QWERTYphone

British
TELECOM

Contents

These guide notes have been designed to assist Field Staff with the Installation and Maintenance of the QWERTYphone 1A and Telephony Module 2A. To gain maximum benefit from them they should be read completely, by both Installation and maintenance staff.

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Introduction

Introduction The QWERTYphone 1A is a modern microprocessor controlled electronic loudspeaking callmaker and Feature telephone with a 4 Line x 32 character Liquid Crystal display panel.

It has a keyboard with 102 keys. These keys are designated as a 14 key telephone keypad, 9 screen keys, 10 function keys, plus a 69 key QWERTY keyboard.

The Principal features are detailed below.

Advanced Loudspeaking Telephone With Full handsfree facilities, last number redial, clock, calendar and call timer. Suitable for all public exchange and PBX lines.

Directory and Autodialler 250 number personal telephony directory and address book securely stored in a non volatile memory. This can be doubled with the addition of a second memory module. Any number in the directory can be dialled automatically.

PBX Featurephone Single key access to the features of Merlin DX, Monarch/IT440, Viceroy/Kinsman, and Regent. (Plus Dekara when available). Features on other PBX's like BTEX/SL1 and SX2000, which tend to be individually configured on a site by site basis, can be stored in the directory.

Calculator Simple 4 function calculator.

Messaging Terminal Able to receive short text messages from other QWERTYphones plus the Tonto and M2105 and any other terminal with a V21 modem. Also able to send short messages to other QWERTYphones. Received messages may be stored in memory, or with the optional printer, printed out immediately.

Memotyper Produces memos with the optional printer. Enables text to be prepared off-line for later transmission to, for example, an electronic mail system.

Computer Terminal A simple glass teletype terminal. Dial-up access is available via the integral V21 modem or direct connection via the serial port.

Manager/Secretary System (Boss/Sec) With the addition of the 2 line Telephony module 2A in each QWERTYphone, two QWERTYphones may be linked as a communications system between manager/secretary. Full intercom facility is provided together with a status display for each line. This option is not yet available.

Two additional features are also available.

Modem for a Personal Computer A "smartmodem" for use with computers like IBM and Macintosh.

Personal Computer Control Mode QWERTYphone has the ability to interwork with personal computers in a "PC control mode".

General Description

General Description The illustration below shows that the QWERTYphone is a single unit instrument that can be conveniently divided into two parts.

The upper section comprises of a Liquid Crystal Display screen, Soft Keys, Contrast and Volume controls and the telephone keypad.

The lower section consists of the Keyboard keys.
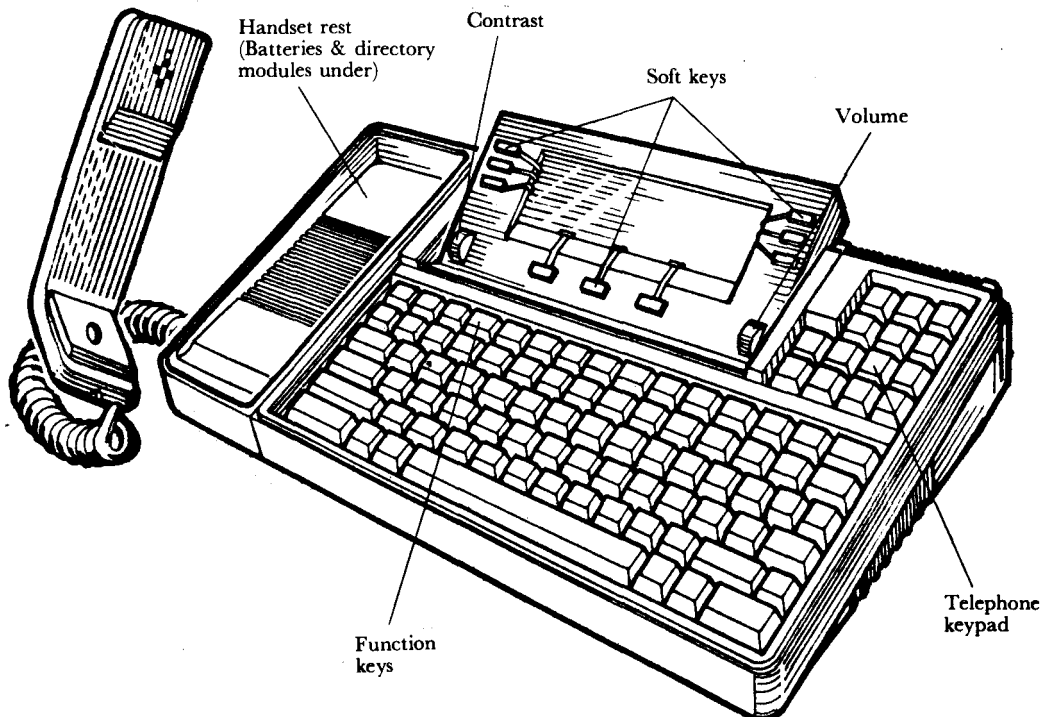
Soft Keys The liquid crystal display has three pushbuttons, or keys, fitted next to each of three of its sides. These keys are not labelled and, because their action varies according to the wording next to them on the display, they are termed "soft keys".

The soft keys to the left and right of the screen are associated with the messages on the first three lines of the display. The three keys at the bottom are associated with the bottom line of text, which may appear as three separate messages.

In the handbook the keys will be referred to by their respective screen messages. For example, the instruction press the "Set Time" key means press the key next to the words "Set time" on the screen.

Screen Displays Screen displays may change as a result of pressing soft keys, the telephone keypad or the keyboard keys. The screen will also change if a text message from another terminal arrives, or if the QWERTYphone is connected to a personal computer.

Telephone Keypad The fourteen keys grouped to the right of the screen perform the same functions as those on many modern telephones.
(Ten numbers, plus *, #, Recall, and Mute.)

2

General Description

Keyboard Keys   Although there are some additional keys, the keyboard layout follows the standard QWERTY typewriter layout, hence the name.

The additional keys are labelled with the function that they will perform.

QWERTYphone Equipment   The QWERTYphone has been designed in such a way as to avoid using the most up to date components in favour of more readily available proven components. In this way the overall price to the customer is kept as low as is possible.

Keyboard   Moulded keytops in carriers, Sublimation printed, rubber mat actuators and single membrane switches.

Display   LCD 4 x 32, with electrical viewing angle adjustment.

Modem   TMS 99534, autodial, auto-answer - V25, 300 baud full duplex V21

Memory   8K (Battery backed) CMOS static RAM, Message store Memotyper PF keys, Configurator system Variables etc.
32K Program EPROM
directory module: 16K (up to 32K with 2nd module) One Time PROM in a carrier.

Processor   Hitachi HD6303X extended 6800 instruction set.

Interfaces   Telephone line. Serial pc port, serial printer port (DIN connectors, RS232C compatible signals)

Handset   Low cost handset with proximity cradle switch.

Installation

Site Location QWERTYphone 1A can be installed at any convenient location providing sufficient desk top space is allowed to give free operator access. However, try to avoid locations that can cause reflections on the display screen. Also remember that the "Hands free" microphone is situated at the rear right hand corner.

Do not position the QWERTYphone near any noise generators, ie, Hard disk unit that has cooling fans, because the noise guard may become active.

Make sure that all leads can be routed safely and tidily to avoid hazards to passers by. If a printer is required, noise and vibration may be a problem.

Mains Supply A mains supply socket outlet (240V 50Hz) preferably of the switched type and suitable for use with a standard UK 13 amp 3 pin plug, should have been provided by the customer. This should be within easy reach of the 3 metre mains lead supplied with the QWERTYphone. The QWERTYphone has no independent on/off switch.

Termination of Exchange Lines and Line Jack Units QWERTYphones can be equipped with 1 or 2 exclusive or PBX lines that employ either loop-disconnect (pulse) or MF (Tone) Signalling.

The incoming signalling circuit of a QWERTYphone has a REN value of 1, enabling QWERTYphones to be installed as an extension instrument within normal limits, up to a maximum of 4.

Physically the 1 and 2 line models differ only in that they will be fitted with the 1 and 2 line version of the slide-in telephony pod.

The installation of the QWERTYphone 1A follows normal "plug and socket" type practice using Insulation Displacement Terminations, to a single line jack unit.

Line Jack Units (LJU) must be sited within 3 metres of the instrument as the line cords supplied are standard and cannot be obtained in longer lengths.
LJU's must be of the "master" type, except in those instances where the instrument is connected as an extension and the master LJU is connected elsewhere in the circuit.

On 2 line installations two separate master (LJU's) or a LJU 4/- would be required.

The LJU should be terminated as follows for a single line unit.

LJU-/-A

2	B-W	B-W	'B' wire
5	W-B	W-B	'A' wire
4 *	W-O	W-O	* Only provide the

CABLE EQUIP. 2503
(6 wire)

* *Only provide the earth when recall is required.*
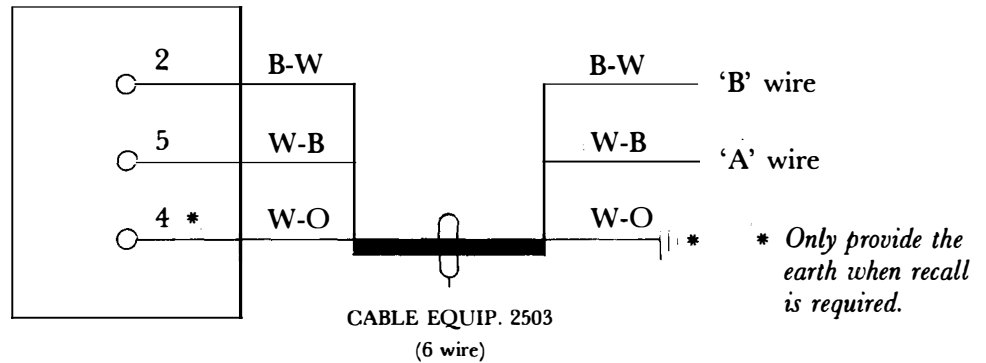
Where a Manager/Secretary system is fitted an additional interconnection is necessary A Boss/Sec Kit 797A will be required.

Unpacking and Checking the equipment

All equipment should be unpacked carefully and checked for damage. If any item in the package is physically damaged then the complete contents of the package should be exchanged. New equipment returned to stores in this way should be returned in the original packaging and accompanied by an A8807A which states that it was "Dead-on-Arrival" (DOA).

After unpacking the QWERTYphone check that you have the following items.
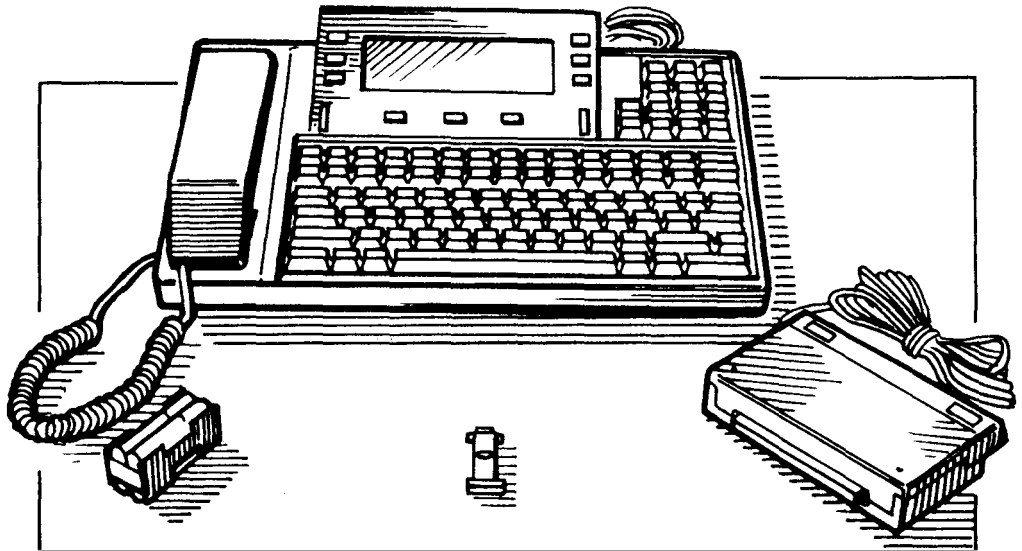
1 QWERTYphone 1A
1 QWERTYphone Telephony Module 1A
1 QWERTYphone Directory Module
1 QWERTYphone Users Guide TPU 462. (not shown).
4 AA size Batteries

Handling the equipment

Do not handle the equipment unnecessarily. Avoid in particular contacts with metal pin and socket connexions since grease from the fingers can affect them and static discharge may damage internal components.

Labelling the QWERTYphone

The telephone number label is housed beneath a clear plastic cover situated on the left hand side of the telephone beneath the handset. To remove the cover, insert tip of finger nail under the raised projection and lift cover up and out.
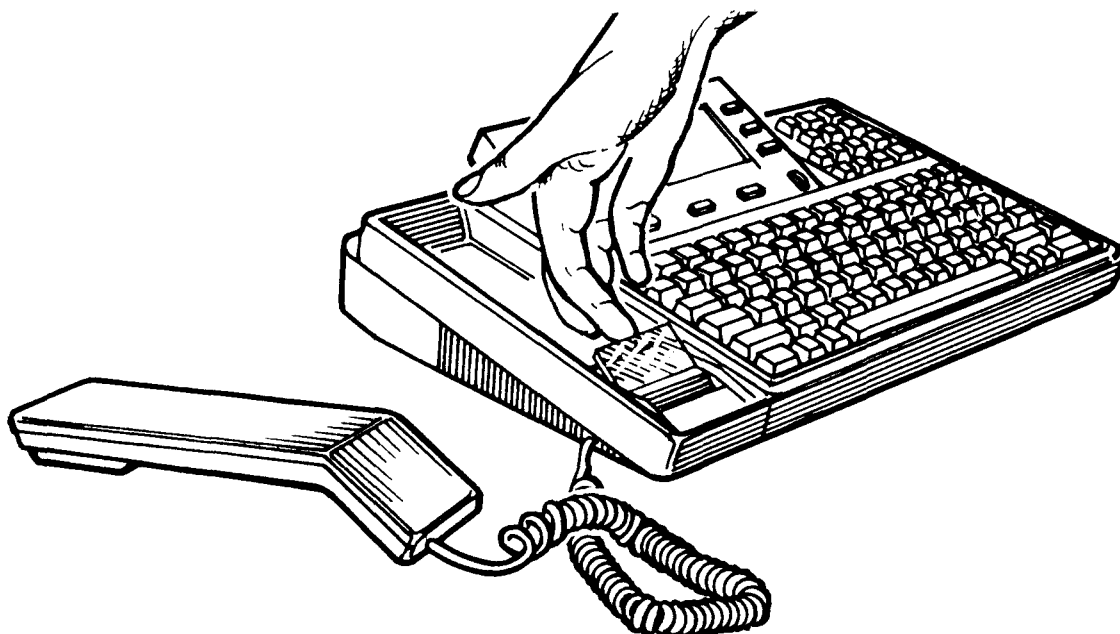
To replace the cover, slide lower projection into slot and reseat cover over dial label.

Fitting the batteries

Four AA size batteries are provided to ensure that the QWERTYphone will continue to provide a phone service if the mains supply should fail, and also a back-up of configuration settings.

The directory memory module is non-volatile and so does not depend on any power supply for its retention.

A battery carrier is provided in a compartment beneath the handset rest area. The rest area interlocks with the telephone module, and is retained by a catch and interlock plug, accessable on the base of the QWERTYphone.

Referring to page 7. Remove the handset from its rest area and place the QWERTYphone face down. Carefully withdraw the telephone module using the draw pull recess, below the line cord.

Remove the black interlock plug by levering with a small screwdriver, in the direction indicated. The grey rest area latch can now be released by pushing gently sideways.

Turn the QWERTYphone back over and hinge the rest area forward, to expose the battery carrier.

1 Withdraw the module

2 Lever out interlock plug

3 Release the catch

Serial port

Printer port

Battery carrier

Socket for second Directory module

Directory A memory module
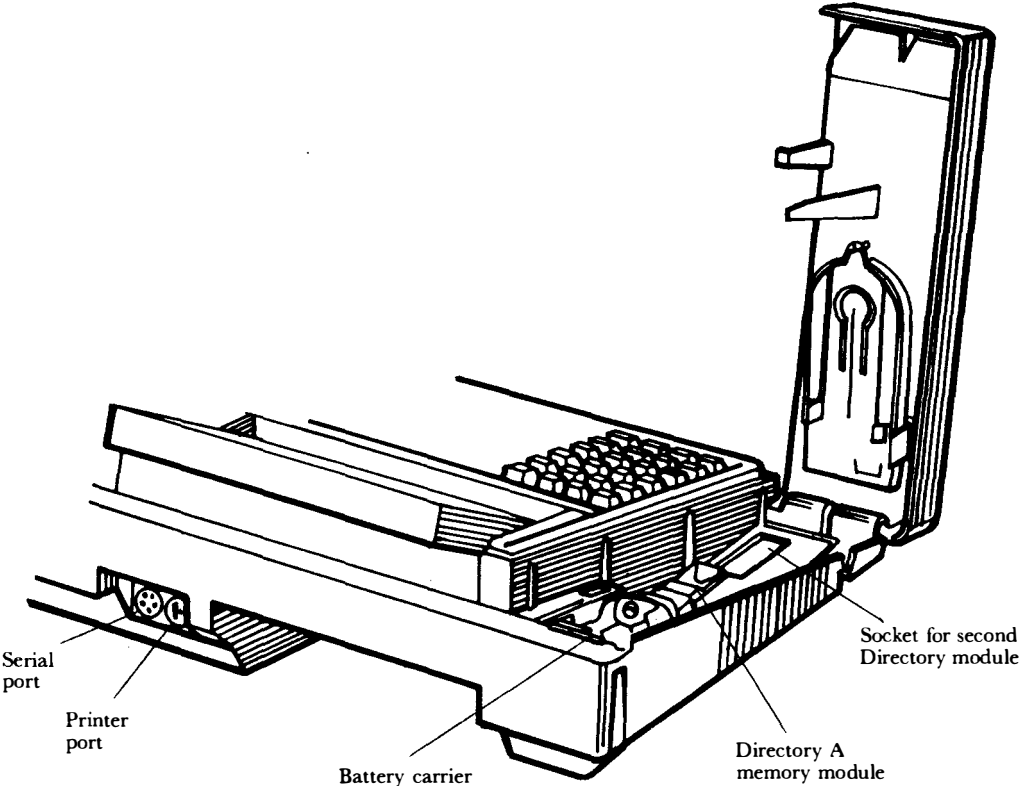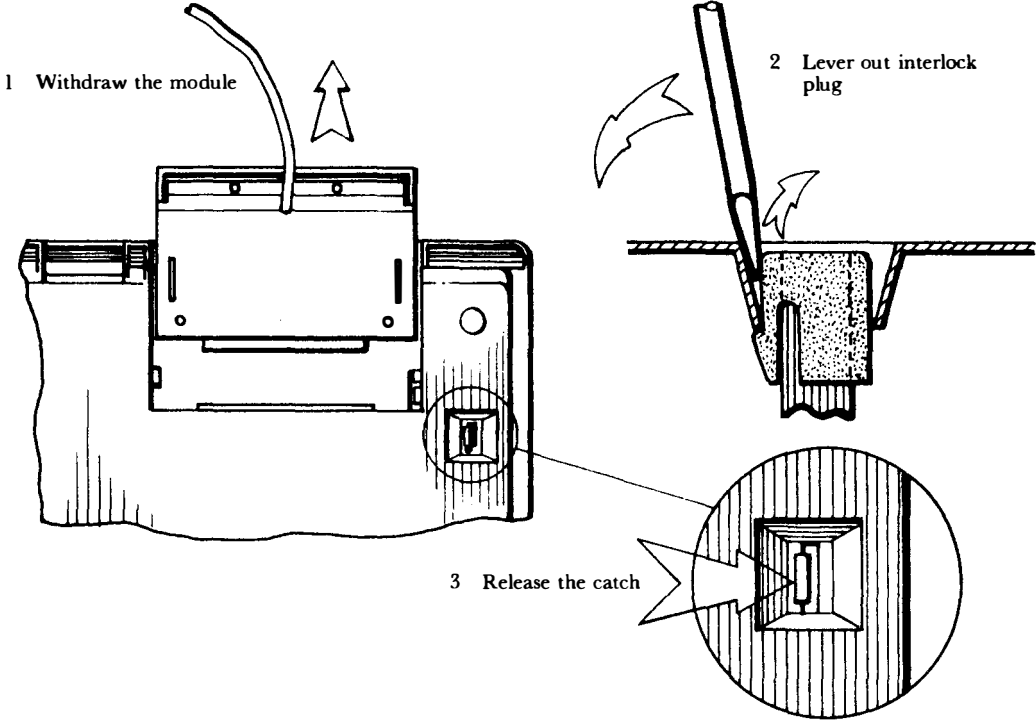
Lift out the battery carrier and insert the four AA size batteries into the carrier ensuring that the polarity is correct. Insert the connecting terminal to the carrier and replace in its compartment. Ensure that the connecting terminal is situated at the upper section of the battery compartment.

Fitting the Directory module

With the handset rest area open the sockets for the first and second directory modules will be exposed. The first module must be positioned in the socket immediately below the battery compartment.

When handling the directory modules care must be taken not to damage the connector pins.
Ideally hold it between forefinger and thumb as shown below.
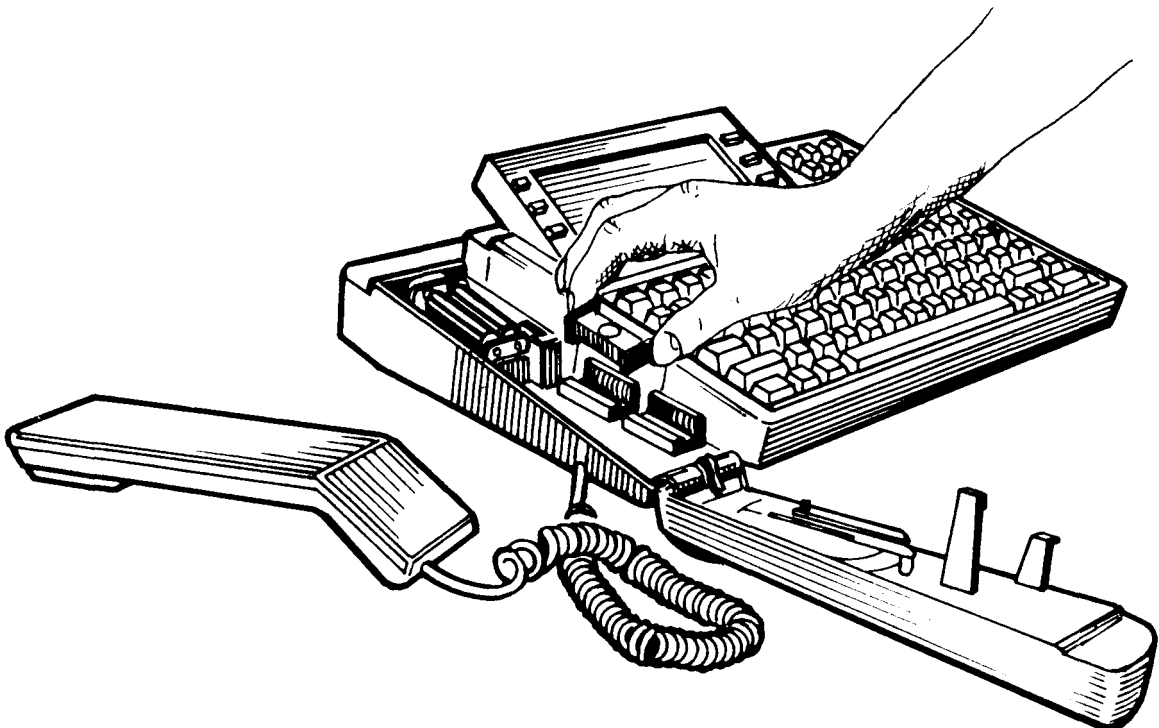
Closing the casing

With both the batteries and the directory modules in place, lower the casing back into its rest position.

Fitting the Telephony Module

The Telephony Module 1A, or 2A has to be slid into the large slot at the rear of the QWERTYphone. A slight resistance should be felt as contact is made with the pins. Push the module fully home to make sure it engages properly, then refit the interlock plug.

Installation

Connecting the mains Connect the mains plug to the switched 240 volt mains supply. The QWERTYphone has no separate on/off switch.

If it is necessary to replace the mains plug for any reason, connections should be in accordance with the following standard.

Equipment Wire colour	Conductor	Plug terminal label
Blue	Neutral (N)	N
Brown	Live (L)	L
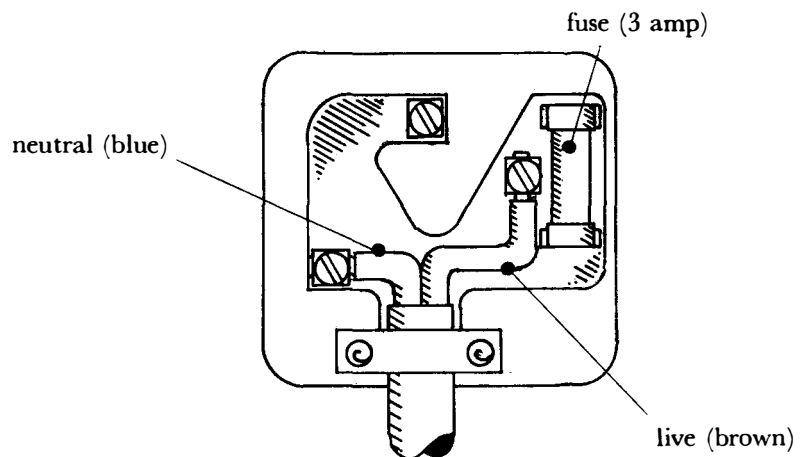
The new plug should be fitted with a 3 amp fuse to BS 1363.

Warning The moulded mains plug cannot be re-used for any other appliance, and must be disposed of if it is removed from the mains lead. Be careful not to leave a discarded plug where anyone (particularly children) could find it and try to connect it to a supply outlet, because of the potential danger of wires exposed by cutting the lead.

Connect the Line cord to the Line Jack.

Plug in mains plug and switch on.

With the mains switched on, and the line cord connected. Adjust the Contrast control to obtain a display that can be seen comfortably.

The Contrast is adjusted by means of the vertically mounted rotary control situated to the lower left hand side of the display.
(This control alters the viewing angle of the LCD).

The display seen at this point should be as shown below.

```
|           LINE 1                    |
|                                     |
| EL recall           TONE  dialling  |
|                           Next      |
```
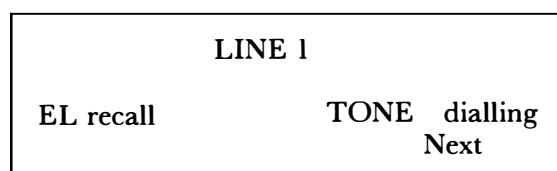
Configuration

Configuration The soft keys associated with this display enable the QWERTYphone to be set up for use, either as an extension of a PBX, or as a direct line from the public network.

If the installation is for a two line model, switching between the primary and secondary lines can be achieved by using the screen soft key. Recall and Dialling can then be independently set up for either line.

PBX working If the installation is to be connected to a PBX, the screen should display "EL recall". If Time Break (TB) recall is required, this is selected by pressing the soft key next to "EL Recall".

One of three types of "dialling" can be selected. "Tone", "Pulse" or "Pulse/Tone". Pressing the soft key to the right of item displayed on the screen will change it to the option required. eg. "Tone" for MF4 systems.

DEL working If the installation is to be connected to the Public Switched Telephone Network (PSTN), select "EL Recall" and the type of "dialling" as required. eg. "Pulse" dialling.

Ringing Options After setting up the recall and dialling options, press the "Next" key to move on to the screen which enables a choice of ringing options to be made for incoming calls.
The tone chosen will be indicated by an arrow.

Warble 1	LINE 1	Warble 3
Warble 2	RINGER	Arpeggio
Scale		Tune

Press [EXIT] on the main keyboard to return to the idle screen.

Idle screen display The idle screen is the display that will appear when no QWERTYphone features are in use.

This display can be obtained at any time during the idle state by pressing [EXIT].

07:20:35	01 Jun 86	Timer
Dial		Redial

Configuration

Set PBX   You will need to carry out some setting up on the PBX screen, even if the installation is connected direct to the public exchange.

Press the [CONFIG] key on the main keyboard to obtain a display similar to the one shown below.

```
Time            CONFIGURE      Comms
Date                           PF keys
PBX type                       Security
                Telephone
```

Select "PBX type" to obtain the screen shown below.

```
Regent               Merlin DX
Monarch         Kinsman/Viceroy
No PBX                    Other
                          Next
```

Select whichever type of PBX is suitable by pressing the appropriate soft key.

If PBX type is not named, press key next to "Other".

If connected to a Direct Exchange Line, Press key next to "No PBX".

Move to the screen below by pressing "NEXT".

```
                LINE 1
Set PBX pause time:        3.5 sec

Increase      Decrease      Next
```

Set pause time   The set pause screen shown above can be regarded as a stepping stone to the next screen. None of the PBX listed require more than 3.5 seconds to connect an outgoing public line.

If you selected "No PBX" on the PBX display, "NEXT" will not appear on the Set PBX pause screen. You can return to the idle screen by pressing [EXIT]; access codes do not apply to direct exchange lines.

Leave the pause time at its default value of 3.5 seconds and press "NEXT" to obtain screen shown below.

```
                LINE 1
     Enter PBX access code (Return)
                  9
```

Configuration

<table>
<tr><td>Access codes</td><td>When a phone is operated as an extension from a PBX it may be necessary to insert a one or two digit access code before dialling a number on the public network.</td></tr>
</table>

Access codes

When a phone is operated as an extension from a PBX it may be necessary to insert a one or two digit access code before dialling a number on the public network.

The system can be set up to insert access the code automatically, so that PSTN numbers selected by using your directory entries are automatically preceded by the access code. If more than one access code is in use, (eg, Access for Private Wires and PSTN etc), then these must be entered with the directory numbers when directory is compiled.

Making a Call

To make a call press the "Dial" soft key. Dial tone will be heard without lifting the handset. The display will then change to show "Hang up". As the required number is dialled, it will be displayed on the second line of the screen. If an error in dialling occurs, press "Hang up" and then press "Dial" and start again.

When called number answers, either pick up the handset and converse in the normal way, or use the system as a loudspeaking telephone. The speaker volume can be adjusted if necessary by the second vertically mounted rotary control to the right of the display screen. Clear the call by replacing the handset, or by pressing the "Hang up" soft key if displayed.

Re-dial

The last number dialled can be called again by pressing the "Re-dial" soft key.

Receiving a call

Calls are received in the normal way, but can be answered by one of the following methods.

Either 1.

Press the soft key next to the screen display "Answer". This switches on the loudspeaker and microphone.

Or 2.

Lift the handset. The call can then be transferred to the loudspeaker by pressing the "speaker" soft key if required.

Connecting the printer

Some printers are supplied ready for installation complete with a mains adaptor. In many instances a single connector is needed to fit the printer socket at the back of the QWERTYphone.

Plug the 5 pin plug into the socket at the back of the printer and the other end into the 7 pin socket, labelled "PRINTER", on the QWERTYphone. Connect the mains adaptor to the mains supply. The mains plug will need to be supplied locally.

For further information on the connection and setting up of a printer turn to appendix.

Set the time

Press the (CONFIG) key on the main keyboard, the CONFIG screen will then be displayed (see page 10).

Select the "Time" soft key.

The display will change to:

```
Enter time (Return):        HhMm
```

Use the 24 hour clock notation without punctuation. (eg. 1345).
Press [RETURN] when satisfied with the entry, to complete.

Call Timing   The call timer starts to operate approximately 14 seconds after the handset has been lifted or the handsfree facility has been activated.

Before replacing the handset or pressing the "hang up" soft key a depression of the [PRINT] key will print the idle screen which contains the information as shown.

```
07:20:35      01 Jun 86      00:00:00
012345678
Auto-answer OFF
Hang Up                      New Call
```

Set the date   Press the [CONFIG] on the main keyboard in the same manner. This time select "Date" soft key.

The display screen will change to:

```
Enter date (Return):        DdMmYy
```

Enter two figures for the Day, Month and the Year - without punctuation.

When satisfied with the entry press [RETURN].

Then press [EXIT], this will return the screen to the "Idle" display.

The Directory

The Directory On the main keyboard press [DIR]

The screen display will be:

```
Search for                        Print
New entry
Copy A       B
                22 Record(s)
```

Create an Entry From the display above press "New entry" the screen display will change to.

```
                            Ext

Name?
```

Name In response to the screen display, enter the name of the person or company to be added to the directory.

Press [RETURN] when satisfied.

On the depression of the [RETURN] key the screen will change to show Number?

Number Enter the full telephone number.

The access code for PBX working will automatically be added during dialling if appropriate.

Press [RETURN]

On the depression of the [RETURN] key the screen will change to show Ext ?

Extension If you are using local PBX numbers to a create directory, enter them in this field.

Press [RETURN]

After the [RETURN] key has been pressed the screen will now change to show Notes?.

Notes Notes relevant to the entry can be inserted on the third line of the display at this point.

Press [RETURN]

When the [RETURN] key is pressed after entering any notes, two options will appear on the display. "Edit" and "Accept". At this point check entry, if any alterations are to be carried out, press soft

key "Edit". When you are satisfied press "Accept". Leave the directory by pressing [EXIT] on main keyboard.

Search the directory There are two ways of finding an entry in the directory. One method is with the idle screen displayed, press the keyboard keys corresponding with the initial letters of the entry that is required.

Three entries are displayed at once as shown below:

```
Triline
Timeline
Traveline
t
```

You can select one of the displayed entries by pressing the associated screen key. If the required entry is not displayed, then use the up and down arrow keys to scroll through the directory, in a progressive search.

The second method of finding a name is to press [DIR] and then the "Search For?" soft key.

By entering several letters of the name that you are searching for you are more likely to find the required entry at the first attempt. The QWERTYphone will search the directory and look for all occurrances of the letter group that you typed in, then it will display the first of them. Other words with the same letter sequence can be displayed by pressing the "Next" soft key, or you can continue to browse alphabetically by pressing the up and down arrow keys.

Auto-dial When an entry has been found the telephone number is automatically dialled by pressing any soft key adjacent to the required display.

Copy directory The directory can be copied from one directory module to another. The copy can then be removed and transferred to a second instrument.

To make a second copy a "clean" directory module must be inserted in the spare socket beneath the handset rest area.

The Directory

Fitting a second directory module To fit a second module, Release the handset rest as stated in the installation note on page 6. Fit the second memory module in the spare socket near the hinge assembly. Replace the handset rest area and the telephony module.

Battery carrier

Directory A
memory module

Socket for second
Directory module
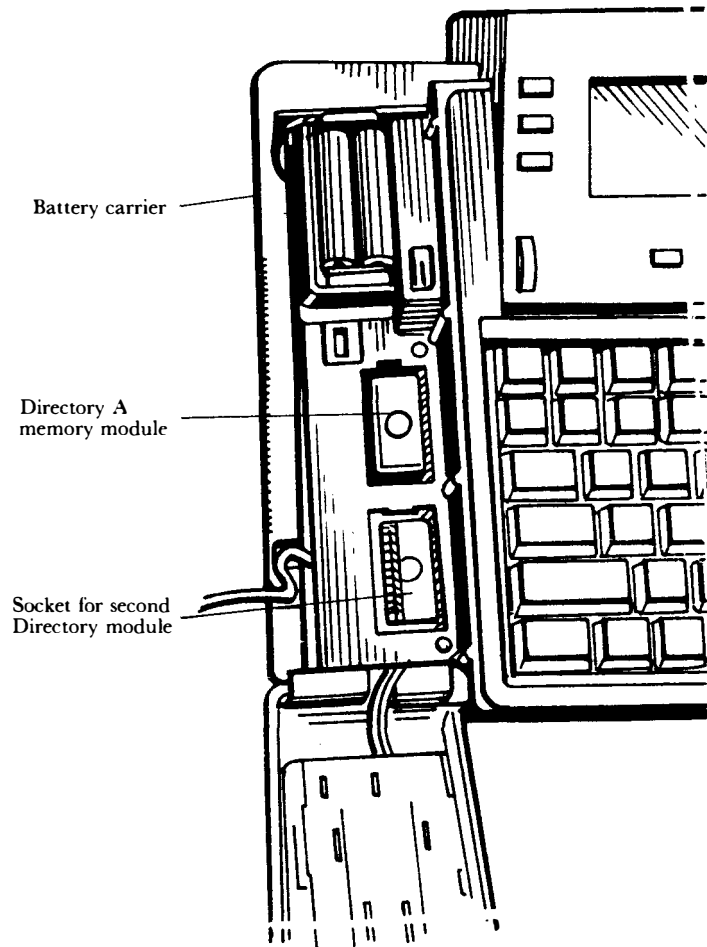
Press [DIR] to obtain the directory display and then select "Copy A - B".

```
Place new module in copy socket.
       press "copy" when ready...

Copy
```

Press the screen "Copy" key to begin the operation. On completion of the copying process the idle screen will reappear.

Security

Directory security

The directory entries can be safeguarded, and unauthorised use of the terminal prevented, by using a personal identity number (PIN)

The security screen is obtained by pressing [CONFIG] and then selecting the "Security" soft key.

Local	SECURITY	Remote
Local+Remote	Rem. lockout OFF	
	Next	

The soft keys associated with Local, Remote and Local + Remote enable security to be selected for one of the options.

The remote lockout key switches between ON and OFF

When remote lockout is OFF other QWERTYphone users can send QWERTYgrams and access your directory.

When the remote lockout is ON the only facility offered to other QWERTYphone callers is the ability to send a QWERTYgram to your terminal.

To enter PIN

The PIN (or password) can be any four standard typewriter characters.

From the [CONFIG] screen, press "Security" soft key.

Select the type of security required, by pressing soft key next to selection.

When satisfied press "Next"

Enter the chosen characters (and memorize them).

Press [Return]

Locking the Terminal

With the idle screen displayed press the soft key below "Timer". You will see that the screen contains the word "LOCKED".

In order to use the directory, or to make use of any of the function keys, you must press "LOCKED" and enter your PIN exactly as it was entered on the security screen.

When [RETURN] is pressed the idle screen will be re-displayed, but without "LOCKED" being shown. The directory can now be used.

Note

When the QWERTYphone is Locked, although the directory and function keys can not be used, the basic telephone facility is still available by lifting the handset.

Messaging

Messaging Simple text messages, called QWERTYgrams, can be sent between QWERTYphones. In addition any terminal with "glass teletype" emulation, such as BT Merlin "Tonto" or M2105, can send a message to a QWERTYphone.

A glass teletype sends and receives data in the same way as an ordinary teletype machine, but displays the data on a screen rather than typing it onto paper.

With the addition of a printer, page copy of incoming text messages can be provided. The printer can also be used to print your messages or internal memos.

To send a QWERTYgram From the idle screen select "Dial" and access the distant number.

A short burst of ringing tone followed by a single note, high pitched tone will be returned, providing that the distant end is in auto-answer.

On receipt of this tone press [TERM] on the main keyboard. The display screen should indicate:

```
        ***ORIGINATE***
        Waiting for carrier...
```

When your terminal receives the correct signal from the distant end the screen will change to:

```
Modem ready...
```

After a few seconds the distant end will send the answer string (stored in its F1 function) which will be displayed on the screen. You will then have a choice of selecting Directory or QWERTYgram.

Use the soft key to select QWERTYgram. The next screen will indicate whether there is a limit on the length of the message you can send. If a printer is connected at the remote end there is no limit. Without a printer, the remote QWERTYphone is limited to four QWERTYlines, (equivalent to 128 characters) which is the maximum that can be displayed on one screen.

Type in the message.

When the message has been completed, press [SEND] key to transmit message to distant end.

Press [EXIT] to return to the idle display.

Long messages Outgoing QWERTYgrams can be typed in and then stored in the memory until it is ready to be sent.

Select [MEMO] and then type in your message, however only one line will be displayed on the screen, but, with a printer connected by pressing [PRINT] a line by line copy can be obtained. (Line lengths will depend on the printer in use and the printer settings). When the memo has been completed press [EXIT].

Interactive mode This mode allows connected QWERTYphone users to communicate via their respective screens, (and printers if fitted).

Dial the distant number and inform the called person that you wish to send a QWERTYgram. When the called person has pressed [SHIFT] and [TERM] you will hear a tone.

To send a stored memo press [ANS/TERM] and then press both [SHIFT] and [MEMO] at the same time.

At the end of the message the distant end will type in reply.

To speak to the called person, both parties should press [EXIT].

To terminate the call, press the [EXIT] and then clear down.

Receiving QWERTYgrams Before you can receive a QWERTYgram for the first time, the terminal should be setup with an Answerback message so that the incoming caller knows that your QWERTYphone is ready to receive a message.

To set up the terminal press [CONFIG] and then select "PF Keys". The screen will display.

F1 KEY STRING (ANSWERBACK):

Type in the required message.

Example.

Jerry Smith's Terminal
QWERTYgram (Q)
Directory (D)

Auto-answer   When leaving the desk for any length of time, the QWERTYphone can be programmed to accept and store text messages in your absence.

To use this facility, the "Auto-answer" must be switched to either IMMEDIATE by pressing the adjacent soft key once or DELAYED by pressing soft key twice. The DELAYED option allows for five periods of ringing before operating. This gives time for the call to be answered manually if required.

Reading received messages   On the main keyboard press [Mes'g] to obtain a display with top and bottom lines similar to those shown below:

```
Message 11      23:26:16       11 Jun 86
Meet Ted Jones at Ascot Hotel
in Liverpool at 1600 Mon Jun 14
      Next message     Delete
```

The message number is sequential between 1 and 99, the date and time refer to the date and time that the message was received.

The centre two lines contain all or part of the first message received. Use the [PAGE UP] or [PAGE DOWN] to see the rest of the message.

To see the other messages that are stored in the memory, press "Next message" soft key. By continuing to press the "Next message" soft key the first message will eventually return. The first message has the lowest number.

Terminal

Terminal The QWERTYphone can be used as a data terminal to access other computer databases and electronic mail systems, provided that the terminal user subscribes to the service.

Services like Telecom Gold, Message Master Radiopager and other "in house" customer databases are available.

The QWERTYphone can also be connected to other terminals with a tele-type capability, British Telecom's Tonto and the M2105 terminals are two examples.

To set up the terminal, it will be necessary to know the operating parameters of the distant equipment.

The remote terminal settings which you will need to know are:

Word Length	Either 7 or 8 bits.
Number of Stop bits	1 or 2.
Parity	Odd, even or none.
Operating method	Full or half duplex.
Protocol	Xon/Xoff or none
Baud rate	See the following paragraph

The QWERTYphone modem Baud rate is fixed at 300 and so the Baud rate at the distant terminal may have to be altered.

Services such as Telecom Gold can handle various rates.

The Modem settings for Telecom Gold are identical to those for QWERTYgrams, so there will be no need to change.

Modem setting up is included on page 31.

Calculator

Calculator   On the main keyboard press [CALC] to obtain calculator display screen.

The calculator can display up to ten significant digits with a decimal point and sign indicator.

The soft keys operate in the usual manner by selecting the operation, or function, indicated on the screen.

Numbers can be entered by using either the telephone keypad or the main keyboard.

The add (+), Subtract (-), Multiply (*) and Divide (/) operations can be initiated by the respective keys on the keyboard, as well as by the soft keys.

C   Activates calculator functions.

CE   Clears the last entry.

+/-   Changes the sign of the current input or the displayed result.

Printing   If there is a printer provided, copies of the calculations can be obtained. To obtain these copies, press the [PRINT] key before entries are made on the calculator display.

The screen will read "Printing Calculator" and the printer will line feed four times. When calculations are performed the printer will print the calculations as well as the result.

Example of a printed calculation   123
                                        789   +
                                        456   -
                                        951   *
                                        357   /

                                   1214.722689   =

Memotyper

Memotyper   Internal office memos can be entered on the screen, line by line, and printed on the associated printer.

To type a memo press the [MEMO] key.

```
┌─────────────────────────────────────────┐
│  MEMO          Line: 1     Column: 01    │
│                                          │
│                                          │
│                                          │
│  New memo     Print OFF                  │
└─────────────────────────────────────────┘
```

Press the "New memo" key

Text that is typed will be entered on line three of the screen. The line length will depend on the printer in use and the printer settings.

If the display is "PRINT ON", then a print is obtained at the end of each line, or when [RETURN] is pressed.

Once you have entered some standard text sequence on the function keys, (eg. plus 15% VAT.) the sequences can be inserted into memos by using [SHIFT] and the appropriate function key.

After leaving your memo, by pressing [EXIT], you can return to the memo display and add to your last memo. If you then press [RETURN] your postscript will be printed on a new line.

PBX Working

PBX Working   The QWERTYphone may be installed as a Featurephone extension on certain PBX's.

These are listed below:

Regent. Monarch. Merlin DX. Kinsman/Viceroy.

When the [PBX] key is pressed, the screen display will depend on the PBX name selected. If "NO PBX" was selected the display indicate "NO PBX".

The screen display also depends on whether or not the handset is on its rest, "on hook".

ON hook features   Screen displays for the standard PBX selections are illustrated below:

Regent

```
Divert all
Divert on busy
Divert on no reply
  Group pick up
```

Monarch

```
Divert all
Divert on busy
Divert on no reply
  Group pick up        Cancel all
```

Merlin DX

```
Divert all


  Group pick up        Direct pick up
```

Kinsman/Viceroy

```
Divert all
Divert on busy
Divert on no reply
  Group pick up
```

Diverting Calls

Monarch, Regent,   These exchanges accept three divert call conditions, any of the three
Kinsman/Viceroy   can be selected by pressing the appropriate soft key.

```
Divert all
Divert on busy
Divert on no reply
```

When a soft key is pressed the screen asks for an extension number to be entered. Enter the number of the extension to which the calls are to be diverted and press [RETURN]. The idle screen will then re-appear.

If after a particular divert has been set up, the next depression of the [PBX] key the screen will show which of the divert conditions is in operation by displaying the "cancel divert" option next to the soft key. "Divert" is also displayed on the idle screen.

Although some exchanges, for example Monarch, allow all three divert conditions to be set up, others such as the Merlin DX support only one feature, "divert all". It may be necessary to consult the user manual of that system for more information.

Cancel diverts On the "Monarch" display the "Cancel all" soft key will cancel all diverts. For the other exchanges, press the soft key next to the divert that is to be cancelled.

Off hook features When the handset is off its rest, the screen display which appears when [PBX] is pressed will depend on the type of exchange selected on the "Set PBX" display.

Regent

```
Callback on busy



Group pick up
```

Monarch

```
Callback                    Wait on busy

Conference                        Accept
   Group pick up
```

Merlin DX

```
Callback              Private call

Conference
   Group pick up    Direct pick up
```

Kinsman/Viceroy

```
Callback on busy



Group pick up
```

The soft key selected will depend on the type of exchange, and the facilities available. If necessary refer to the manual for the exchange.

Other PBX features   The directory can also be used to store the codes used to select certain PBX features - providing that the features are available on the particular PBX.

The codes are a mix of alphabetic and numeric characters, plus the symbols * and # . The letters used have the meanings:

I .... Inhibit
R .... Recall to pbx
P .... Send designated pause time.
X .... Hang up.

Two features of the Monarch PBX, together with the appropriate codes, are shown below:

Park   IR*7 #
Retrieve different extension   I*87*

Store PBX feature codes in the directory as you would the name and number of a normal entry.

```
RETRIEVE
I*87*                         Ext
Type Extension number then     #
```

If however the required type of PBX is not listed, its features can still be used by inserting the required codes in the directory.

For example, if the code for recall is **87, enter "Recall" in the name field for reference and **87 in the number field.

Manager/Secretary System

Manager/Secretary System (Boss/Sec). Option not yet available.

Boss/Secretary working can be used only on QWERTYphones fitted with a two line telephony module. (Telephony Module 2A)

It will allow 2 QWERTYphones to be used as a fully featured planset for Manager/Secretary or Partner/Partner work situations.

Features include:

One or Two lines, full intercom, hold, transfer, conference, do not disturb and line status display.

One QWERTYphone may set up calls for the other.

Intercom facility which is independent of the telephone lines, and is used via the handsets or loudspeaking telephones.

Boss/Secretary communication is brought into use by means of the [Boss Sec] key on either instrument.

A single QWERTYphone with the two line module fitted can be used as a two line Dealerphone.

QWERTYphone with a Personal Computer

Using QWERTYphone with a Personal Computer

QWERTYphone can be used as a versatile peripheral with personal computers. Its serial terminal and Hayes "Smartmodem" modes allow it to interwork with a variety of PC's.

The QWERTYphone may act in one of three modes via the RS232 port. The mode is user selected and entered when the PC key is pressed.

The three modes are:

1. As a Autodial V21 modem operating under the Hayes Smartmodem control codes.

2. As a serial terminal (teletype) using the keyboard and LCD screen.

3. As a "PC peripheral" in PC control mode. This mode is an extension of the Hayes control codes which allow the controlling device complete access to QWERTYphones telephony circuits, keyboard etc.

The QWERTYphone can be connected to a personal computer by using a connecting cord fitted with a 7 pin DIN plug and plugged into the serial socket, labelled "PC" at the back instrument.

The settings of the two "PC PORT" screen displays should be checked before any attempt to operate the QWERTYphone/PC combination is made.

At the keyboard press [CONFIG] and then press the "Comms" soft key on the CONFIGURE screen.

By-pass the MODEM screen by pressing "Next".

The first PC PORT screen will be as shown below.

```
                    PC PORT
     PC key functions: TERMINAL
     PC/MODEM startup: SEND RESULTS
                                  Next
```

The soft key associated with the "PC key function" enables you to choose how the QWERTYphone will operate when [PC] is selected. There are three options:

Terminal.
Modem.
PC Control.

QWERTYphone with a Personal Computer

PC terminal   By selecting "Terminal" the QWERTYphone is configured so that a text communication can be carried out between the QWERTYphone screen and keyboard, and the PC monitor and keyboard, when the [PC] key is pressed. In terminal mode the PC/modem start-up soft key switches but has no effect.

If the PC key has been set up as a "Terminal" the screen display which appears when [PC] is pressed will be shown as:

```
Terminal ready....
```

The keyboard can now be used to type messages to the PC in the same way that a memo or QWERTYgram would be typed. There are differences: in PC terminal mode the text occupies all four screen lines and scrolls off the top of the page as more text is received.

PC modem   When the PC key function is set to "Modem" on the PC PORT screen, the QWERTYphone internal modem is available for use by the PC, when [PC] is selected on the QWERTYphone keyboard. This means that the PC can be interfaced with remote databases, or other distant PC's by using the QWERTYphone's modem and its associated telephone line.

When the "PC/modem start-up" soft key is effective. The options available are "Send Results" or "No Results": the choice depends on the PC which is connected.

The display that will be seen in this case will be as shown below.

```
     PC to modem running...

Line   Carrier           Data
 [  ]      [  ]        Tx[  ]     Rx[  ]
```

PC control   The third function which the [PC] key may allow access to is "PC control". In this mode the QWERTYphone features can be made use of by the PC in a variety of ways. The features which may be used by the PC are the internal clock, the modem, directory and auto-dial. Additional software may be required for these features to run successfully.

The "PC/modem start-up" soft key switches but has no effect in PC control mode. Note: only when used with keyboard adapter.

The display screen will be as shown below.

```
Under PC control!
```

PC port parameters The PC PORT displays cover two separate display screens. The first display shows the set up for the "PC key function" and the "PC/Modem startup". When the soft key "Next" is pressed on the first display, the second PC PORT screen is displayed.

The default screen is shown below and it may be necessary to change the configuration to suit the particular PC being used. Reference to the appropriate PC users manual should be sort if required.

```
4800 Baud      PC PORT      NO parity
8-bit word               Local Echo OFF
1 stop bit(s)        XON/XOFF protocol
  Page OFF     Send CR         Next
```

The soft keys provide the following range of settings:

7 or 8 bit word length.

1 or 2 stop bits.

Odd, even or no parity.

Local Echo ON or OFF

Xon/Xoff or Busy protocol.

Page on or off.

Send CR or Send CR + LF

If an 8-bit word length is selected together with odd or even parity the QWERTYphone will allow only one stop bit.

When "page on" is selected the text display consists of four lines at a time; this is accomplished by counting LF (line feed) signals.

The Send CR (carriage return) or Send CR + LF settings will depend on the configuration of the PC monitor (VDU).

Press [EXIT] to return to the idle screen, or press the "Next" soft key to set up the printer port.

Modem

Modem settings When the QWERTYphone is first switched on the modem is already set up to enable messages to be sent between QWERTYphones. The basic, default settings are also suitable for communicating with Telecom Gold, British Telecom's "Tonto" and the M2105 Messaging Terminal

The default settings are shown below in order that you have a reference point.

```
Ans.echo ON    MODEM    EVEN parity
7-bit word               Local Echo OFF
1 stop bit(s)            XON/XOFF protocol
 Page OFF      Send CR            Next
```

The modem screen is selected by pressing [CONFIG] and then using the soft key to select "Comms".

The baud rate is fixed at 300 Baud. All the other parameters must be set to suit the requirements of the distant terminal.

By pressing the soft keys you will find that the following variations can be obtained.

Answer echo on or off.

Word length of 7 or 8 bits.

The number of stop bits can be 1 or 2.

Odd, even or no parity.

Local Echo ON or OFF

Xon/Xoff or no protocol.

Rx (receive) page on or off.

Send CR or Send CR + LF.

Note If you attempt to select an 8 bit word, together with parity and two stop bits, the QWERTYphone will convert the stop bit selection to one bit.

By setting Page to "ON" the QWERTYphone will display four lines of the incoming data, with further data being buffered. Press the Page Key [□] when you are ready to read the next four lines.

To leave the modem screen press [EXIT].

Printers

Printer Operation Default settings for the MP 1713 printer are built into the QWERTYphone. If another printer is used, some of these settings may have to be changed.

The default settings are shown below.

9600 Baud	PRINTER	NO parity
8-bit word		Auto-print OFF
1 stop bit(s)	69-character width	
	Send CR+LF	

Baud rates between 300 and 9600 can be selected.

Word length, stop bits and parity can be set in the same way as for the modem and PC screens.

By selecting "Auto-print On", page copy of incoming QWERTYgrams and other text can be obtained automatically.

The character width should be set to suit the capacity of the printer.

The Epson P-40 Thermal Printer

The Epson P-40 Thermal Printer
The Epson P-40 Thermal printer is supplied ready for use with the QWERTYphone.
No attempt should be made to remove its casing or to alter internal switch setting settings. If it fails to function correctly during installation, or during the commissioning procedure then it should be returned to section stock with an A8807A stating that it was "Dead-on-Arrival".

Installation
Carefully check that the following items are included in the packing carton.

AC adapter

P-40

Thermal roll paper

Operating manual
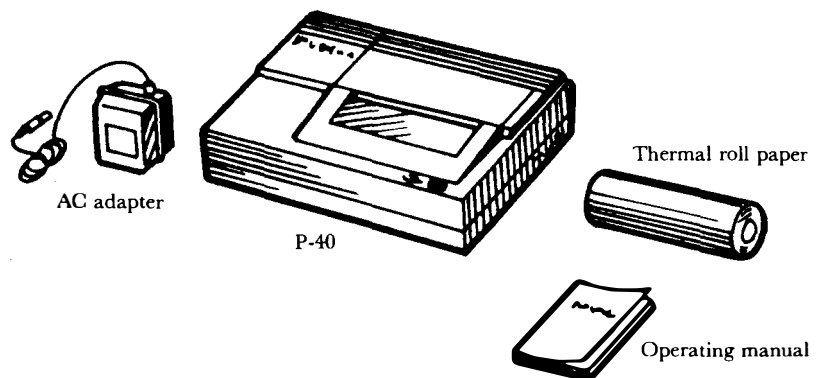
Power Supply
The P-40 power supply consists of a built in NiCd battery pack. It is advisable to recharge the pack with the 240 V Ac adaptor before using the printer.

Charging procedures
Turn off the printer power switch. Plug the AC adaptor into an AC outlet and connect the cable to the socket marked AC ADAPTOR as shown below. The battery pack takes 6 to 7 hours to become fully charged. Do not charge the pack for periods longer than 24 hours as the batteries may deteriorate.
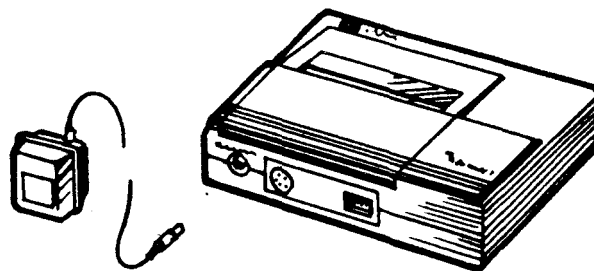
The Epson P-40 Thermal Printer

Interface cable connection

Observe the following precautions when connecting the printer to the QWERTYphone.

1. QWERTYphone power switched off
2. Printer power switched off
3. That the QWERTYphone printer cable 2A Item code 98 9102 is used.
4. Ensure all connectors are inserted correctly. 5 pin plug into socket at back of printer.
   Other end into 7 pin socket, labelled PRINTER on the QWERTYphone.

(Serial Type)
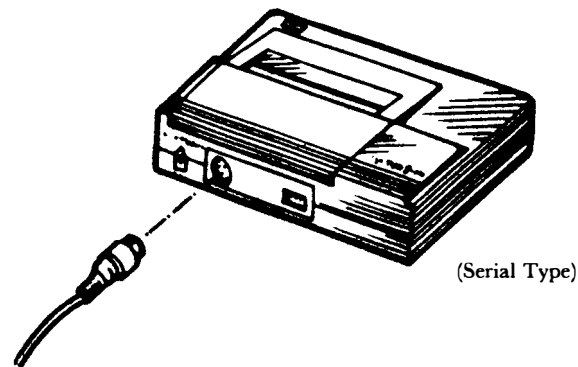
Switches and indicators

The power switch is located on the right hand side of the case. The paper feed (PF) switch and the power indicator are located on the right front corner of the top panel.

Power switch:

This is a locking slide switch, which turns the power on and off

The printer initializes automatically when the switch is turned on. (All previous function settings set by control codes are reset.)
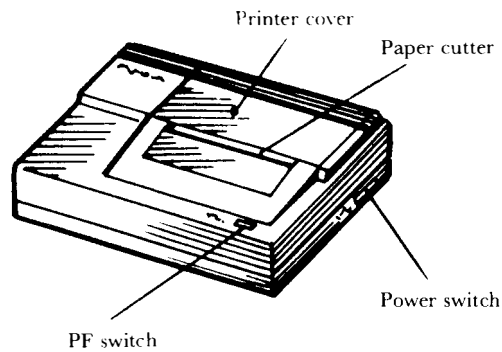
PF switch:

Paper Feed. Non-locking pushswitch, pressing this switch feeds paper on line.

The paper is continuously fed if the key is held on.

Line spacing is set by the ESC 2 or ESC A codes. The default line spacing is 1/16 inch (See manufacturers handbook for further details).
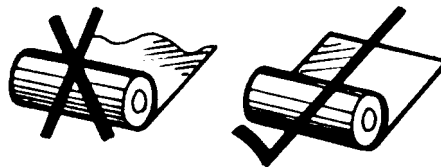
The Epson P-40 Thermal Printer

Power indicator: Red LED. This LED lights when power is on. (If it does not light when the power switch is turned on, the battery pack may be discharged.)
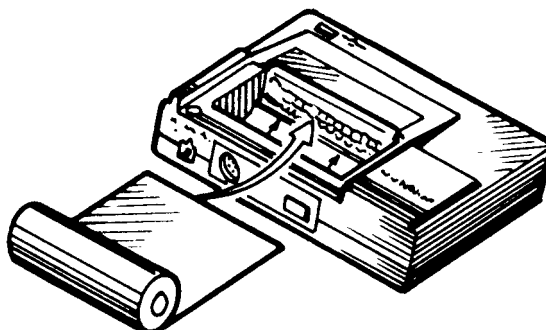

Paper Loading 1. To remove the printer cover, lift the front of the cover whilst pressing the position marked "▼"
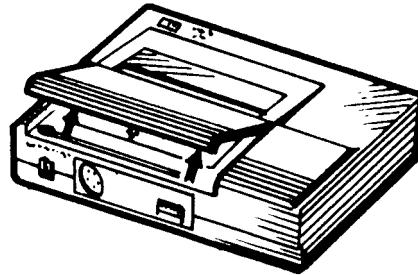
2. Turn on the printer power switch.

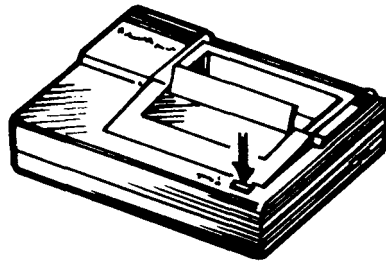3. Cut the leading edge of the paper so that it is parallel to the roll shaft.

4. Align the paper so that it is straight when you insert it into the paper inlet as shown below.
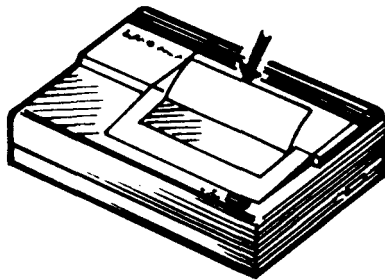
5. Press the PF switch to feed the paper until the leading edge of the paper passes the paper cutter.

6. Replace the printer cover ensuring that the paper exits through the slit as shown below.

The Epson P-40 Thermal Printer

Self Test Function To start the test, turn on the power switch while pressing down the PF switch. During the test the characters are repeatedly printed in the condensed print mode.

To stop the test turn off the power.

DIP Switches The circuit board of the serial type printer includes an 8 position DIP switch.

Setting the DIP switches 1. Turn off the Power switch

2. Set the DIP switches for the desired functions as listed in the table below. Use a small screwdriver, or similar pointed object to set each individual switch.

[Serial Type]

Switch No.	Function	ON	OFF	Factory setting
1	AUTO FEED XT (Note 1)	Valid	Invalid	OFF
2	Parity	Valid	Invalid	OFF
3	Parity	Even	Odd	OFF
4	Word length	7 bits	8 bits	OFF
5	Bit rate 3	See the table below.		OFF
6	Bit rate 2			ON
7	Bit rate 1			OFF
8	Bit rate 0			ON

Bit rate (B.P.S)	SW5	SW6	SW7	SW8
75	ON	ON	ON	ON
110	ON	ON	ON	ON
134.5	ON	ON	OFF	ON
150	ON	ON	OFF	OFF
200	ON	OFF	ON	ON
300	ON	OFF	ON	OFF
600	ON	OFF	OFF	ON
1200	ON	OFF	OFF	OFF
1800	OFF	ON	ON	ON
2400	OFF	ON	ON	OFF
4800	OFF	ON	OFF	ON
9600	OFF	ON	OFF	OFF

Note 1: When this switch is ON, a line feed is made automatically whenever a carriage return is input.

Note 2: The standard setting for QWERTYphone is similar to the factory setting except that switch number 8 is in the "OFF" position.

The MP1713 Dot Matrix Printer

The MP1713 Dot Matrix Printer The MP1713 Dot Matrix Printer is supplied preset and ready for use with QWERTYphone.
No attempt should be made to remove its casing or to alter internal switch settings.
If it fails to function correctly during installation, or during the commisioning procedure it should be returned to section stock with an A8807A stating that it was "Dead-on-Arrival".

Installation After unpacking, carefully check that the items shown are included in the packaging.
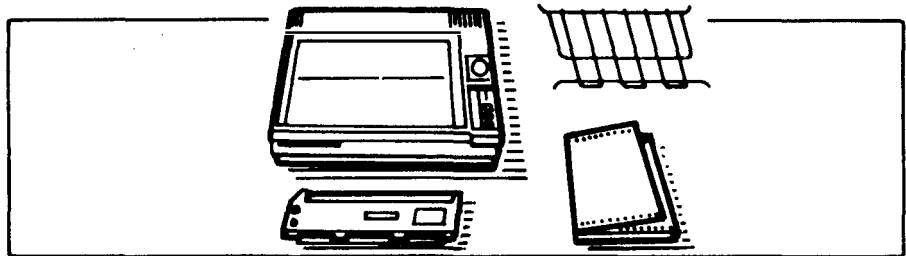
Preparing the printer for use Remove the plastic top cover to expose the print head and mechanism.

Remove the shipping screws. These are located on the underside of the printer and are labelled. The screws should be removed using a Philips screwdriver with the printer resting on its left side.
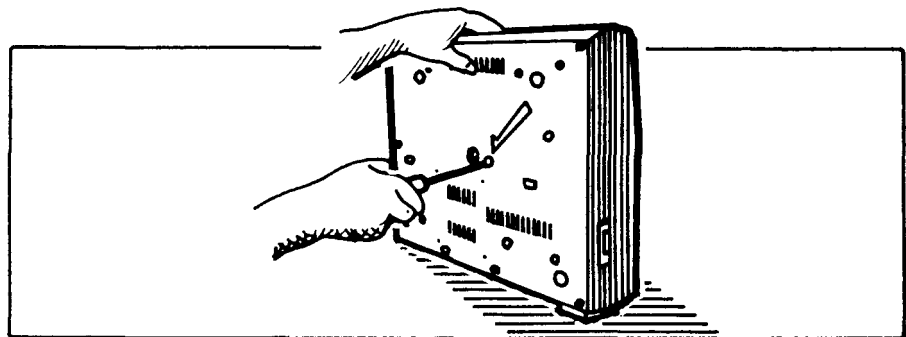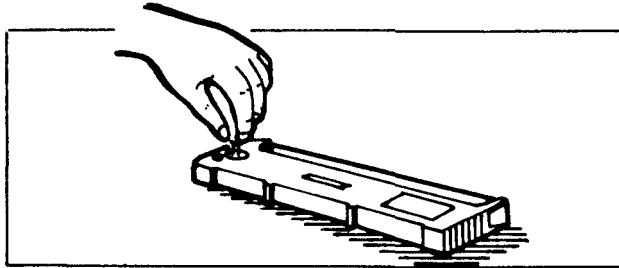
Check that there are no obstructions in the path of the printer head or paper feed.
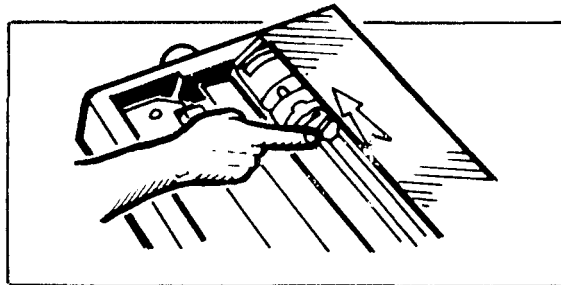
The MP1713 Dot Matrix Printer

Installing the ribbon cartridge Tighten the ribbon by turning the plastic knob anticlockwise as shown below.

Move print head by hand, as far to the left as is possible.

With the plastic knob on the cartridge uppermost and positioned to the left, place the cartridge between the side frames of the printer mechanism so that the catches engage with the cartridge. The cartridge should be tilted forward during this operation. Finally press the cartridge firmly into position.
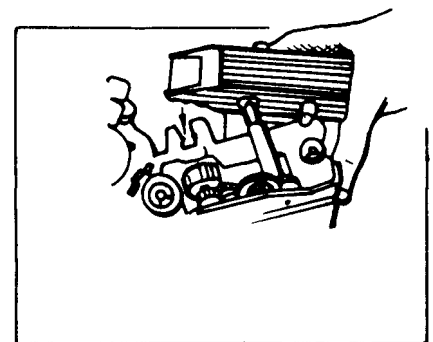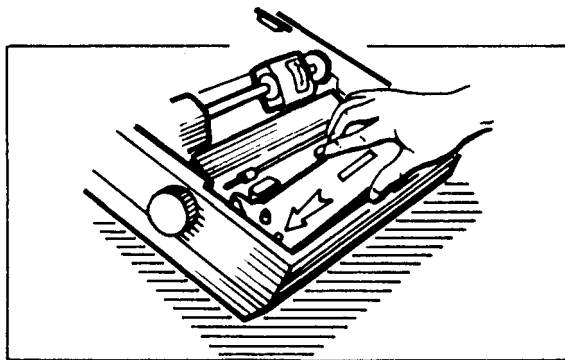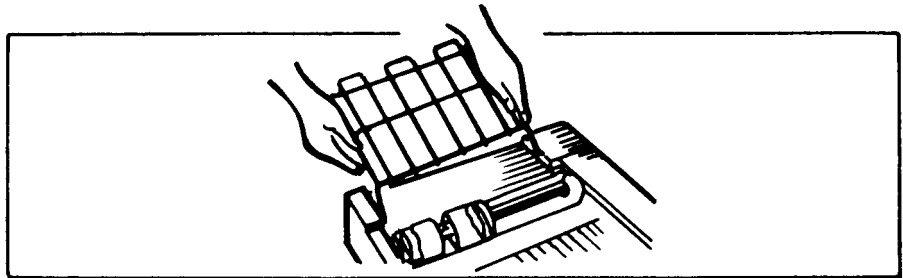

Make sure that the ribbon is taut and correctly positioned between the print head and paper.

It should be remembered that cartridge replacement is normally the responsibility of the customer.

The MP1713 Dot Matrix Printer

Load the paper Load the paper into the printer in the following sequence:

Position the wire rack as shown below.

This allows the paper to feed smoothly through the printer.

Pull the release lever forwards as shown below. If tractor feed paper is used this would be the normal position.
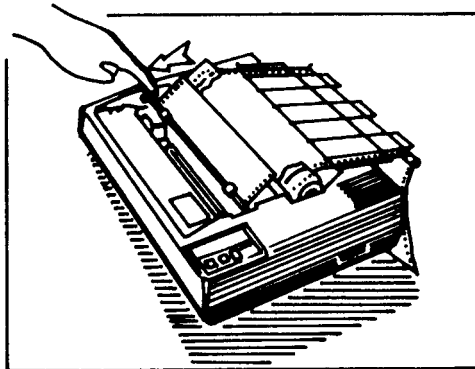
Feed the paper through the paper guide from the rear.

Open both the tractors by lifting their covers.

Both of the tractors can be moved horizontally along their bar to match the width of the paper being loaded.

The MP1713 Dot Matrix Printer

Position the paper holes over the tractor teeth.

Close the covers.

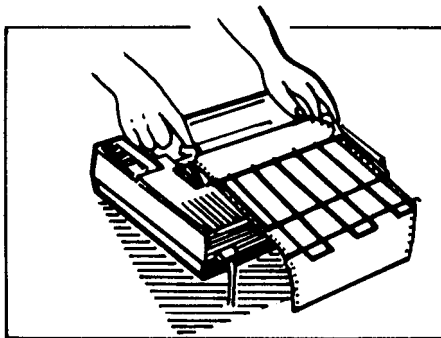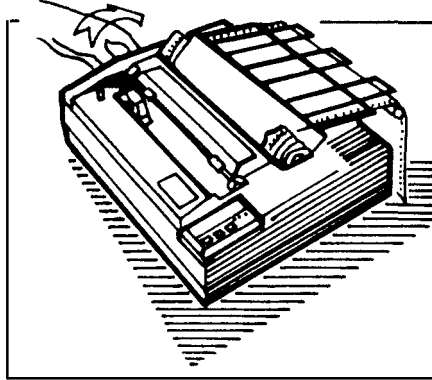Feed the paper forward with the platen knob and set the paper position so that the perforation between the sheets lies just below the top of the ribbon.

Function selector switches These switches are mounted on the printed circuit board inside the printer. They are preset when the printer leaves the factory. If however alterations are required, information is contained in Merlin MP1712/1713 printer guide. TPU384.

Serial selector switches These switches control parity, baud rate, word length etc. It may therefore be necessary to alter the settings of these switches.

Setting selector switches Ensure that the power is switched off and the plug removed from the socket.

Remove top cover

Remove the platen knob
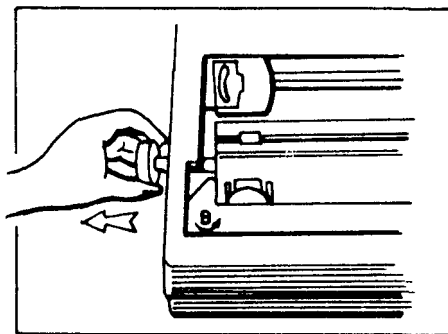
Remove the four Philips screws situated beneath the unit at each of the corners.
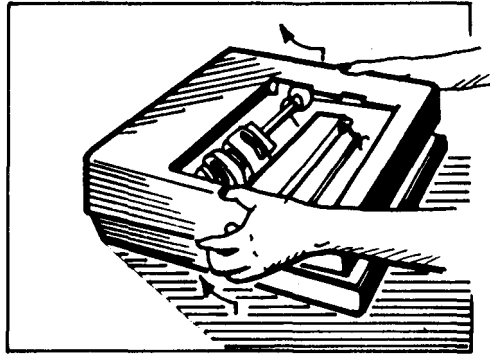
The top casing can now be removed. Extra care must be taken at this stage as wires from the bottom panel are still connected. Raise the cover from its left side but do not place the wiring under tension.
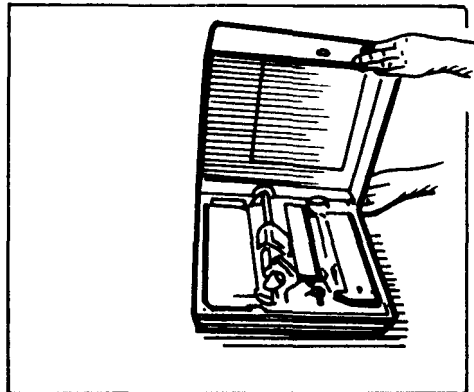
Setting of selecter switches on serial interface board

DIP Switch	Functions and Conditions	ON	OFF	Factory se conditions
SW 1 SW 2 SW 3 SW 4	BAUD RATE	See Table 2		ON OFF OFF OFF
SW 5	STOP BIT	2 bits	1 bit	OFF
SW 6	PARITY BIT	EVEN	ODD	OFF
SW 7	PARITY check	YES	NO	OFF
SW 8	WORD LENGTH	8 bits	7 bits	ON
SW 9 SW10	Buffer full recovery	See Table 3		OFF OFF
SW11	Loop back check	Enable	Disable	OFF
SW12	Not used	--------	--------	OFF

TABLE 1

Setting of baud rate switches on serial interface board

NO	SW1	SW2	SW3	SW4	BAUD RATE(BPS
		Selector Switch			
0	ON	OFF	OFF	OFF	9600
1	OFF	ON	OFF	OFF	4800
2	ON	ON	OFF	OFF	2400
3	OFF	OFF	ON	OFF	1800
4	ON	OFF	ON	OFF	1200
5	OFF	ON	ON	OFF	600
6	ON	ON	ON	OFF	300
7	OFF	OFF	OFF	ON	200
8	ON	OFF	OFF	ON	150
9	OFF	ON	OFF	ON	134.5
10	OFF	OFF	ON	ON	110
11	OFF	OFF	ON	ON	75

TABLE 2

Setting of buffer full recovery

BUFFER FULL RECOVERY	DIP SW9	DIP SW10	COMMENTS
256 bytes	OFF	ON	4K RAM OR 2K RAM SW/=OFF
496 bytes	ON	OFF	4K RAM OR 2K RAM SW/=OFF
1776 bytes	ON	ON	2K RAM SW/=OFF
3776 bytes	ON	ON	4K RAM SW/=OFF

TABLE 3

The MP1713 Dot Matrix Printer

Connecting lead to printer   Connect the QWERTYphone printer cable at the printer end only at this stage making sure that it is secure.
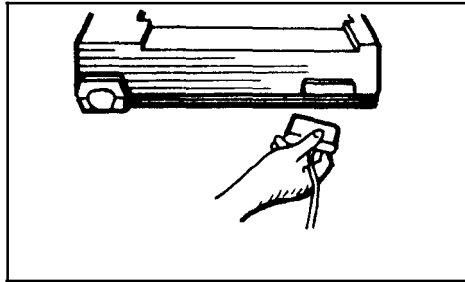
Make sure that paper is loaded into the printer

Plug in and switch on the mains supply.

A print test can now be made as follows.

Press and hold down the LF key and then turn the power switch to "ON".

The printer will now print the whole character set and will continue to print as long as the LF key is operated.

When the print test is satisfactory the printer cable can be connected to the QWERTYphone printer port at the rear of instrument.

The Control Panel   The functions of the lamps and switches on the control panel are as follows:

Power switch: Connects the printer to the mains supply

ON LINE switch: Used to connect the printer to QWERTYphone for print out.

FF switch: The Form Feed switch advances the paper to the next sheet. This button can only be used when the printer is OFF LINE.

LF switch: The Line Feed switch advances the paper one line at a time. If the switch is held operated then the paper is continuously fed.
This switch can only be used when the printer is OFF LINE.

POWER Lamp: Lights when the printer is connected to the power supply and switched on.

READY Lamp: Lights when the printer is "ON LINE" ready for printing.

ON LINE Lamp: Lights when the printer is ready to recive data from QWERTYphone for printing.

PAPER OUT Lamp: Lights when paper has run out or is incorrectly inserted.

Glossary of Terms

Access code	A number that is inserted before the dialled number, to gain access to an Exchange Line or Private Circuit.
Access pause	A pause in a dialling sequence of about 4 seconds that allows time for lengthy telephone exchange operations. For example, on exchanges where you dial a single digit (Access code) to get an outside line, you will probably need an access pause between dialling the single digit and dialling the telephone number, to allow time for connection to the outside line.
Auto-answer	On QWERTYphone this facility gives an automatic answering service, for data telephone calls. A short text message can be left at the incoming terminal.
Baud Rate	The number of bits per second transmitted along a wire.
Bit	One of the two digits 0 and 1 used in binary notation. The word comes from BInary digiT.
Boss/Sec	Two QWERTYphones working together as a plan system.
Character	A single letter, number, symbol, punctuation mark or space.
CMOS	Complementary Metal Oxide Semiconductor (Very static sensitive)
Data	A general term for numbers, digits, characters and symbols which are accepted, stored and processed by a computer. Only when such data becomes meaningful to a person can we say we have information.
Database	A collection of data that is created and maintained by a particular application (The Telephone Directory database is an example).
Duplex	A mode of transmission which allows data to travel in both directions at the same time. Half duplex allows travel in both directions but not at the same time.
Electronic Messaging Terminal	A terminal that can transmit and receive messages.
Glass teletype	A glass teletype sends and receives data in the same way as an ordinary teletype machine, but it displays the data on a screen rather than typing it onto paper.
LCD	Liquid Crystal Display. This consists of a liquid whose molecules can be made to line up thus making it look darker when an electrical voltage is applied.
Messaging	The action of transmitting and receiving messages.
Modem	MOdulator-DEModulator. A device that converts data into a form suitable for transmission over a telephone line and also converts data received over a telephone line into a form acceptable to a computer.

Glossary of Terms

On/Off Hook This relates to the facilities that are available on certain types of PBX.
On hook is before the handset is lifted, Off hook is when the handset is raised.

Protocol An agreed procedure for the exchange of messages and replies in a communications system.

Pulse Loop disconnect dial pulses, and DTMF. Dual Tone Multi Frequency. Both stand for forms of signalling used on telephone systems, particularly during dialling.

QWERTY This is used to describe the keyboard on a normal typewriter. The name comes from the first six keys on the second row of the keyboard.

Recall On QWERTYphone two types of Recall are available to the PBX equipment. (EL Recall) stands for Earth Loop Recall, and (TB Recall) stands for Timed Break Recall. EL Recall will be the most common.

RAM Random Access Memory. This is a set of storage locations any of which can be accessed directly without having to work through from the first one. Such memories can be written to and read from.

ROM Read Only Memory. This is a memory that holds data or instructions permanently and cannot be altered by the computer or programmer. The actual content of a ROM is fixed at the time of manufacture. (PROM Programmable Read Only Memory is fixed using a special device by the user; EPROM can be changed by the user).

Terminal In its simplest form, a machine with a keyboard and a screen or printer, connected to a computer by a fixed cable or telephone line. The QWERTYphone acts as a terminal when you use the PC or TERM configurations.

Tonto Tonto is the name given to the Merlin Personal Information Centre.

Volatile Memory This refers to all types of memory which lose their stored data as soon as the power is switched off. (Non volatile devices need no power to retain their memory).

Word Length Many computers work with a fixed number of bits at a time and these are called words. The memory of such computers is organised in words and the "word length" is measured by the number of bits each word contains.

Maintenance

Reference Customer Service Information. No. 057. QWERTYphone

General   As there are very few replaceable parts on QWERTYphone, it has been decided that the policy will be to completely replace faulty Field Replacable Units (FRU's).

Fault Reporting and Maintenance Support   QWERTYphone may be maintained by District Customer Apparatus Maintenance Technicians.
No routine maintenance is required.
It is the responsibility of the customer to change the batteries if required.
If a printer has been provided it is also the customers responsibility to change the ribbon cassette and paper.

The customers may report faults using normal District fault reporting procedures. ie. 151 or the nominated fault reporting point.

Districts will offer a comprehensive first level support service for equipment repair.

Second level support to District Support Units is available from the LCS/BSSU.

Normal A646 procedures apply.

RSC Procedures.   If customers report faults direct to RSC's it is important for the RSC to establish with the customer whether the report justifies a faultsman's visit.

Before authorising a visit the RSC should ensure that the following conditions apply:

1. That the system is covered by a BT maintenance agreement.
2. That the mains supply has not failed or been switched off.
3. That the system is not locked, thus preventing unauthorised use.
4. That the exchange line(s) test OK.

Documentation   Merlin QWERTYphone User Guide. TPU 462
Customer Apparatus Installation and Maintenance Guide Notes. (TGN 0035).
Customer Service Information No.057 QWERTYphone.

Tools   Normal tools required for both maintenance and installation.

Warranty   The QWERTYphone will be sold with a 12 month warranty, as will the WM 100 printer. The Epson P40 printer will have a 90 day warranty.

Spares   The following is a full list of QWERTYphone spares. They should be retained in the packaging as supplied by the manufacturer and that packaging must be used when returning faulty items for repair via section stock. All faulty equipment must be accompanied by a completed A8807A indicating the warranty expiry date in section 1 if appropriate.

Engineering Stores Catalogue Description	Item code no.
QWERTYphone 1A	25 2481
QWERTYphone Printer Cable 1A	25 2482
QWERTYphone PC Cable 1A	25 2483*
QWERTYphone PC AT Cable 1A	25 2484*
QWERTYphone Telephony Module 1A	25 2485
QWERTYphone Telephony Module 2A	25 2486*
QWERTYphone Directory Modules	25 2487
QWERTYphone Boss/Sec Kit 797A	25 2488*
QWERTYphone Macintosh Cable 1A	25 2489*
QWERTYphone Macintosh Plus Cable 1A	25 2490*
QWERTYphone Printer Cable 2A (MP 40)	98 9102
Dot Matrix - MP 1713 Printer (WM100)	98 1823
Thermal - MP40 Printer (Epson P40)	
(5 per box)	98 1962

At the time of printing, items shown '*' are not available.

Handling Precautions   When handling the Telephone Module care should be taken to avoid contact with the metal pin and socket connexions as it contains static sensitive components.

The EPROMS are located on special carriers for plug in use, so that no special static precautions are necessary, however care should be taken whilst handling them.

Software Variations   To display which version of the software is in operation.

Press [CONFIG] on the main keyboard.

From the config screen press "Telephone" soft key.

Press the top soft key at the right hand side of the display screen. The software version being used is then displayed.

Operational problems normally due to customer mis-operation

Complaint. No ring or faint ring.

Cause. Volume control turned down. (Turn right hand wheel upwards).

Complaint. No ring.

Cause. Mains failure.

Complaint. Display not visible or faint.

Cause. Viewing angle incorrectly adjusted. (Adjust left hand wheel).

Complaint. Outgoing difficulties.

Cause. Incorrect type of dialling selected. (Press "CONFIG" then select "Telephone", Change "Pulse" to "Tone" or vice versa).

Complaint. Screen Blank, Telephone dead.

Cause. Power off, and batteries flat. (Check mains is plugged in, and switched on at the socket).

Complaint. No dial tone.

Cause. Telephony module not engaged properly. (Reseat telephony module)

Complaint. Programmable function key data corrupted, or printer will not print, or garbage on screen. (Kana, [Japanese characters] 48 messages received etc).

Cause. Ram Corruption, probably caused by frequent removal of the Telephony module. (Switch off mains for a short period then restore. Press [CONFIG] then type "Reset". Reconfigure the system).

Complaint. Incoming difficulties. Callers complain of high pitched tone on answer.

Cause. Auto-answer switched to ON.

Complaint. Unintelligible screen display when using the terminal access Telecom Gold or another QWERTYphone.

Cause. Modem settings incorrect. (Reset Modem configuration).

Complaint. Printer does not print or prints rubbish.

Cause. Printer settings incorrect. (Reset Printer configuration).

Complaint. Incoming messages do not print automatically.

Cause. Check "Auto Print" is ON from the Printer screen.