show $0.40.
- On each subsequent meter pulse, the credit display should be reduced by 20c.

Meter Pulse	LCD Display
3	20
4	0
5	Cut off

- After the fourth meter pulse has been received, a short warning tone should sound in the receiver and the credit display should flash for the duration of the call.

ISD Call

Charges are based on 20c for all meter pulses. If ISD is available, the following call should be made:

- Operate the switchhook for 2 seconds and release
- Insert in order a 50c and two 10c coins. The credit display should show $0.70.
- Dial an ISD test number
- On answer, the 50c coin should be collected - the credit should show $0.50.
- After the next meter pulse the credit display should show $0.30. A short warning tone should sound in the receiver and the credit display should flash for the remainder of the call.
- After the third meter pulse, the credit display should show $0.10.
- After the fourth meter pulse is received, the call is cut off. The 10c coin should be refunded when the switchhook is operated.

Follow-On-Call Button

- Operate the switchhook for 2 seconds and release
- Insert a 50c coin - credit display shows $0.50.
- Dial a local call.
- On answer, the 50c coin is collected - the credit display shows $0.30.
- Press the Follow-On-Call button. The call currently in progress should be disconnected, followed by dial tone.
- The credit display should still display $0.30.
- Dial an STD number.
- On answer, the credit display should display $0.10.
- After receipt of the next meter pulse, the call should be cut off and the credit display should show $0.00.

Access Barring Facility

- Dial the Subscriber's Trunk Operator - 011.
- The call should not be connected.

'D' Position tests

Coins are not required when the KS Key is in 'D' position.

Call cost option

- Ensure the DMS strap (located on the network board) is in position CC - the telephone will now display the cost of a call made.
- With the switchhook operated, set the KS Key to the 'D' position.
- Make a local call - the display should show $0.20.
- Operate the switchhook and release it - the credit display should still show $0.20.
- Make an STD call.

After the first meter pulse, the credit display should show $0.40.

- After the second meter pulse, the credit display should show $0.60.
- Operate the switchhook for 2 seconds and release - the display should show $0.60.

- With the switchhook operated, the KS Key to the 'C' position - the display should go blank. When the switchhook is released the display should show $0.00.

Meter Pulse Option.

- Ensure the DMS strap (located on the network board) is in position MP - the telephone will now display the number of meter signals received and the $ sign in the Display will be switched off.
- With the switchhook operated, turn the KS Key to the 'D' position.
- Make a local call - the display should show 1.
- Operate the switchhook and release it - the display should show 1.
- Make an STD call.
- On answer the display should show 2.
- After the second meter pulse, the display should show 3.
- Operate the switchhook - the display should still show 3.
- With the switchhook operated, set the KS key to the 'C' position - the display should go blank. When the switchhook is released the display should remain blank.

Lessee Position tests

- With the switchhook operated, set the KS key to the 'L' position. Ensure the credit display is blank.
- Make a local call - the call should proceed normally.
- Make an STD call - the call should proceed normally.
- If ISD is available, dial an ISD test number
- If the facility is available, call the local Subscriber's Trunk Operator to ensure the Customer has access to this facility.

Figure 29 TELEPHONE IDENTIFICATION NUMBER LABEL

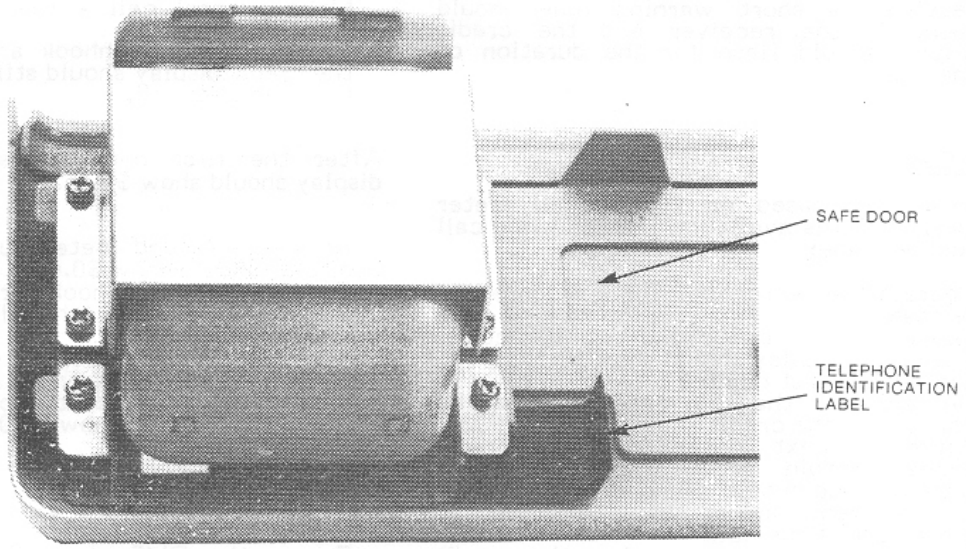


Figure 30 TELEPHONE IDENTIFICATION NUMBER LABEL ACCESS

TESTING

ISD test numbers The following test numbers should be used when testing ISD facilities.

0011 0908(1) 1194(2)

(1) other numbers 0902, 0903, 0905, 0906
(2) other community call numbers can be used.

IMPORTANT: REMOVE THE VINYL TAPE HOLDING THE MECHANISM FLAPPER AGAINST THE BODY OF THE MECHANISM PRIOR TO PERFORMING ANY TESTS.

- Connect the Gold Phone to the telephone line.
- Set the KS key to the 'C' position and ensure the handset is in its cradle.
- Wait 40 seconds for the Quick Charge Circuit to charge the capacitors.
- Lift the handset - the credit display should show $0.00.
- Remove the top case cover.
- Place the coin mechanism in the test position by grasping the cradle lift handles (labelled LIFT) and pulling gently upward and forward. Release the handles to ensure that the cradle will lock into the test position.

Free Call

- Make a non-metered call.
- Two-way conversation should be possible.

Local Call

- Operate the switchhook for 2 seconds and release
- Insert a 20c coin - the credit should show $0.20.
- Make a local call.
- 20c should be collected within 3.3 seconds of answer.
- Two-way conversation should be possible.
- The credit display should read $0.00.

STD Call

Charges are based on 20c for all meter pulses.

- Operate the switchhook for 2 seconds and release
- Insert in order a 10c coin, a 20c coin and a 50c coin - the display should show $0.80.
- Make an STD call. (Ensure the meter pulse period is greater than 10 seconds otherwise the warning tone signal will sound on the second meter pulse.)
- When the first meter signal is received, the 10c and 20c coins should be collected - the credit display should show $0.60.

Re-assembling the Gold Phone

- Ensure the DMS strap is set to position CC or MP to provide the appropriate 'D' position facility as specified by the customer.
- Place the coin mechanism in the normal position. This can be done by grasping the cradle lift handles and pulling the handles upward. The cradle can then be lowered to its normal position.
- Replace the case top cover.
- Replace the handset on the switchhook.
- Restore the KS key to the 'C' position and remove.

Incoming Call

- Arrange to have an incoming call made to the coin telephone. The ringer should sound. If there is an extension bell, ensure that it also rings.
- Answer the call - two-way conversation should be possible.

MAINTENANCE

The Gold Phone contains CMOS integrated circuits in the Network Unit, Coin Mechanism, Credit Display and Dial PBA's. Faults in these boards are not to be corrected on site due to the complexity and static discharge susceptibility of the modules.

When a fault exists in any of the above PBA's it should be replaced by a working unit. No attempt should be made to repair the PBA in the field.

Handling, Packing and Return of Faulty Modules. The Network Unit, Coin Mechanism, Credit Display and Dial PBA's all contain static sensitive CMOS integrated circuitry. Premature failure of these devices may be caused by electrostatic discharge; the following precautions MUST be taken:

- Components are physically delicate. Finger pressure on a component can fracture, but not necessarily break component leads; a future fault.
- Handle PBA's by the edge or by the handles. DO NOT handle PBA tracks or components.
- To protect against physical and electrostatic damage, PBA's MUST ALWAYS be placed into antistatic bags, sealed and packed in one of the specially designed protective cartons.

NOTE: These procedures apply equally to both working and faulty PBA's. Careless handling, storage and transportation may cause future faults.

The packaged modules should then be returned to State Workshops for exchange on a one-for-one basis.

Antistatic Bags and Protective Cartons When transporting PBA's, the following packing method MUST be used. The PBA is to be placed inside one of the following antistatic bags:

Serial	Dimensions
14/81	150mm X 250mm
14/82	250mm X 355mm
14/83	355mm X 405mm
14/84	405mm X 460mm

The bag must then be placed inside one of the following protective cartons.

PBA	Serial	Dimensions
Network	189/49	340 X 255 X 80
Unit	189/50	340 X 300 X 100
Coin Mech	189/86	340 X 300 X 120
Dial	189/20	150 X 100 X 60

Fault Report Label A Fault Report label (E441) containing as much detail about the suspected fault as possible, MUST be attached to each module returned for repair. These labels are used to compile a statistical summary of faults. They are available from local FDC stores.

Network Unit

Identification. The Network Unit has a label attached to the top protective rail giving date of manufacture and serial number.

Removal. The Network Unit is located in two slots at the rear of Gold Phone. To remove the Unit, disconnect the three line cord wires terminated on the quick connect terminals in the upper left-hand corner of the board. Unplug the "T" and "P" plugs located in the upper left and right hand sides respectively. Press in the plastic catches located at the side of the unit and lift up and out.

Replacement. The replacement of the Network Unit is the reverse of the above. The "T" and "P" plugs are keyed so they will fit in one direction only. The line wires should be connected to the quick connect terminals corresponding to the colour coding on the label above the terminals.

Network Unit Strapping Options. There are several straps located at the top of the network board that have to be set at the time of installation. See Installation Section.

Coin Mechanism

Identification. The coin mechanism has a label attached near its bottom left hand corner giving the date of manufacture and serial number.

Coin Mechanism Mounting. The coin mechanism is mounted in a cradle which may be moved from the normal operating position to a test position by grasping the cradle lift handles, and pulling upward and forward. The handles should then be released to ensure that the cradle will lock into the test position. In this position, coins inserted will be collected into the refund chute instead of the coin box.

NOTE: The top cover assembly cannot be fitted when the mechanism is operating in the test position.

To return the coin mechanism to its normal operating position, grasp the cradle lift handles and pull upward. The mechanism can then be lowered to its normal operating position

Removal. To remove the coin mechanism, the Credit Display PBA should first be tilted forward. This prevents the Credit Display PBA from being damaged when the mechanism is removed or replaced. The wiring form at the rear of the coin mechanism must be disconnected by pulling the plug out of the CV socket. Grasp the coin mechanism lift handles; the mechanism can then be pulled up and out of the cradle.

Replacement. To replace the Coin Mechanism, grasp the Coin Mechanism lift handles. Line up the tabs on the sides of the Coin Mechanism with the slots in the mechanism cradle and lower the Coin Mechanism into its cradle. Release the Coin Mechanism lift handles and the mechanism will lock into position. Replace the plug at the back of the Coin Mechanism into its socket (CV).

Clearing of Coin Blockages. Coin blockages may be easily cleared.

The coin selecting and storage channels are hinged at one end. When replacing the handset, the unhinged end is forced away from the body of the mechanism. This action allows coins or other objects jammed in the mechanism to fall through to the refund chute.

Any coins blocked in the coin mechanism or chute may be cleared by either:

- Removing the coin safe door and coin box and obtaining access to the blockage through the coin safe housing.
- Removing the coin mechanism.

Cleaning. The coin mechanism flapper may be opened at 90 degrees to the coin mechanism body to allow cleaning of the select and storage channels as follows:

- Loosen the two screw securing the coin holding stopper lever guard to the mechanism and remove the guard.
- Pivot the coin mechanism flapper stopper out of the way.
- Remove the black plastic refund cover on the front of the coin mechanism.
- Pull the flapper away from the coin mechanism.

Where cleaning is necessary a rag moistened with methylated spirits should be used to remove light grime. A light abrasive cleaner such as a (micro-scrub) contact cleaning strip should be used to remove more stubborn grime, as this provides a suitable abrasive action without excessive marking of the nickel plated surfaces.

Handset Assembly The Handset of the Gold Phone contains the transmitter, the receiver (which are both 4T inserts), and the hearing aid coupler coil. The caps are glued and tightly screwed in place. Handset cords have been designed so that they may be easily removed and replaced, with both ends terminating in quick connect terminals.

Handset Cord To remove the handset cord, disconnect the two pink and two yellow wires terminated on the quick connect terminals on the small terminal board on the left hand side of the Gold Phone. Unscrew the transmitter and receiver caps and disconnect the yellow and pink wires terminated on the transmitter and hearing aid coil. Remove the screw located inside the handset anchoring the handset cord to the handset and remove the cord. Remove the screw securing the handset cord in the Gold Phone and remove the handset cord.

The replacement of the new handset cord is the reverse of that above.

Credit Display Module To remove -

- disconnect the wiring loop
- remove the two screws located on either side of the follow-on call button holding the module to the dial and ringer base.

Follow-On Call Button To remove -

- press on one side of the button. This releases the catch, allowing the assembly to be removed.

To replace -

- line up the catches on either side of the button with the square holes in the Credit Display Module.
- press the button to lock it in position.

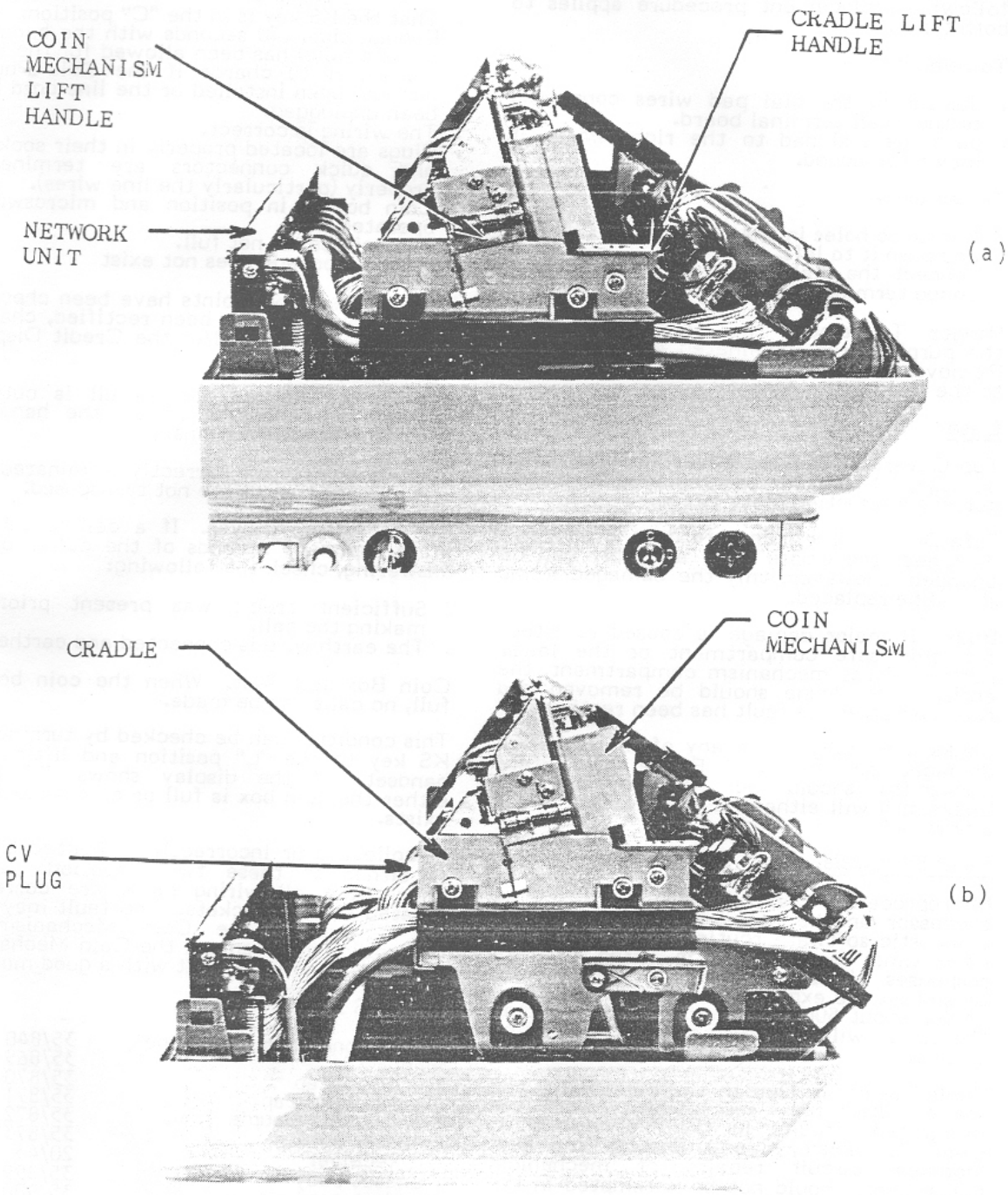


Figure 31 COIN MECHANISM AND CRADLE

Dial The Gold Phone is fitted with a decadic push-button dial pad. A DTMF dial pad can be fitted where required. The following replacement procedure applies to both types.

To remove -

- disconnect the dial pad wires connected to the small terminal board.
- push the dial pad to the right where it may be removed.

To replace -

- line up to holes in the back on the dial pad and push it to left.
- connect the dial pad wires to the colour coded terminals above the word 'DIAL'.

Ringer To remove the ringer, disconnect the purple wires terminated on the ringer. Remove the two screws securing the ringer to the dial and ringer base.

Case

Top Cover. If the top cover sustains major damage, it should be replaced and the correct instruction plate fitted.

Safe Door. If the coin safe door is seriously damaged, the entire door assembly can be changed. However, only the damaged items should be replaced.

Body. If major damage is caused to either the coin safe compartment or the lower section of the mechanism compartment, the entire Gold Phone should be removed and returned after the fault has been rectified.

Locks Generally, when any of the locks are damaged on the Gold Phone, the State Locksmith should be notified and the Locksmith will either fix the problem or fit a new lock.

Fault Diagnosis

Microprocessor Test L.E.D. The microprocessor on the network unit has a self diagnostic software routine that is initiated each time the handset is lifted. If the responses obtained from the routine are those that are expected, the L.E.D. will turn on for about 500mS. If an error is detected the L.E.D. will NOT turn on at all indicating a fault.

Fault Location. Due to the complexity and static discharge susceptibility of the integrated circuits in the Network Unit, Coin Mechanism, Credit Display and Dial Modules, circuit repairs or mechanical adjustments should not be attempted in the field or local repair centre.

However, to trace the fault to a particular module, a few procedures have been outlined for some fault cases. Detailed diagnostic flow charts are attached.

Display Remains Blank. If the handset is lifted and $0.00 does not appear (ie., remains blank), check the following items:

- That the KS key is in the "C" position.
- Enough time (40 seconds with the handset in its cradle) has been allowed for the line capacitors to charge if the Gold Phone has just been installed or the line cord has been unplugged.
- The wiring is correct.
- Plugs are located properly in their sockets and quick connectors are terminated properly (particularly the line wires).
- Coin box is in position and microswitch operated.
- The coin box is not full.
- A coin blockage does not exist

If all of the above points have been checked and the fault has not been rectified, change the Network Unit and/or the Credit Display Module.

Cut-off on Pick Up If a call is cut-off within ten seconds of lifting the handset, check the following items:

- the line wires are correctly terminated
- the l+ and Lwires are not transposed.

Cut-off after Answer. If a call is cut-off after approx. 3 seconds of the called party answering, check the following:

- Sufficient credit was present prior to making the call.
- The earth wire is connected and earthed.

Coin Box full Test. When the coin box is full, no calls can be made.

This condition can be checked by turning the KS key to the "L" position and lifting the handset. If the display shows "F" then either the coin box is full or a coin blockage exists.

Uncollected or Incorrectly Collected Coins. If either of these two situations occur, check that all wiring plugs are correctly located in their sockets. The fault may also be located in the Coin Mechanism or Network Unit. Replace the Coin Mechanism and/or the Network Unit with a good module.

STORES ITEMS

Gold Phone Coin Telephone	35/840
Handset	35/869
Receiver Cap	35/870
Transmitter Cap	35/871
Hearing Aid Coupler Coil	35/872
Handset cord	35/873
4T Receiver	20/43
Handset body	35/899
Handset cord clamp	35/900
Transmitter spacer	35/901
Thumb Nut	35/838
Base Plate	35/839
Stand	35/836
Wall Mounted Shelf	35/835

GOLD PHONE

Line Cord 0.35m	30/263
Line Cord 1.8m	30/76
Line Cord 3.0m	30/78
Lightning Arrestor Block	268/73
Lightning Arrestor	442/34
Mechanism Compartment Top	35/846
Plate Instruction No. 1	35/847
Plate Instruction No. 2	35/848
Plate Instruction No. 3	35/889
Plate Instruction No. 4	35/890
Coin Slot	35/867
Prot. Kit, Credit Display	35/868
Glass plate	35/898
Credit display filter	35/917
Rubber seal	35/932
Coin Safe Compartment Ass.	35/843
Coin Safe Compartment Door	35/844
Microswitch - Coin Box	35/857
Rubber foot	35/866
Rubber grommet	35/919
SL plate	35/921
Slide block	35/922
SL collar	35/923
Coin box microswitch	35/924
Coin box assembly	35/937
Coin Refund Chute Module	35/860
Flap Refund	35/861
Coin Refund Chute Wall	35/862
Refund Coin Chute Securing Bracket	35/863
Card Identification	35/864
Identification label	35/865
Coin safe door	35/912
Refund flap spring	35/913
Refund shaft	35/933
Mechanism compartment case	35/845
Decadic dial	35/874*
Ringer	35/875
Wiring loom	35/876
Credit display module	35/877
Follow-on call button	35/878
Credit display PBA	35/879
Line cord securing bracket	35/885
Dial and ringer base	35/886
Terminating board	35/887
Programming plug, PM1 - 20	35/891
Left wiring loom clamp	35/892
Key codes label	35/893
DTMF Dial	35/894*
Credit display PBA cover	35/895
Network unit clip	35/929
TL - 180 clip	35/930
Coin mechanism assembly	35/841*
Coin validating PBA cover	35/882
Coin refund cover	35/896
Bottom (ABS)	35/845
Pushbutton Dial - Decadic	35/874*
Ringer Type HBF-10	35/875
Wiring Loom.	35/876
Credit Display Module	35/877
Follow-On-Call Button	35/878
Credit Display PBA	35/879*
Network Unit - Complete	35/842*
Microprocessor	35/884**
Coin Validating PBA	35/880**
Coin Validating PBA	35/881**
Coin Validating Unit Cover	35/882
Coin Channel Mechanism	35/883**
Lock Assembly - 'M'	35/849
Lock 'M'	35/850
Lock Assembly - 'S'	35/851
Lock Coin Safe - 'S'	35/852
Key Switch - KS	35/853
Lock, Key Switch KS	35/854
Micro switch, KS lock	35/926

* Item available for change-over from Local State Workshop or Store, repair of electronic circuitry in these items MUST NOT be attempted in the field.

** Held in NSW workshops, available to repair centre only.

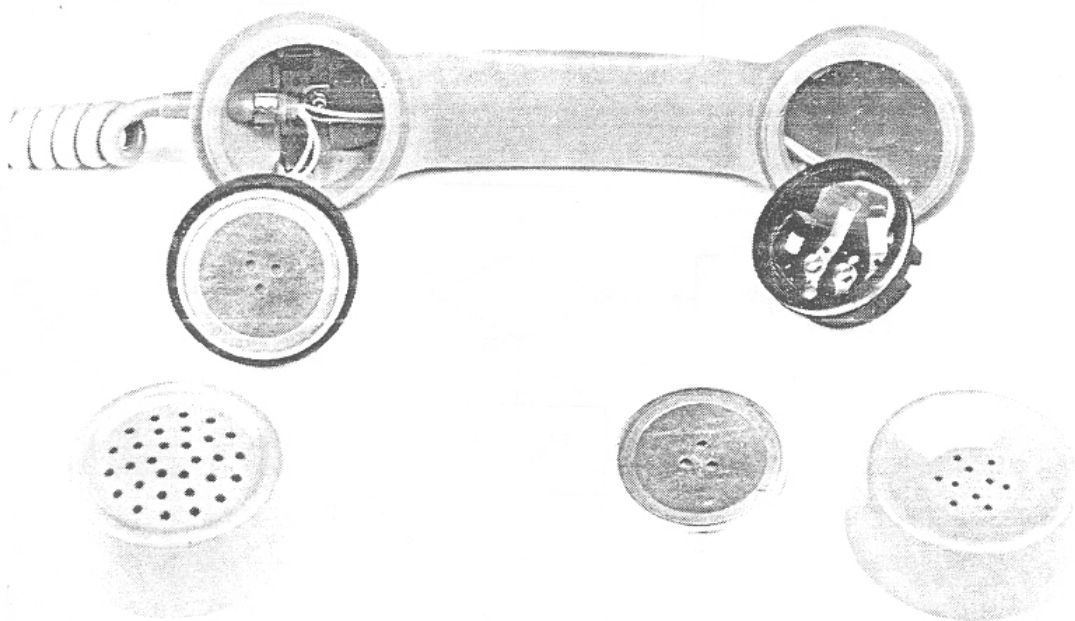


Figure 32 HANDSET COMPONENTS

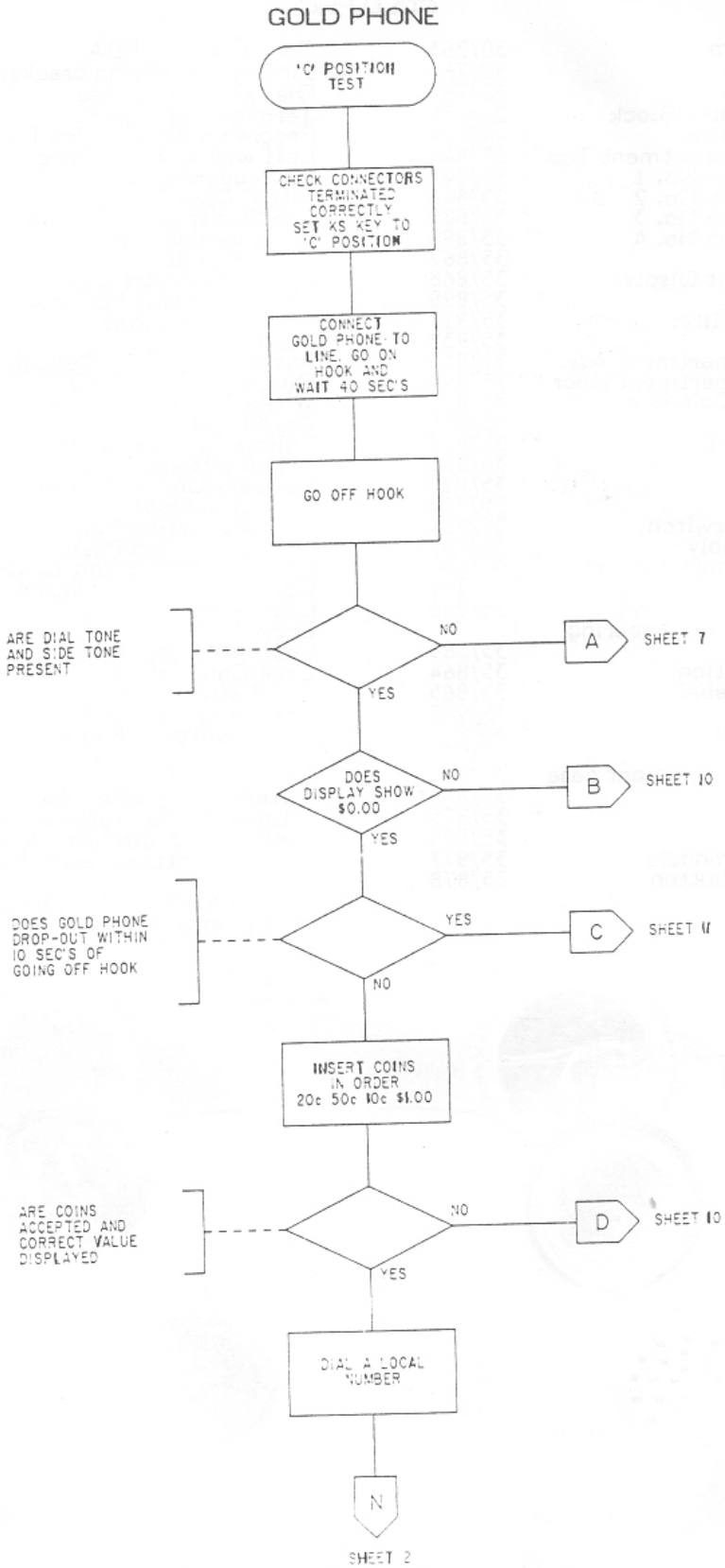


Figure 33 FLOWCHART SHEET 1

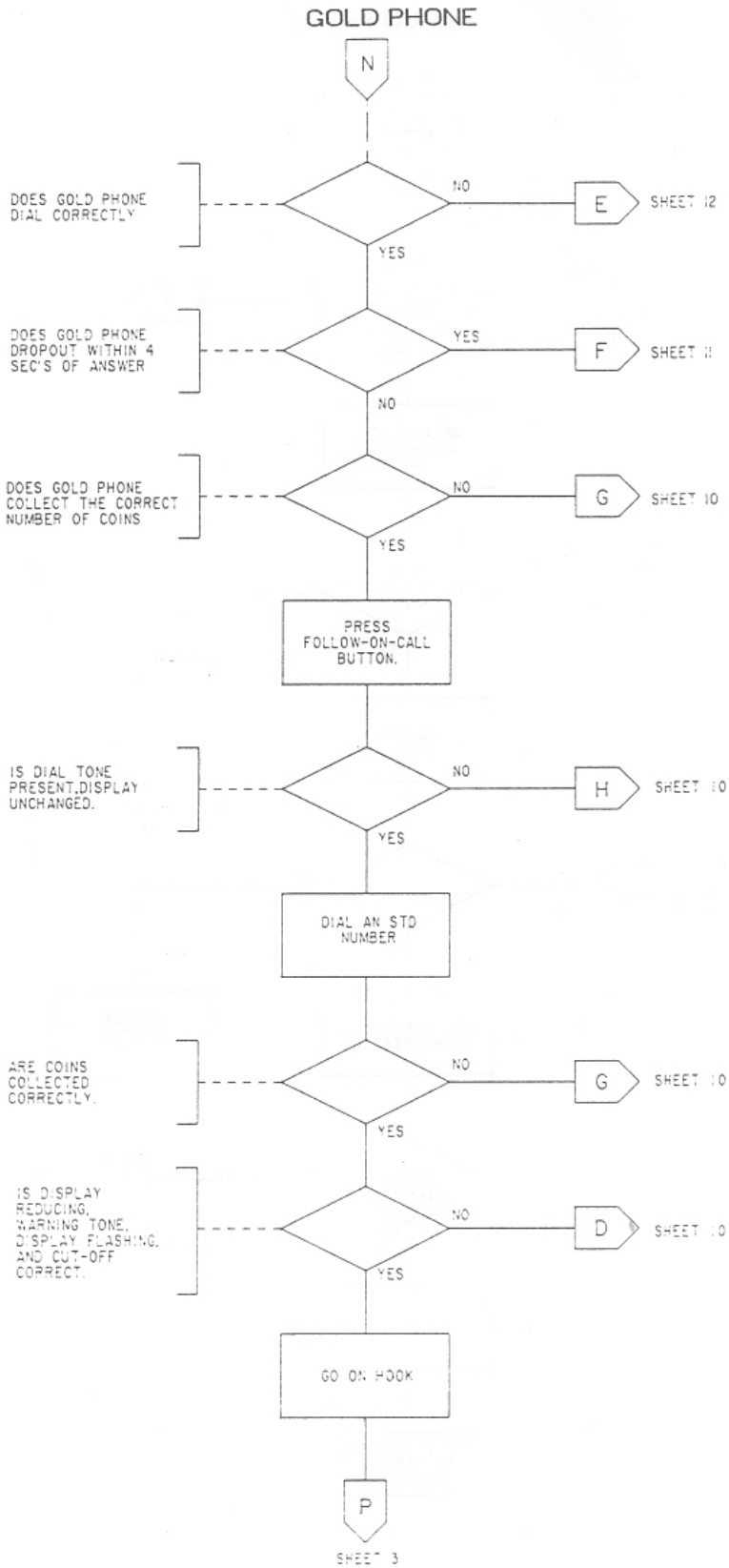


Figure 34 FLOWCHART SHEET 2

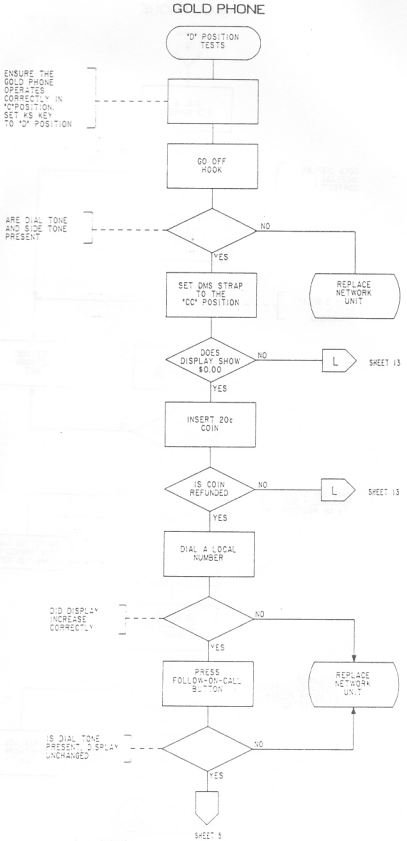


Figure 36 FLOWCHART SHEET 4

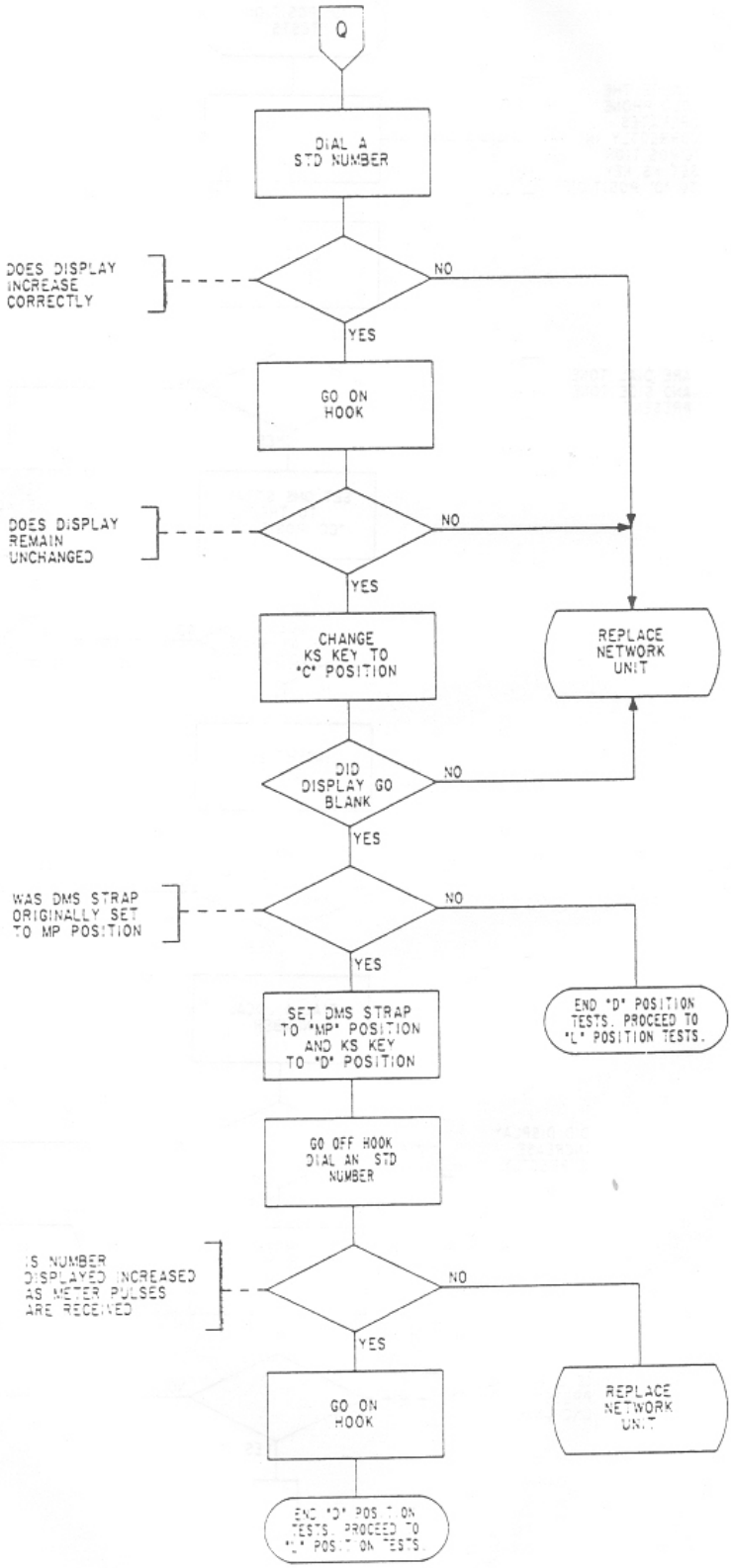


Figure 37 FLOWCHART SHEET 5

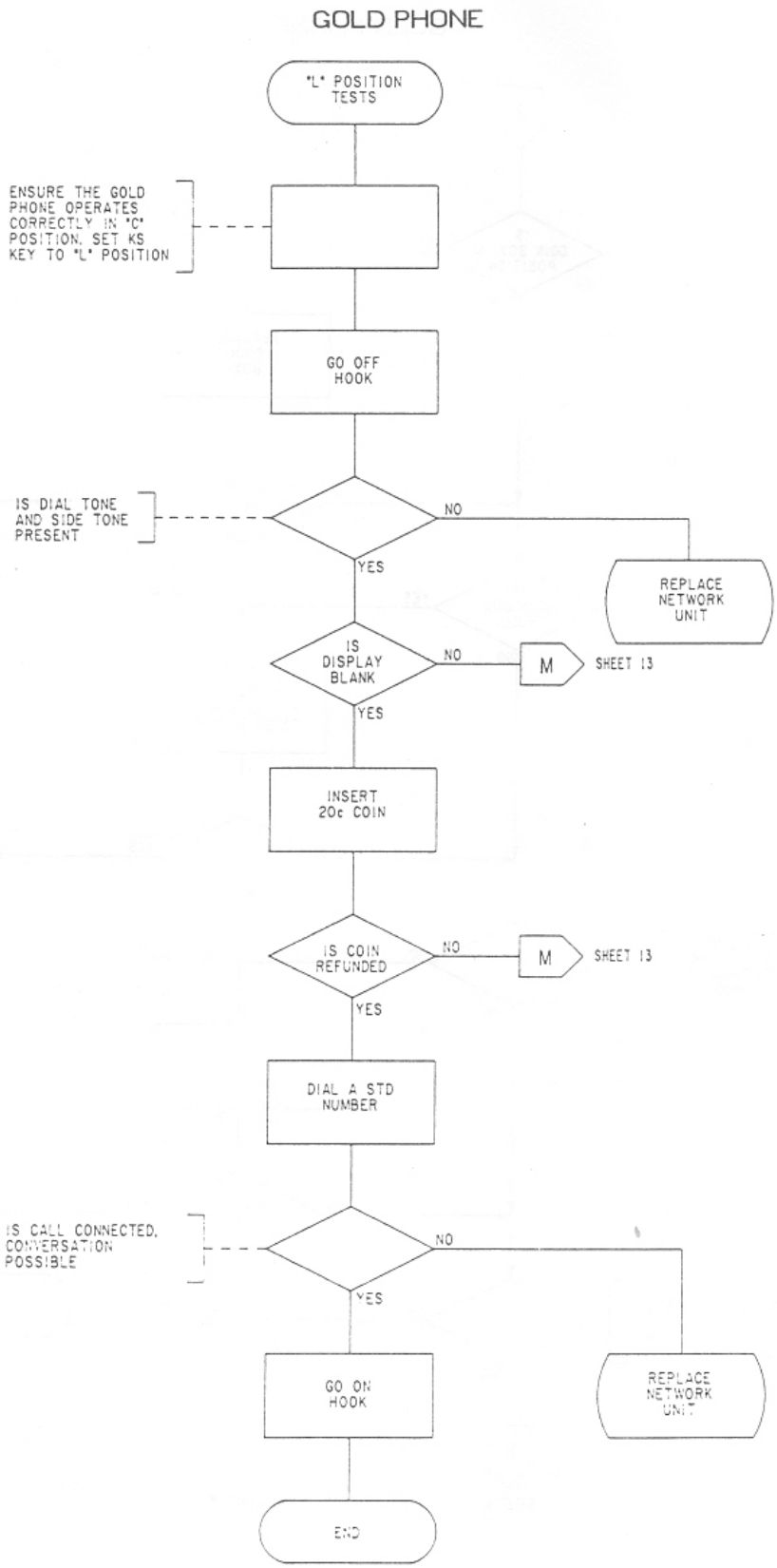


Figure 38 FLOWCHART SHEET 6

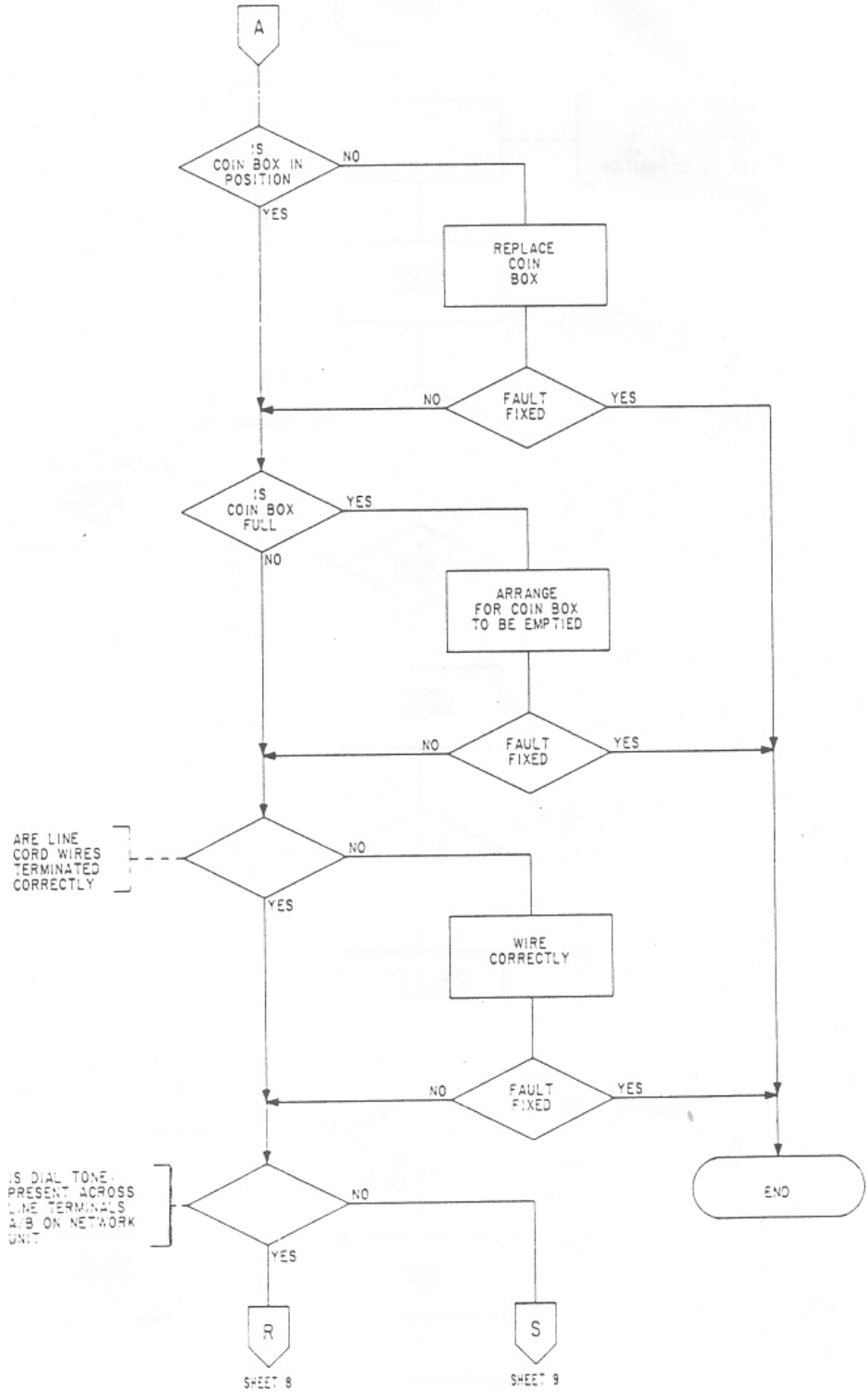


Figure 39 FLOWCHART SHEET 7

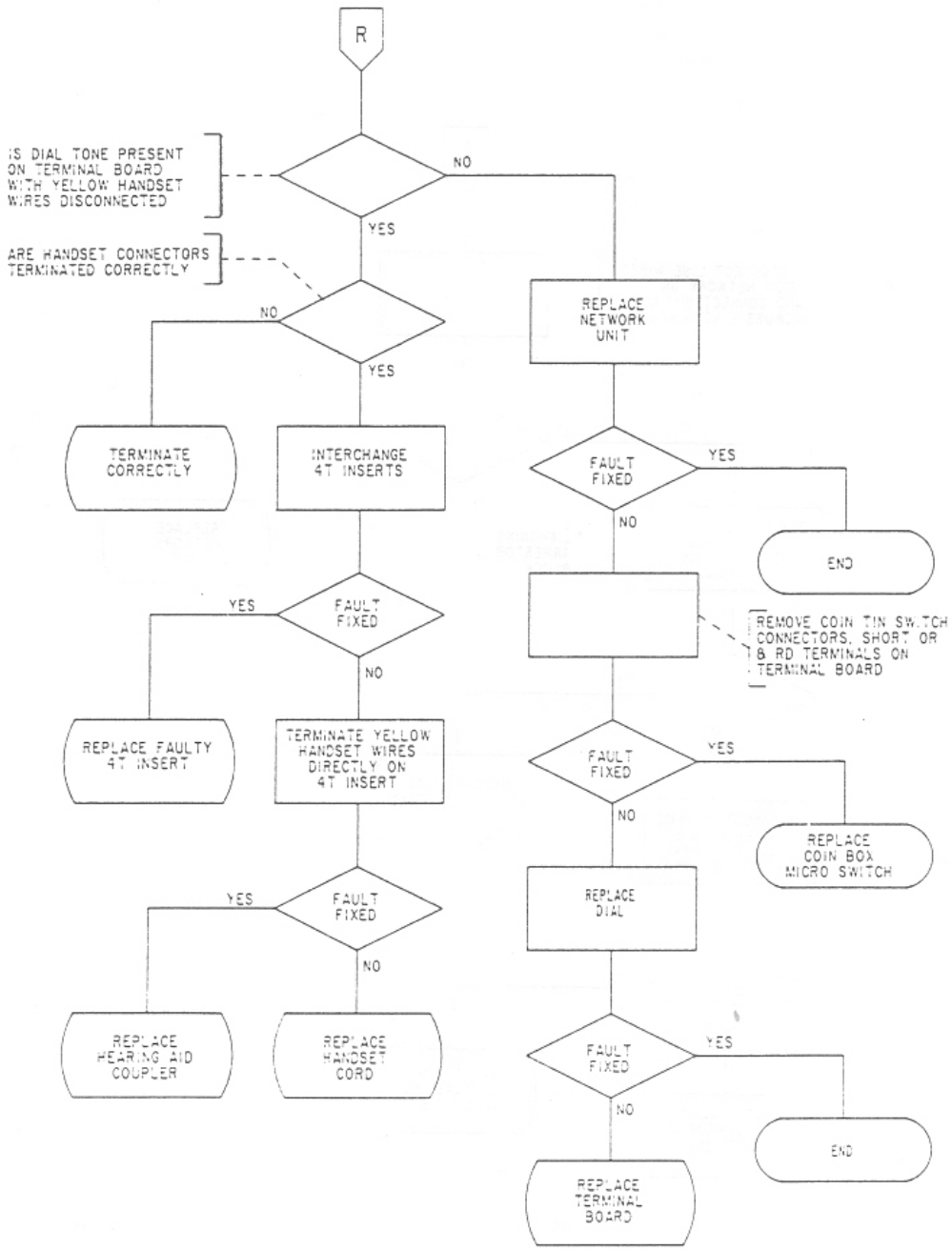


Figure 40 FLOWCHART SHEET 8

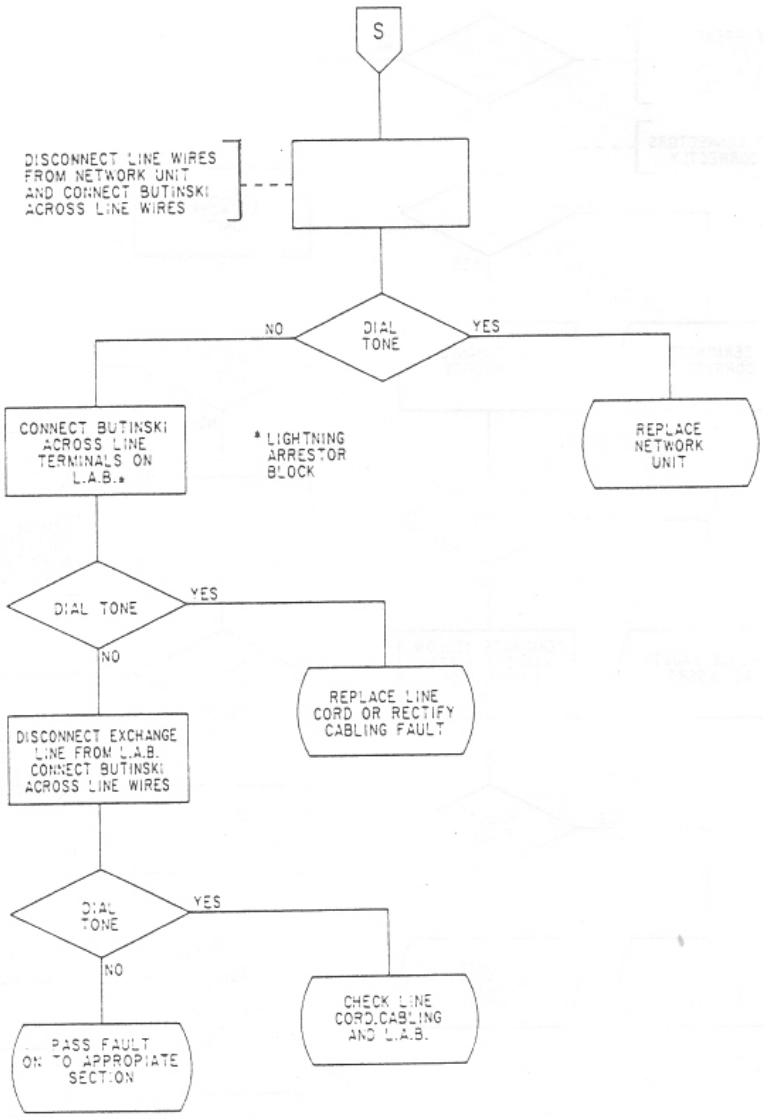


Figure 41 FLOWCHART SHEET 9

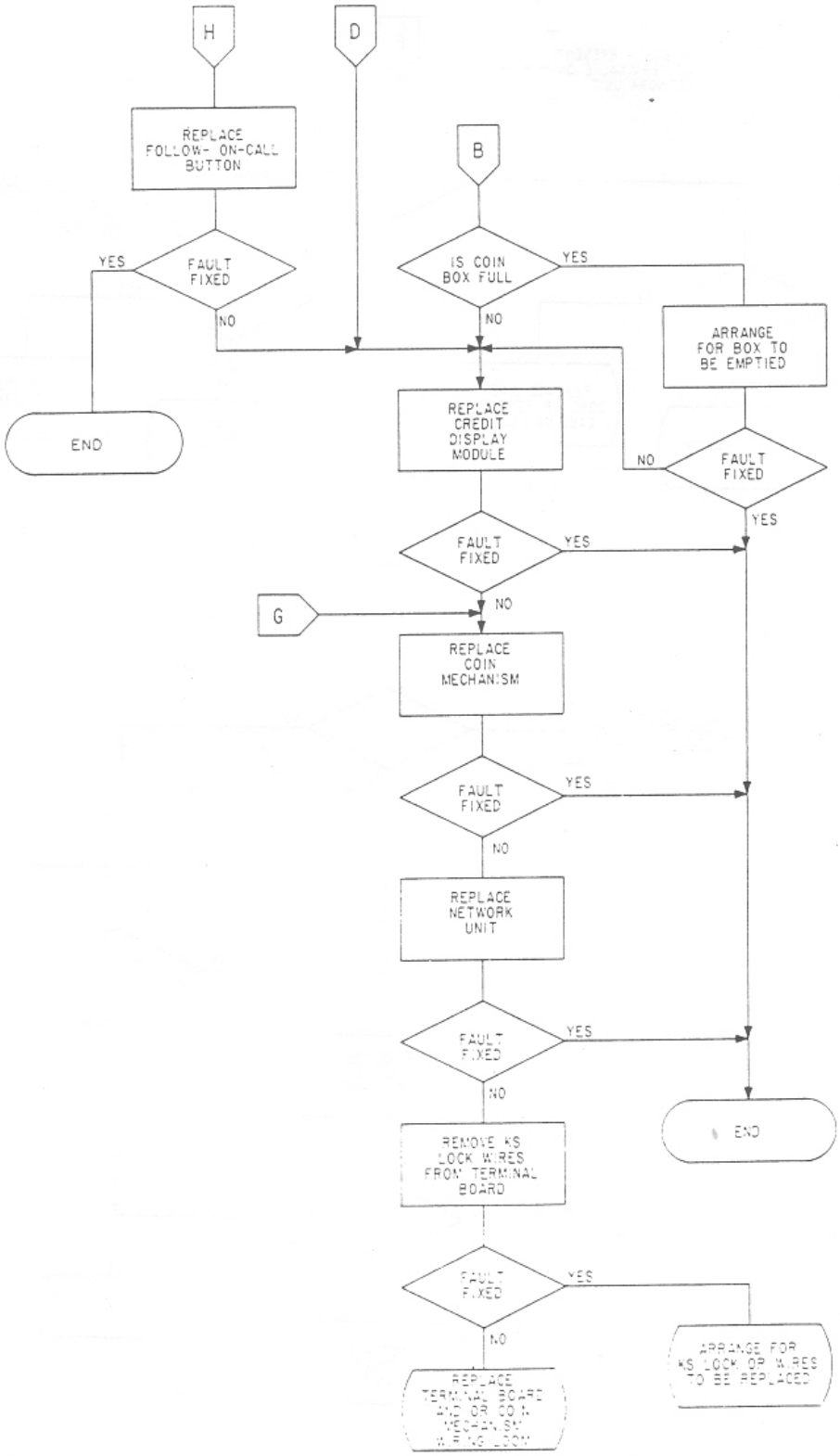


Figure 42 FLOWCHART SHEET 10

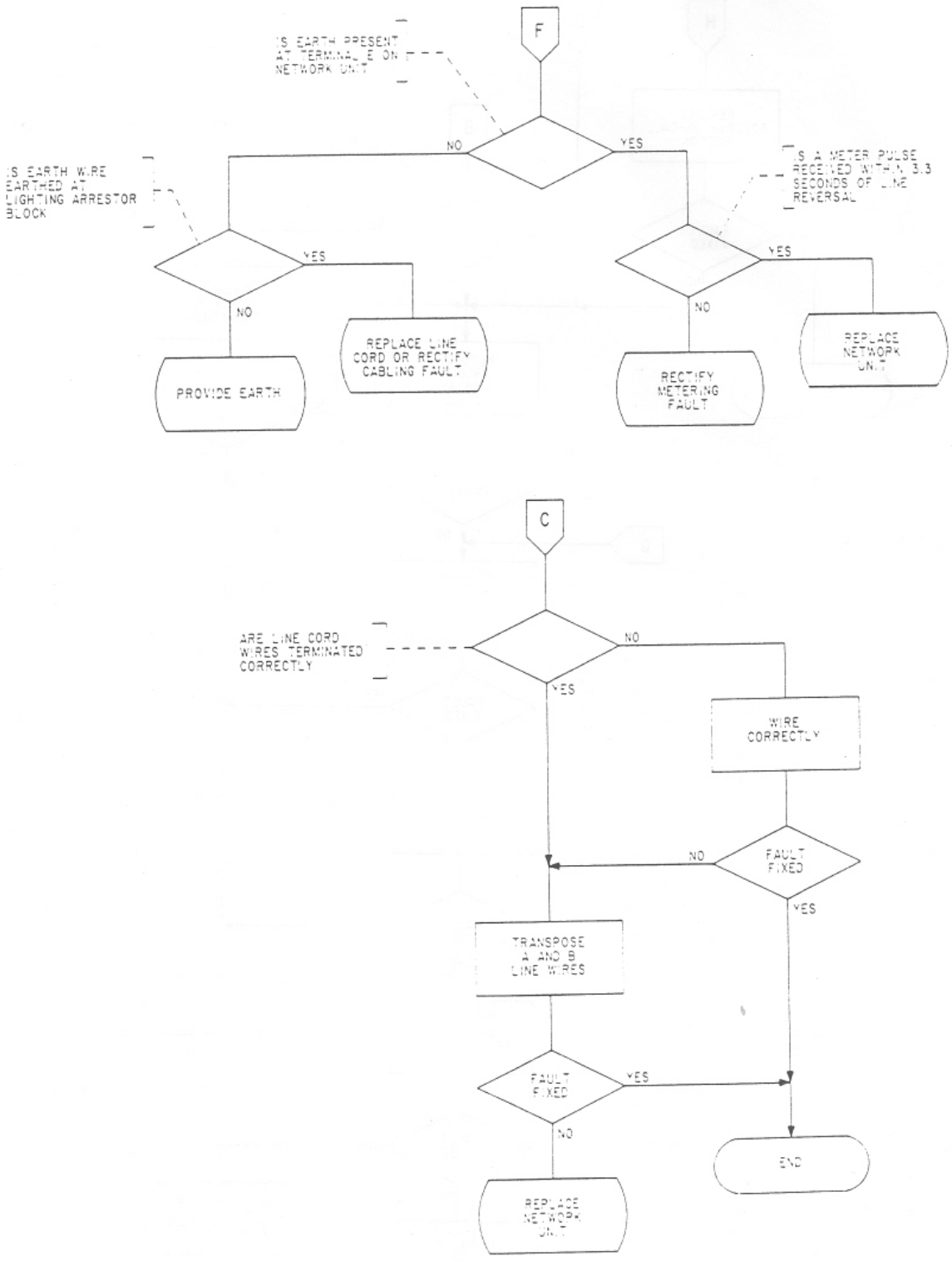


Figure 43 FLOWCHART SHEET 11

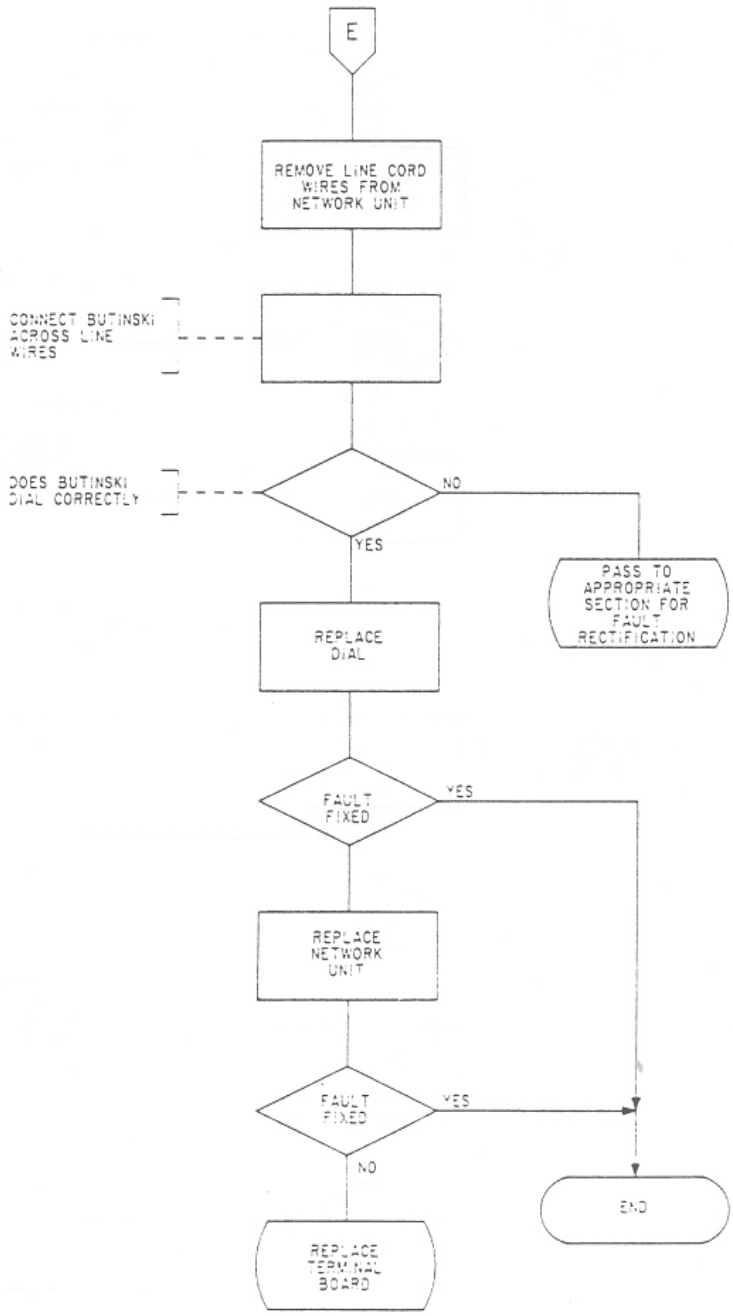


Figure 44 FLOWCHART SHEET 12

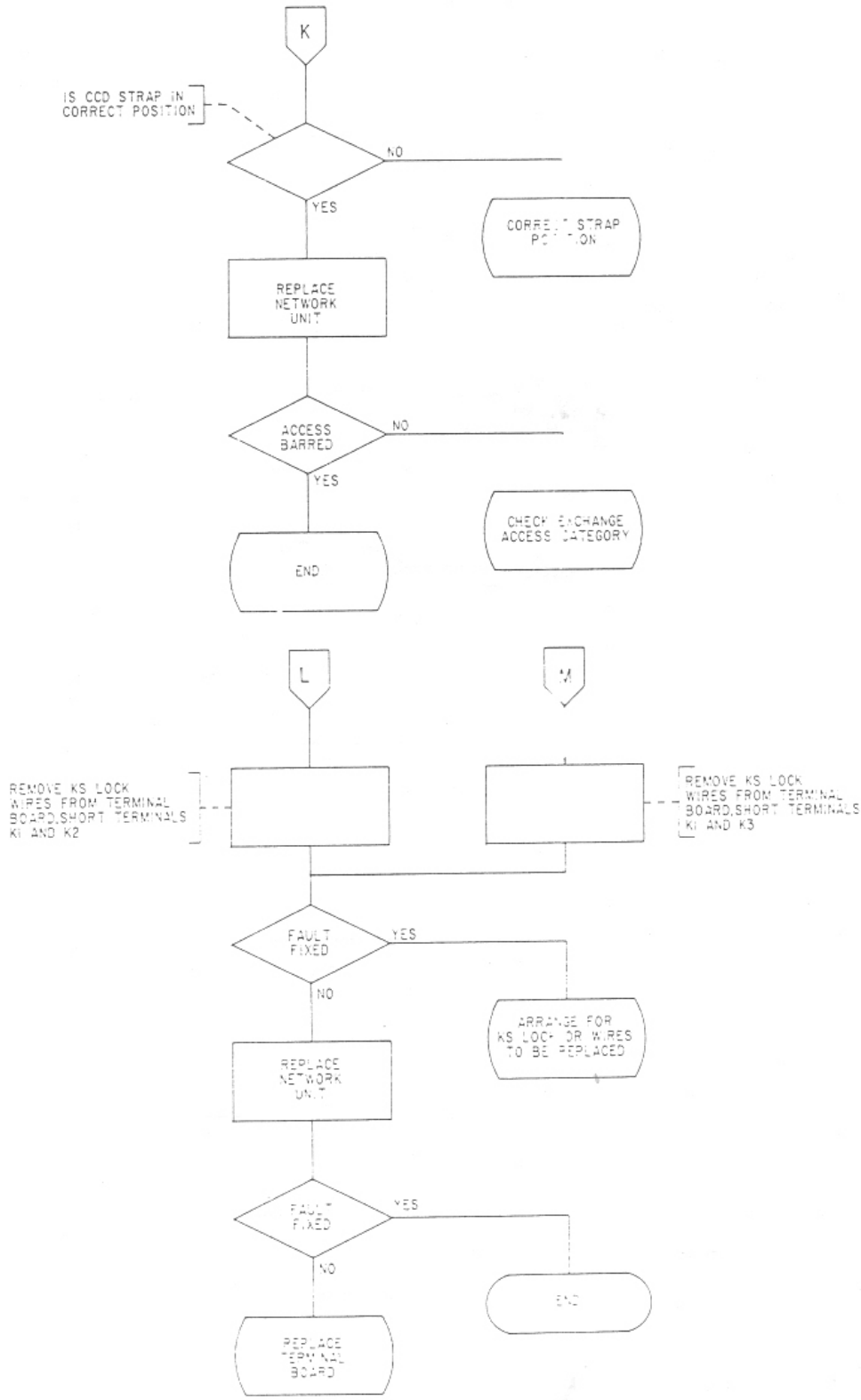


Figure 45 FLOWCHART SHEET 13

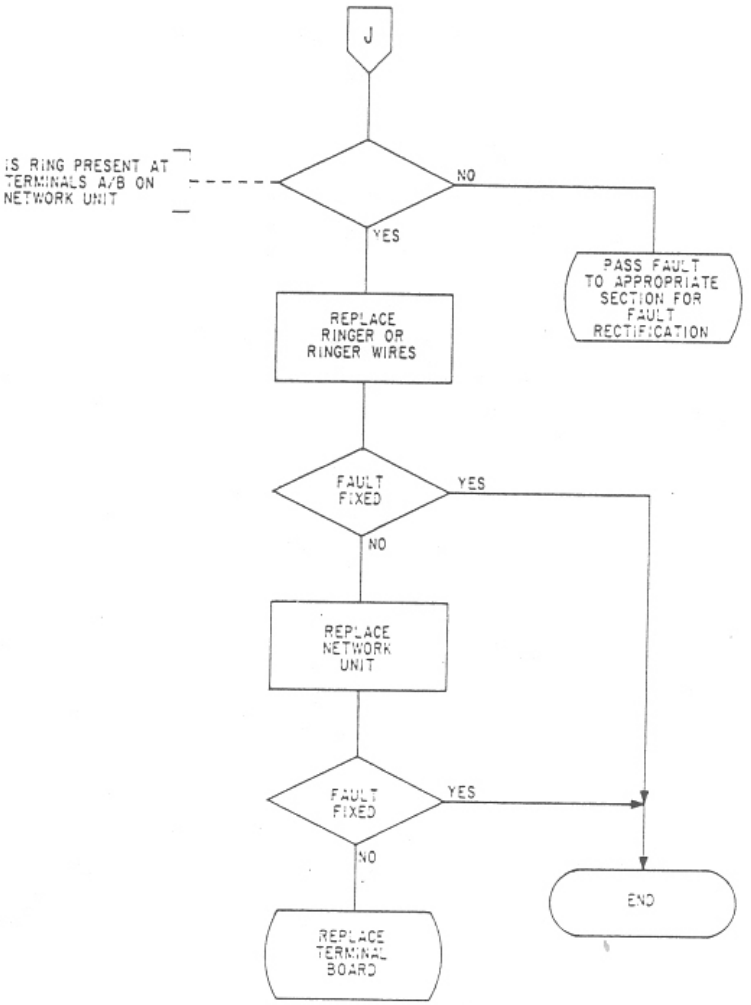


Figure 46 FLOWCHART SHEET 14