PX 1000

OPERATING INSTRUCTIONS

TEXT TELL

We bridge the communication gap

BEFORE STARTING TO OPERATE THE PX AND PXP FOR THE FIRST TIME, IT IS NECESSARY TO CHARGE THE BATTERIES (see section L).

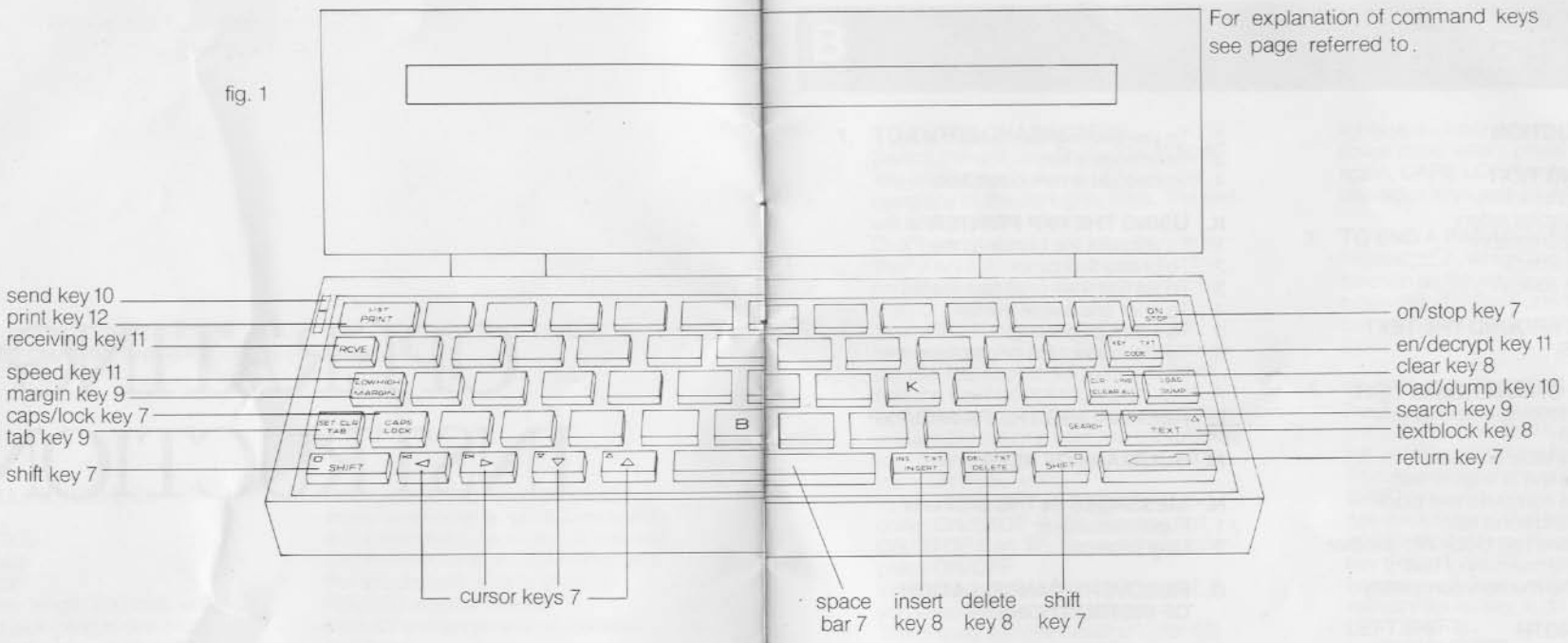
THE TEXT TELL PX 1000 BOX CONTAINS:

- Text Tell PX 1000
- soft leather case
- AC/DC adaptor
- twin-core cable, length 200 mm, with 2½ mm mono jack-plug at one end and 3½ mm stereo jack-plug at the other end (for dumping and loading)
- three-core cable, length 600 mm, with a 3½ mm stereo jack-plug at one end and three loose wires at the other end (for attachment of delta plug for RS232C external printer)
- instruction manual and guarantee certificate

OPERATING INSTRUCTIONS

For explanation of command keys see page referred to.

fig. 1



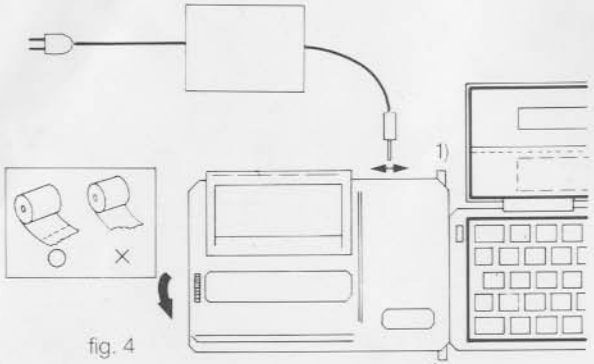


fig. 4

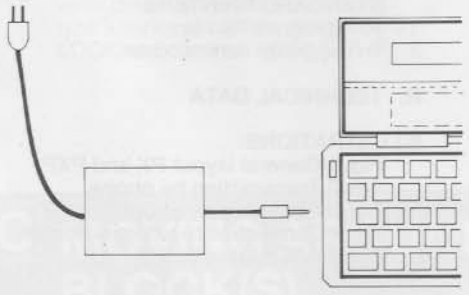


fig. 2

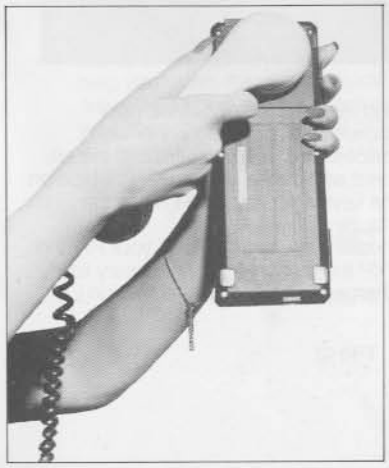


fig. 3

CONTENTS

A. INTRODUCTION

B. ENTERING TEXT
1. To enter characters
2. To enter capital letters
3. To end a paragraph
4. 'Shift characters'
5. To enter a space

C. MOVING AROUND THE TEXT BLOCK(S)

D. EDITING OR AMENDING TEXT
1. To correct typing errors as you make them
2. To erase a letter or letters
3. To erase a line or lines of text
4. To erase a complete text block
5. To insert additional text
6. To insert one text block into another
7. To clear the memory of text
8. To clear the memory completely

E. LINE LENGTH

F. TABULATION
1. To insert a tab at a different position
2. To replace all tabs

G. SEARCHING FOR A PARTICULAR POINT IN A TEXT

H. STORING TEXT ON TAPE AND RELOADING

I. TRANSMITTING AND RECEIVING TEXT BY PHONE

J. ENCODING/DECODING
1. To set the en/decoding key
2. To use existing text to set the key
3. To encode a text
4. To decode an encoded text

K. USING THE PXP PRINTER
1. To connect the printer to the PX
2. To print a text block
3. To list first lines of all text blocks
4. To print one line at a time
5. To interrupt printing
6. To disconnect the printer from the PX

L. RECHARGING THE PX AND PXP

M. SUMMARY OF KEYS

N. MESSAGES IN THE DISPLAY
1. Fixed messages
2. User prompts

O. RECOVERY/CANCELLATION OF INSTRUCTIONS

P. CONNECTING OTHER PRINTERS TO THE PX

Q. ADAPTING THE PX TO NON-STANDARD PRINTERS
1. To reprogram PX keys
2. To set printer control codes

R. TECHNICAL DATA

ILLUSTRATIONS:
Fig. 1 General layout PX and PXP.
Fig. 2 Transmitting by phone.
Fig. 3 Receiving by phone.
Fig. 4 Connection to external printer.
Fig. 5 ASCII table for PX.

A INTRODUCTION

The PX 1000 combines functions normally found in highly sophisticated word processing systems, namely text entry, editing, storage and transmission, with additional functions such as encoding/decoding messages, normally only found in specialist security and military fields. Despite this versatility the PX 1000 is simplicity itself to operate and requires absolutely no prior knowledge of computers or word processing. Don't be afraid to experiment with the PX - whatever you type on the keyboard,you won't harm the machine.

* Please note: before using your PX and PXP the first time it is necessary to charge the batteries (see section L).

B ENTERING TEXT

1. **TO ENTER CHARACTERS**
- Switch the unit on with the **ON/STOP** key and type in text as on a typewriter, using any of the dark grey keys. The text will appear in the display.
- Don't worry about how long the line is; the PX will automatically break off at the end of a line and put the next word at the start of the next line.
- You should hear a single beep each time you press a key. Two beeps mean the key has registered twice, no beep that the key has not registered at all. A longer beep indicates a mistake or that you are 8 positions from the end of the line (to enable you to break off the line manually if you wish).
- To silence the beeper press and hold down **ON/STOP** + **'B'**. Release first **ON/STOP** then **'B'**. To reset the beeper press **ON/OFF**.
- Where appropriate keys will 'repeat' if you keep them pressed down.
- The display switches itself off after 50 seconds. Press **ON/STOP** to restart.

2. **TO ENTER CAPITAL LETTERS**
Hold either of the **SHIFT** keys down while pressing the desired letter. To type a series of capitals press **CAPS LOCK** and continue typing (**LOCK** lights up in display); to revert to ordinary (lower case) letters press **CAPS LOCK** again. **CAPS LOCK** only operates on character keys, not on instruction keys.

3. **TO END A PARAGRAPH** (return key)
Press ⏎, which has the same function as the carriage return on a typewriter. To leave one full line clear before the next paragraph press ⏎ again.

4. **'SHIFT' CHARACTERS**
The figure keys also have various signs and punctuation marks indicated at top left and top right of the key.
To obtain these signs use one of the **SHIFT** keys. For character on top left use the left-hand shift key (**LEFT SHIFT**), and for top right use the right-hand shift key (**RIGHT SHIFT**), keeping the shift key pressed down while pressing the relevant figure key, e.g.:
LEFT SHIFT + 1 = !
but **RIGHT SHIFT** + 1 = @

5. **TO ENTER A SPACE**
Press the long space bar in the center of the bottom row of keys. The 'underlining' in the display, which indicates the blank part of a line which has not (yet) been taken up by text, will disappear to indicate that you have entered a space.

C MOVING AROUND THE TEXT BLOCK(S)

The cursor (the flashing block of dots in the display) shows you where you are in the text. Various keys are provided to help you move this cursor quickly around your text, as if you were moving your finger over a page of text or turning the pages of a book. These keys work as follows:

	◁	cursor back 1 position
SHIFT +	◁	cursor to start of line
	▽	cursor down 1 line
SHIFT +	▽	cursor to last position in text block
	△	cursor up 1 line
SHIFT +	△	cursor to start of text block

▷	cursor forward 1 position
SHIFT + ▷	cursor to end of line
LEFT SHIFT + TEXT	moves cursor to start of next higher numbered text block. To repeat, press **TEXT** again
RIGHT SHIFT + TEXT	moves cursor to start of next lower numbered text block. To repeat, press **TEXT** again
TEXT	starts new text block

You can also use a key-word to search for a particular point anywhere in the memory (see section G). Finally you can 'scan' the first line of each text block by pressing **SHIFT** + **PRINT** (= LIST)

A text block is: any amount of text you wish to separate from other text.

D EDITING OR AMENDING TEXT

1. **TO CORRECT TYPING ERRORS AS YOU MAKE THEM:**

a. Place cursor on the letter you wish to correct.
b. Type the correct letter. If you continue typing you will 'overtype'any existing text.

2. **TO ERASE A LETTER OR LETTERS**

a. Place cursor after the letter you wish to correct.
b. Press **DELETE**.
Repeated pressing of **DELETE** 'eats back' into the existing text erasing one letter at a time. This operates on letters, numbers, punctuation marks, and spaces entered with the space bar, but ignores blanks. To delete a **RETURN** (= end-of-paragraph) instruction, move the cursor to the start of the following line and press **DELETE** once.

3. **TO ERASE A LINE OR LINES OF TEXT**

a. Place the cursor at the start of the line.
b. Press **SHIFT** + **CLEAR ALL** (= **CLR LINE**)
c. If you keep **CLR LINE** depressed it will continue to delete lines until you release it again or until you reach the end of the text block. If the cursor is not at the start of the line, this key will only erase the part of that line to the right of the cursor.

4. **TO ERASE OR DELETE THE COMPLETE TEXT BLOCK IN WHICH YOU ARE WORKING**

a. Press (**LEFT** or **RIGHT**) **SHIFT** + **DELETE** (= **DEL TXT**). Display shows '**ERASE TEXT** (number) + **PRESS AGAIN**.
b. Press **DELETE** again.
This can be done with the cursor in any position in the text.

5. **TO INSERT ADDITIONAL TEXT WITHOUT DELETING EXISTING TEXT**

a. Move cursor to desired insertion position.
b. Press **INSERT**.
The word 'Insert' in the display lights up, an opening appears in the center of the cursor to indicate "insert" mode.
c. Type the required text.
d. To stop insertion press **INSERT** again.
Use of **TAB** in 'insert' mode enters a space equal to the existing tab length (see also section F.).

6. **TO INSERT ONE TEXT BLOCK INTO ANOTHER**

a. Move the cursor to any point on the line following the desired insertion point.
b. Press **SHIFT** + **INSERT** (= **INS TXT**).
The "insert" mode cursor is positioned for typing in text number.
c. Enter the number of the text block which you wish to insert.
d. Press **INSERT** again.
The PX will copy the second block and insert it in the first text block on the line above the cursor position at stage a.
The 'original' of the copied text remains stored under its original text block number. An encrypted text block cannot be inserted in this way. To insert part of a text block, copy the text to a free text block number, delete the unwanted section and insert the remainder using the above procedure.

7. **TO CLEAR THE MEMORY OF TEXT**

a. Press **CLEAR ALL**.
Display shows **ERASE ALL TEXT? + PRESS AGAIN**
b. Press **CLEAR ALL** again.
This will clear everything except the en/decoding key or cipher (see section J) and the 'conversion characters' (see section Q).
If you wish to preserve any text blocks (e.g. for use as code ciphers - see section J) delete the text block by block as described in section D.4 above.

8. **TO CLEAR THE MEMORY COMPLETELY**

a. Press and hold down **ON/STOP** + **PRINT**.
b. Release first **ON/STOP** then **PRINT**.
This will clear all text as under 7. above, and will also clear any special instructions stored under 'conversion characters' (see section Q).

E LINE LENGTH

The PX automatically moves to a new line when the current line is full. The display shows up to 40 characters and the standard line length is also set at 40 characters, but lines of text, e.g. for printing, can have a length of up to 80 characters. You can adjust the line length by resetting the right-hand margin anywhere between the 10th and the 80th position, (also in existing text) as follows :

a. Press **MARGIN**.
Display shows '**SET RIGHT MARGIN AT 40 - PRESS AGAIN**'
b. Type in the desired number of characters per line. (Between 10-80.)
c. Press **MARGIN**. this sets the new line length for that text block.
d. To revert to 40 character line length, repeat "a"through"c", inserting 40.
For checking line length press margin twice.

F TABULATION

To assist you with the layout of your text, standard 'tabulator stops' have been set at every 8th character from the left in the display. If you press **TAB** the cursor will jump to the next preset tabulator stop. This also provides a 'fast forward' facility within a line.

1. **TO INSERT A TAB AT A DIFFERENT POSITION OR POSITIONS**

a. Move cursor to that position.
b. Press **LEFT SHIFT** + **TAB** (= **SET**).

2. **TO REPLACE ALL TABS WITH NEW TABS**

a. Clear all tabs with **RIGHT SHIFT** + **TAB** (= **CLR**).
b. Insert new tabs as under 1. above.
This sets new tabs for all subsequently entered text, not just for the text block in which you are working. **CLEAR ALL** resets standard tabs.

G SEARCHING FOR A PARTICULAR POINT IN A TEXT

The PX can search its entire memory for a particular combination of 1-8 characters occurring anywhere in its memory. When using this facility to search for a particular position, try to select a unique set of characters, i.e. sequence of letters or figures which probably only occurs once in the memory. A suitable selection is often the last letters of one word, the space and the first letters of the next word. Proceed as follows:

a. Press **SEARCH**.
b. Type in 1-8 characters as a 'search key'
c. Press **SEARCH**.
d. If the 'search key' occurs more than once in the memory, press SEARCH again until you reach the correct position.
e. To enter a new search key, first press **ON/OFF**, then repeat a. thru d. above.

If the display shows **NOT FOUND**, correct your search key and try again.

N.B. All operations except coding can be interrupted by pressing **ON/STOP**. This resets the PX to the position in the text at which you were previously working.

H STORING TEXT ON TAPE AND RELOADING INTO THE PX

You can see how much of the machine's internal memory is full by the **'M'**□□□□ indicator in the display. Each square which lights up indicates max. 25% of the memory still available; so 3 squares means 50-75% of the memory is still available. If you try to perform an operation (e.g. copying/inserting) for which there is insufficient free memory available the display will show *****MEMORY FULL.*****
If you don't want to delete text blocks in order to free space, you can transfer or 'dump' text on a tape.

1. TO DUMP TEXT
a. Connect the PX audio socket (at right of machine) to the microphone input of the tape recorder using the special cable supplied.
b. Press **DUMP**.
Display shows **START 'RECORD' ON TAPE + PRESS AGAIN**.
c. Start tape recorder in record mode. Make sure the non-recording leader at the start of the tape has passed the recording head.
d. Press **DUMP** again.
e. When light stops flashing all text is transferred to tape.
Display shows first line of transmitted text.
f. Disconnect the cable.

2. TO RE-LOAD FROM TAPE TO PX
a. Connect earphone output tape recorder to PX audio socket.
b. Press **SHIFT + DUMP (= LOAD)**.
Display shows **READ TEXT OO FROM TAPE**.
N.B. If no number is entered the PX will load the first textblock found on tape.
c. Type in number of text block required.
d. Press **DUMP (= LOAD)**.
Display shows **READY TO RECEIVE**.
e. Start tape in 'play' mode.
f. Wait for send/receive light to stop flashing.
Number of audible beeps and blocks in display indicates reception quality (see table in section I).
g. Disconnect the cable.
To avoid having duplicate text numbers do not re-use the text numbers which you have dumped on tape, when typing new text.
If your tape-recorder has no earphone output or microphone input socket, you can also dump to tape and reload using the same procedure as for telephone transmitting and receiving (see section I).

I TRANSMITTING AND RECEIVING TEXT BY PHONE

1. TRANSMITTING
You can use the PX to transmit to another PX or telephone answering machine/tape recorder (see section H). Proceed as follows:
a. Move cursor to any position in the text you wish to transmit.
b. Telephone the party concerned and check that he/she is ready to receive.
c. Make sure no connector is plugged into the PX audio socket as this shuts off the telephone adapter.
d. Press **SEND** button (see fig. 1). Send/receive lamp lights up.
e. Display shows **'READY TO SEND - PRESS AGAIN'**.
f. Close PX lid and press PX rubber adapter against telephone mouthpiece (see fig. 2).
g. Press **SEND** button again. Lamp flashes.
h. Keep adapter against telephone mouthpiece until lamp stops flashing and remains off.
i. Ask the other party whether he/she has received the text successfully.
j. If poorly received, repeat.
The transmission speed can be changed from standard speed to fast speed by pressing **RIGHT SHIFT + MARGIN**
This takes the place of step d. above.
The LOW speed has a better chance of being received more accurately.
The receiving unit will automatically adjust itself to the speed chosen by the transmitting unit.

2. RECEIVING TEXT BY PHONE
To receive text from another PX 1000 proceed as follows:
a. Make sure no connector is plugged into the PX audio socket.
b. Press **RCVE**.
Display shows **READY TO RECEIVE**.
c. Close PX lid and place rubber adapter against telephone earpiece with your hand over the mounthpiece (see fig. 3).
d. Wait till lamp stops flashing.
e. Check number of audible beeps and/or illuminated squares in display for reception quality (see table below).
g. If poorly received request other party to re-send, using lower speed.
N.B. In **READY TO RECEIVE** or **READY TO TRANSMIT** mode the automatic switch-off does not work. To save battery power cancel this mode with **ON/OFF** if necessary.

N.B. The acoustical characteristics of a telephone receiver depend on its particular physical shape and constructions. We designed the PX 1000 to accomodate the most usual telephone set designs. It is possible, however, that occasionally the sound waves from a PX (when sending text) are partially phased out within the receiver cavity, resulting in a reduced effective sound level on the line. This problem can be overcome by placing the (sending) PX slighty tilted against the telephone receiver (2-3 millimeter will do). When using an adapter for direct connection to a telephone set, this phenomenon will not occur.

RECEPTION QUALITY TABLE:

1 square/4 beeps:	0-70 % received
2 squares/3 beeps:	70-90 % received
3 squares/2 beeps:	90-99 % received
4 squares/1 beep:	99-100 % received

N.B. If you transmit important figures, we advise you to mention them also in words.

J ENCODING/DECODING

To prevent PX messages or text being read by unauthorized persons, any of the text blocks can be encoded using the method chosen as Industry Standard by the U.S. National Bureau of Standards: the Data Encryption Standard.
Encoded text can be transmitted or stored on tape, etc., but cannot be edited or printed. You can compose an encoding/decoding key or cipher from any combination of up to 16 characters/figures.

1. TO SET THE ENCODING/DECODING KEY
a. Press **LEFT SHIFT + CODE (= KEY)**.
Display shows **NEW KEY....+ PRESS AGAIN**.
b. Type in a maximum of 16 characters (including spaces or **RETURN** but without any instruction keys).
c. Press **CODE** again.
Display shows **NEW KEY ACCEPTED** and then reverts to previous working position.
You may wish to store alternative keys as seperate text blocks for future use or merely to use the first 16 characters of an existing text block as an encoding/decoding key.

2. TO USE THE FIRST 16 CHARACTERS OF AN EXISTING TEXT TO SET THE KEY
a. Press **RIGHT SHIFT + CODE = TXT**.
Display shows **NEW KEY TEXT OO + PRESS AGAIN**.
b. Enter the number of the text block you wish to use as key.
c. Press **CODE** again.
Display shows **NEW KEY ACCEPTED** then reverts to previous working position.

3. TO ENCODE A TEXT
a. Set the code key as described in 1 or 2 above.
b. Move the cursor to the desired text block.
c. Press **CODE**.
Display shows **EN/DECRYPT TEXT..? + PRESS AGAIN**.

d. Press **CODE** again.
Display shows first **PLEASE WAIT**, then **ENCRYPTED TEXT, LENGTH .. BYTES**.

4. **TO DECODE AN ENCODED TEXT**
a. Set the code key as described in 1 or 2 above.
b. Move the cursor to the desired text block.
Display shows **ENCRYPTED TEXT, LENGTH .. BYTES**.
c. Press **CODE** twice.
Display shows first **PLEASE WAIT**.
The first line of the text should then appear in the display. If you have used the wrong code key or cipher the display will show
***** WRONG KEY *****, then **PLEASE WAIT**, then **ENCRYPTED TEXT LENGTH .. BYTES**.
Enter the correct key and press **CODE**.

N.B. When an encrypted text is not 100% received (1, 2 or 3 squares), it is possible that the ***** WRONG KEY ***** message appears in the display, although the correct key was entered. The message has to be sent again, preferably at low speed.

K USING THE PXP PRINTER

1. **CONNECTING THE PRINTER TO THE PX**
a. Check that the printer is switched off.
b. With the PX keyboard facing you, fit the PXP printer into the slot on the left side of the PX (see fig. 1).
c. Switch the PX printer on with the **ON/OFF** switch at the rear of the unit.

2. **TO PRINT A TEXT BLOCK**
a. Move the cursor to the text block concerned.
b. Press **PRINT**.
N.B. It is advisable to set the **RIGHT MARGIN** to **40**, when using the PXP 40.

3. **TO LIST FIRST LINES OF ALL TEXT BLOCKS IN MEMORY**
Press **SHIFT** + **PRINT** (= **LIST**).

4. **TO PRINT ONE LINE AT A TIME**
a. Move the cursor to the line concerned.
b. Press **RETURN**.
Each time you press **RETURN** the PXP will print out the next line.

5. **TO INTERRUPT PRINTING**
Press ON/STOP. This will interrupt the transfer of text to the printer. The printer will stop as soon as all text already transferred to printer 2K buffer memory has been printed out.

6. **TO DISCONNECT THE PRINTER FROM THE PX**
a. Switch the printer off.
b. Press the two release catches (fig. 4) on the sides of the PX.
c. Pull the PXP carefully from the PX.
N.B. Do not forget to switch off the PXP after use or when charging.

L RECHARGING THE PX AND PXP

If the PX is not used for a period of 50 seconds it will switch itself off automatically unless it is in the 'waiting to receive' or 'waiting to transmit' mode.
While charging the PX the send/receive lamp lights up.
The PXP printer will print approximately 2,000 lines of text on full batteries.
When the batteries are low the printer will print as a last line:
***** Batteries low, please recharge *****

The units can be charged separately by inserting the charger lead into the 3.5 mm socket on the left side of the PX or the rear of the PXP printer.
The units can also be charged simultaneously. To do this connect the PXP to the PX and insert the charger lead into the socket at the rear of the PXP printer.
Charging time is 10 to 12 hours.

M SUMMARY OF KEYS

(This summary proceeds counter-clockwise round the keyboard starting at top left).

The letters and figures in brackets after each of the following explanation indicate the sections in this manual where detailed information is given on use of the keys.
The send key is the only key outside the keyboard, when the lid is in closed position.

PRINT
With PXP or other printer connected and switched on: PXP prints contents of one text block (K).

SHIFT + PRINT (= LIST)
Displays first lines of all text blocks which contain text, one after the other. With printer connected and on: all the above lines are printed (K).

TAB
Moves cursor to next preset or manually set tab position.
Also serves as 'fast forward' key within line.
In 'insert' mode : inserts tab-length spaces (F).

LEFT SHIFT + TAB (= SET)
Sets new tab at cursor position. In blank positions tabs are indicated in blank (parts of) the display by dots (F).

RIGHT SHIFT + TAB (= CLR)
Clears all tabs (F).

MARGIN
Initiates sequence for changing line length of text block concerned (E).

LEFT SHIFT + MARGIN (= LOW)
Prepares PX to transmit text at low speed (I).

RIGHT SHIFT + MARGIN (= HIGH)
Prepares PX to transmit text at high speed (I).

RCVE
Prepares PX to receive text transmitted from another PX (I).
In this mode 'auto-off' is not functional.

CAPS LOCK
Results in letter keys producing capitals. Does not operate on figure or function keys.

LEFT SHIFT
When used in conjunction with triple function key (e.g. **TAB/SET/CLR**): produces the function shown at top left of the key (in this example: **SET**).
When used in conjunction with figure key (top row on keyboard): produces character or sign shown at top left on key concerned.
When used with dual function keys (e.g. **DUMP/LOAD**) produces the top function shown on the key (i.e. **LOAD**).

CURSOR CONTROL KEYS

◁
Cursor back one position
SHIFT + ◁
Cursor to start of line
▷
Cursor forward one position
SHIFT + ▷
Cursor to end of line
▽
Cursor down one line
SHIFT + ▽
Cursor to last position in text block
△
Cursor up one line
SHIFT + △
Cursor to start of text block.

Enters one space in text.

INSERT
Sets PX in 'insert' mode allowing new text to be inserted in existing text rather than overtyping existing text (D.5).

SHIFT + INSERT (= INS TXT)
Allows one text block to be inserted into another (D.6).

DELETE
With cursor within a line: deletes the character or space before the cursor (D.2).
With cursor at start of first line of new paragraph: deletes **RETURN** (= end-of-paragraph instruction) and puts text on that line at end of text on previous line.
With cursor at start of a blank line: erases the **RETURN**, i.e. erases the blank line.
With cursor in blank line or blank part of a line: moves cursor to start of line or start of blank respectively.

SHIFT + DELETE (= DEL TXT)
Prepares PX to delete complete text block (D.4).

RIGHT SHIFT
Operates in the same way as **LEFT SHIFT**, except triple function keys where it operates the top right function, sign or character on that function key.

RETURN
When typing in new text: gives end-of-paragraph instruction, moving cursor to next line.
With cursor at first position of a new line: produces a blank line and moves cursor to start of next line.
With cursor in previously typed text: displays the whole of that line (if the line is larger than the display, it scrolls across the display), then puts cursor at first position of next line.
If printer connected and on: prints that line.
In insert mode and with cursor within previously typed text: moves text after cursor to beginning of next line, i.e. starts new paragraph.
In insert mode with cursor at first position of a line: inserts a blank line above that line.

SEARCH
Instructs the PX to search its full memory for the set of characters entered as 'search key' (G).

TEXT
Starts new text block.

LEFT SHIFT + TEXT (= ▽)
Moves cursor to first position of next following (higher numbered) text block, regardless of whether that block contains text or not.
RIGHT SHIFT + TEXT (= △)
Moves cursor to first position of nearest preceding (lower numbered) text, regardless of whether that block contains any text or not.
CLEAR ALL
Erases all text from memory, with the exception of the en/decoding key (cipher) and the 'conversion characters' (D.7).
SHIFT + CLEAR ALL (= CLR LINE)
Erases all characters to the right of the cursor on one line. Sets cursor at first position of following line (D.3).
CODE
With cursor in a text block: encodes that text block.
With cursor in encoded text block: decodes that text,provided that the key or cipher in use is exactly the same as that used to encode the text (J. 3+4).

LEFT SHIFT + CODE (= KEY)
Prepares PX to accept a (new) key or cipher for en/decoding (J.1).
RIGHT SHIFT + CODE (= TXT)
When used with the number of a text block: registers the first 16 characters of that text block as the new en/decoding key or cipher (J.2).
ON/STOP
When PX is off: switches the PX on (PX switches itself off automatically after 50 seconds except when in **RECEIVE or TRANSMIT** mode).
When machine on: interrupts all fuctions (e.g. transmit /receive text etc.) except en/decoding. Also resets beeper. (B)

KEY COMBINATIONS
ON/STOP + 'K'
Prepares PX to accept 'conversion characters' (Q).
ON/STOP + 'B'
Silences the beeper.
(**ON/STOP** resets the beeper) (B)

N MESSAGES IN THE DISPLAY

1. **FIXED MESSAGES**
A number of 'fixed messages' are registered in the display and will light up in the following situations:

☎ :□ □ □ □	Indicates reception quality (see section I.2).
FORMAT: 40	Line length at 40 characters or less.
FORMAT: 80	Line length between 41 and 80 characters.
SHIFT	Indicates that shift key is in operation.
LOCK	Indicates **CAPS LOCK** in operation.
INSERT	Indicates PX in insert mode.
M:□ □ □ □	Indicates percentage of memory available (see section H).
TEXT	Indicates number of text block.
LINE	Indicates line number.

2. **USER PROMPTS**
These are messages which appear during text entry or while using various function keys to assist the user.

a. **FREE** (text and line nos.).
Indicates a free text block.

b. **NO FREE TEXT AVAILABLE** indicates that all 99 text blocs are in use.

c. **SET RIGHT MARGIN AT 40 + PRESS AGAIN**
Appears when **MARGIN** key is pressed to invite you to enter a line length (pressing **MARGIN** key again retains existing margin).

d. **INSERT TEXT OO ? + PRESS AGAIN**
Appears after you press **SHIFT + INSERT KEY**, to ask which text you wish to insert.

e. **EN/DECRYPT TEXT OO ? + PRESS AGAIN**
Appears after **CODE** key is pressed to ask you to confirm that you wish to en/decrypt the text.

f. ***** WRONG KEY *****
Appears when you attempt to decrypt an encrypted message using the wrong **KEY**.

g. **ENCRYPTED TEXT, LENGTH ... BYTES**
Appears in place of the first line of an encrypted text block and also indicates the length of the text (in bytes or characters).

h. **NEW KEY ..... + PRESS AGAIN**
Appears when you press **LEFT SHIFT + CODE (= KEY)**, allowing you to type in the new key. Similar message appears after you press **RIGHT SHIFT + CODE (= TXT)**, allowing you to enter a text block number as key.

i. **NEW KEY ACCEPTED**
Confirms that the key (cipher) you have just entered has been registered in the PX memory.

j. **SEARCH FOR ..... + PRESS AGAIN**
Appears after you have pressed **SEARCH**, inviting you to enter the search keyword.

k. **..... NOT FOUND**
PX has not found the keyword you requested it to search for.

l. **START 'RECORD' ON TAPE + PRESS AGAIN**
Appears after pressing **DUMP** when transferring text to tape.

m. **READ TEXT OO FROM TAPE + PRESS AGAIN**
Appears after pressing **SHIFT + DUMP (= LOAD)**.
Invites you to enter the number of the text block to be loaded. If no number entered, will load the first text block found on tape.

n. **READY TO RECEIVE**
Appears after pressing **RCVE** or during loading from tape and remains until message has been received.

o. **RECEIVING**
Indicates that PX has begun to receive message from telephone/tape, etc. When reception complete the first line of the text will appear on the display.

p. **READY TO SEND + PRESS AGAIN**
Appears after pressing **SEND** button.

q. **READY TO SEND (LOW SP) + PRESS SEND-KEY**
Appears after pressing **LEFT SHIFT + MARGIN (= LOW)**.

r. **READY TO SEND (HIGH SP) + PRESS SEND-KEY**
Appears after pressing **RIGHT SHIFT + MARGIN (= HIGH)**.

s. **TRANSMITTING**
Appears on display while PX is transmitting. When transmission complete this is replaced by the first line of text.

t. **MEMORY FULL**
Indicates no space for further text without deleting or dumping.

u. **ERASE TEXT OO ? + PRESS AGAIN**
Appears after pressing **SHIFT + DELETE** to allow you to continue with delete or stop.

v. **ERASE ALL TEXT? + PRESS AGAIN**
Appears after pressing **CLEAR ALL** to allow you to think again whether you wish to clear the whole memory or stop.

w. **PLEASE WAIT**
Indicates that the PX is transmitting text through its serial output (e.g. to printer) or that it is en/decrypting.

x. **CONVERSION CHARACTERS . OO + PRESS RETURN**
Appears after pressing **ON/STOP + 'K'**, and prompts you to enter the conversion characters and code desired.

O RECOVERY/CANCELLATION OF INSTRUCTIONS

1. If a display message or prompt appears because you pressed the key concerned by mistake, you can 'recover' or return to your previous position by pressing another key or **ON/STOP**. Where the message requests you to enter a figure or text, you should only cancel the instruction by pressing **ON/STOP**.

2. To interrupt processes such as transmit etc., press **ON/STOP**. The PX will stop processing and revert to the position you were at before you gave the instruction.

P CONNECTING OTHER PRINTERS TO THE PX

a. Connect the cable supplied into the 3.5 mm socket on the left of the PX.
b. Connect the 3 open leads to the printer terminal as indicated in appendix IV section R and your printer's manual.
c. Use the PX keyboard in the same way as indicated for the PXP printer (section K).

Q ADAPTING THE PX TO PRINTERS WITH NON STANDARD CHARACTER CODES.

With some printers, what is actually printed will not be exactly the same as what you have entered into the PX. This is because some of the printer's characters have been coded differently than those of the PX.
To overcome this you can 'reprogram' up to 12 of the PX keys to correspond with the coding in the printer. You will require an ASCII character-coding table for your printer.

1. TO 'REPROGRAM' PX KEYS

a. For the letters, figures and punctuation marks which you will be using frequently, use the character-code tables of the printer and of the PX to identify where the 2 units use different 'hexadecimal' codes for the same character.
b. Make a list of the characters and codes concerned.
c. Press and hold down **ON/STOP** + **K**.
d. Release first **ON/STOP then** + **K**. Display shows **CONVERSION CHARACTER . → OO + RETURN.**
e. Press the PX key for the first character concerned (from the list you have made).
f. Press the code number from your table. Display shows **CONVERSION CHARACTER . → OO + RETURN**
g. Press **RETURN**.
h. Repeat steps e. thru g. for all characters concerned (maximum 12).
i. When you have finished your conversions, press **ON/STOP**.

This same 'conversion character' feature on the PX enables you to instruct an external printer to carry out special instructions such as underline. This is done with so-called printer control codes. These codes should be given in your printer manual.

2. TO SET PRINTER CONTROL CODES

a. Check in your printer manual the hexadecimal code for e.g. underline.
b. Press and hold down **ON/STOP** + **'K'**.
c. Release first **ON/STOP** then **'K'**. Display shows **CONVERSION CHARACTER.→ OO + RETURN.**
d. Select any key on the PX which you will not require and press that key (using **SHIFT** if necessary).
e. Type in the hexadecimal value shown in your printer manual.
f. Press **RETURN** Display shows **CONVERSION CHARACTER . → + RETURN.**
g. Repeat steps d. thru f. for each printer instruction you wish to include.
h. When complete, press **ON/STOP**. When you press the 'converted character' in text entered into your PX, this will now provide the desired instruction to the printer.

R TECHNICAL DATA

APPENDIX I - PX AUDIO TRANSMISSION FORMAT

1 start-bit
8 data-bits, LBS first
1 parity-bit (even)
2 stop-bits
MARK = 1300 Hz, SPACE = 1700 Hz
MARK = 1, SPACE = 0

Header:
300 baud
transmission starts with a 2 second MARK, followed by:
Bloc-number, most significant byte first (in case of encrypted text, size + 32768)
baud-rate of data, one byte:
Low speed = 300
Normal = 600 (default)
High speed = 1200
end of header: 0,5 sec MARK
any parity-error, or any unacceptable data will restart the reading process.
Receiver waits for 0,5 sec MARK.

Data:
text is divided into units of 8 bytes plus a vertical parity byte.
Blanks are added to the last unit whenever necessary.
Even parity is used. End of transmission: 1 second MARK.
Frequencies are complying with CCITT V 23 Standard.

APPENDIX II - PX SERIAL DATA OUT FORMAT

1 start-bit
7 data-bits
1 parity-bit (even)
2 stop-bits
baud rate: 1200
logic 1: −5 V (plm 10 %)
logic 0: +5 V (plm 10 %)
busy (handshake): 0,8 V max.
ready (handshake): 2,0 V
Data levels are complying with RS 232 C and V 24 Standards.

APPENDIX III

The Coding / Decoding system used in the PX 1000.
Whenever a text is 'encrypted', all characters in the PX memory are transformed into numbers that have absolutely no discernable meaning - except for a PX with the right **KEY** entered!
Important is, that the encrypted text itself contains no clues whatsoever to find the right **KEY**.
There are over 72.057.590.000.000.000 possible different **KEYS**.
At the present time, and in the foreseeable future, it is not feasible to run a program -on any computer- that tests all these **KEYS** for clues to what the encrypted data might represent: all possible **KEYS** have to be tested one by one. This tedious process wil prove to be an impossible (too lengthy and costly) job.
That is why this method of encryption is chosen as an Industry Standard by the U.S. Nat. Bureau of Standards: The Data Encryption Standard.

The encryption algorithm used in the PX was tested according to the instructions set out in the U.S. National Bureau of Standards Special Publication 500-20, and found compatible with the Standard.

ASCII CHARACTER CODES

DECIMAL	HEX	BINARY	CHARACTER	DECIMAL	HEX	BINARY	CHARACTER
32	20	0100000	SPACE	49	31	0110001	1
33	21	0100001	!	50	32	0110010	2
34	22	0100010	"	51	33	0110011	3
35	23	0100011	#	52	34	0110100	4
36	24	0100100	$	53	35	0110101	5
37	25	0100101	%	54	36	0110110	6
38	26	0100110	&	55	37	0110111	7
39	27	0100111	'	56	38	0111000	8
40	28	0101000	(	57	39	0111001	9
41	29	0101001	)	58	3A	0111010	:
42	2A	0101010	*	59	3B	0111011	;
43	2B	0101011	+	60	3C	0111100	<
44	2C	0101100	,	61	3D	0111101	=
45	2D	0101101	-	62	3E	0111110	>
46	2E	0101110	.	63	3F	0111111	?
47	2F	0101111	/	64	40	1000000	@
48	30	0110000	0	65	41	1000001	A

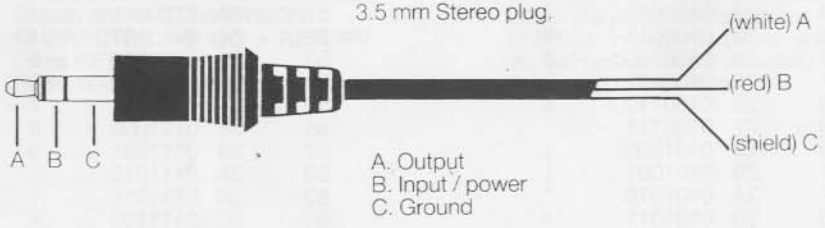
DECIMAL	HEX	BINARY	CHARACTER
66	42	1000010	B
67	43	1000011	C
68	44	1000100	D
69	45	1000101	E
70	46	1000110	F
71	47	1000111	G
72	48	1001000	H
73	49	1001001	I
74	4A	1001010	J
75	4B	1001011	K
76	4C	1001100	L
77	4D	1001101	M
78	4E	1001110	N
79	4F	1001111	O
80	50	1010000	P
81	51	1010001	Q
82	52	1010010	R
83	53	1010011	S
84	54	1010100	T
85	55	1010101	U
86	56	1010110	V
87	57	1010111	W
88	58	1011000	X
89	59	1011001	Y
90	5A	1011010	Z
91	5B	1011011	[
92	5C	1011100	\
93	5D	1011101	]
94	5E	1011110	Ü
95	5F	1011111	←
96	60	1100000	£

DECIMAL	HEX	BINARY	CHARACTER
97	61	1100001	a
98	62	1100010	b
99	63	1100011	c
100	64	1100100	d
101	65	1100101	e
102	66	1100110	f
103	67	1100111	g
104	68	1101001	h
105	69	1101001	i
106	6A	1101010	j
107	6B	1101011	k
108	6C	1101100	l
109	6D	1101101	m
110	6E	1101110	n
111	6F	1101111	o
112	70	1110000	p
113	71	1110001	q
114	72	1110010	r
115	73	1110011	s
116	74	1110100	t
117	75	1110101	u
118	76	1110110	v
119	77	1110111	w
120	78	1111000	x
121	79	1111001	y
122	7A	1111010	z
123	7B	1111011	ä
124	7C	1111100	ö
125	7D	1111101	↑
126	7E	1111110	ü
127	7F	1111111	Ø

DECIMAL	HEX	BINARY	CONTROL CODES
0	00	0000000	PAUSE
1	01	0000001	CTRL A
2	02	0000010	Å
3	03	0000011	å
4	04	0000100	Ä
5	05	0000101	Ö
6	06	0000110	CTRL F
7	07	0000111	CTRL G
8	08	0001000	CTRL H
9	09	0001001	CTRL I
10	0A	0001010	CTRL J
11	0B	0001011	CTRL K
12	0C	0001100	CTRL L
13	0D	0001101	CR

DECIMAL	HEX	BINARY	CONTROL CODES
14	0E	0001110	CTRL N
15	0F	0001111	CTRL O
16	10	0010000	CTRL P
17	11	0010001	CTRL Q
18	12	0010010	CTRL R
19	13	0010011	CTRL S
20	14	0010100	CTRL T
22	16	0010110	CTRL V
23	17	0010111	CTRL W
24	18	0011000	CTRL X
25	19	0011001	CTRL Y
26	1A	0011010	CTRL Z
27	1B	0011011	ESC

APPENDIX IV - SERIAL CONNECTION



A. Output
B. Input / power
C. Ground