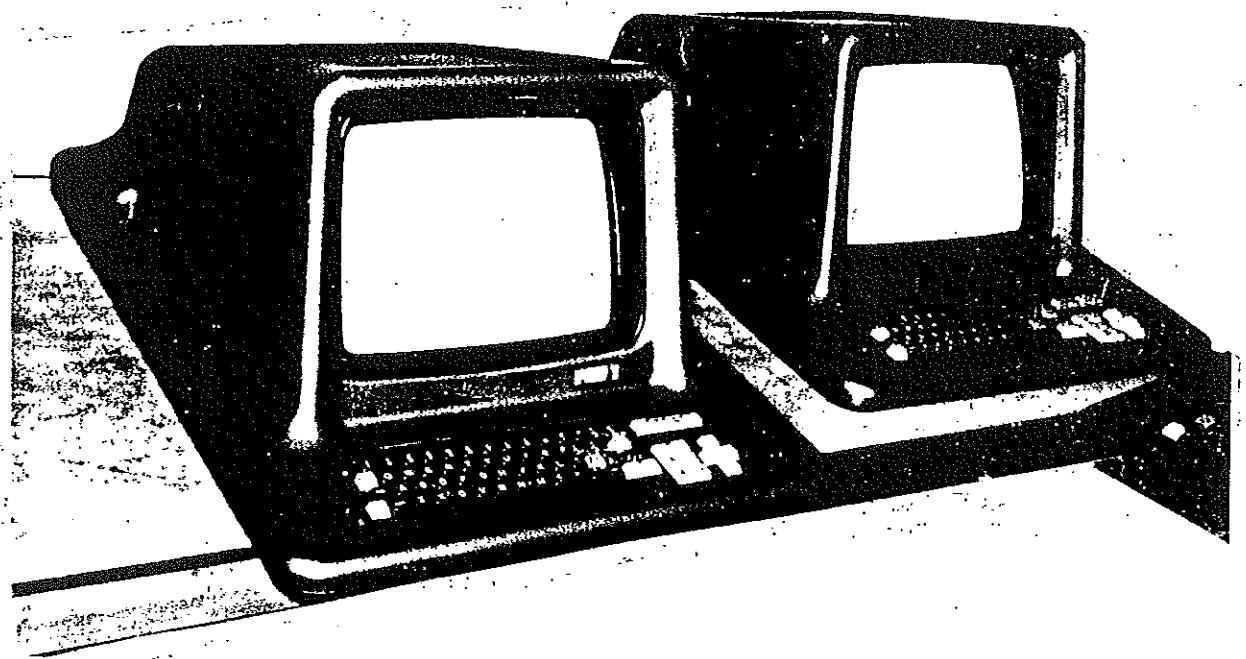


# **POLY SYSTEM OPERATING MANUAL**

**ISSUE 1.3**

# P O L Y      S Y S T E M .

## OPERATING MANUAL



Issue 1.3  
February 1982

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## 1. HARDWARE DESCRIPTION

### 1.1 Hardware Units

A POLY system has the following units:

- i disk control unit
- ii printer
- iii one or more POLY units

#### 1.1.1 The Disk Control Unit

This unit controls the POLY system and houses the floppy disk facility.

All POLY units link to the disk unit via a communications cable.

The printer connects directly to the disk unit. The function of the disk unit is to provide, for all POLY units access to a single disk storage system and to a printer.

Requests for disk access (both read and write) are queued by the disk unit. Processing of the queue is designed to provide an even distribution of service time to all requests currently on the queue.

The disk unit also automatically controls and records the status of the network system.

Specifically, POLY units may be added or removed from the system without the system being powered down. This enables faulty units to be removed from the system without affecting the remainder of the system.

The disk unit houses one eight inch, floppy disk, labelled 0.

If a double disk unit is available, this houses disk drive #1.

On the front of the control unit there are several indicator lights (see diagram).

- i On the door catch of each drive, there is a small red light. Whenever information transfer is being carried out, the light on the door catch of the appropriate disk drive glows.

No attempt to remove a disk should be made when one of these lights is glowing.

- ii On the top front of the cover case, there are two lights which indicate network activity.

Control of the disk unit is limited to:

- i an ON/OFF switch
- ii insertion/removal of the subject disk from drive 0 and #1

The ON/OFF switch is located on the rear panel of the unit. A neon lamp indicates when the power is switched on.

The manipulation of the disk units is covered in detail later in this section.

Only three external connections are permitted to the disk unit. These are:

- i 230v power source
- ii printer
- iii communications link

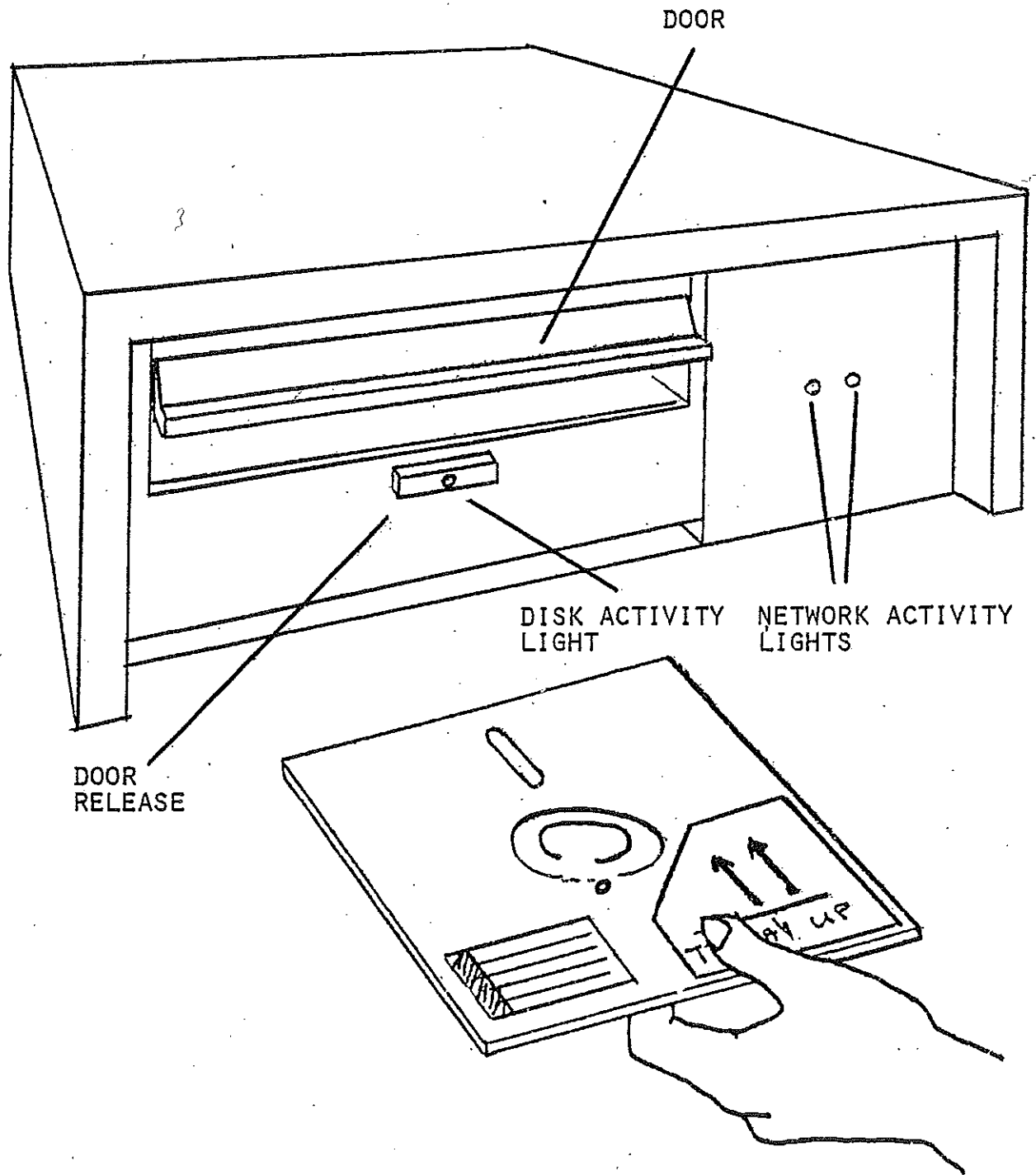
Connection of the 230v power source is via the attached cable and plug.

An ON/OFF switch on the rear panel controls the power supply. When the power is switched on, a neon lamp glows. This lamp is located next to the power switch. A power fuse is also located on the rear panel. The fuse is removed by unscrewing the plastic cover and withdrawing the fuse.

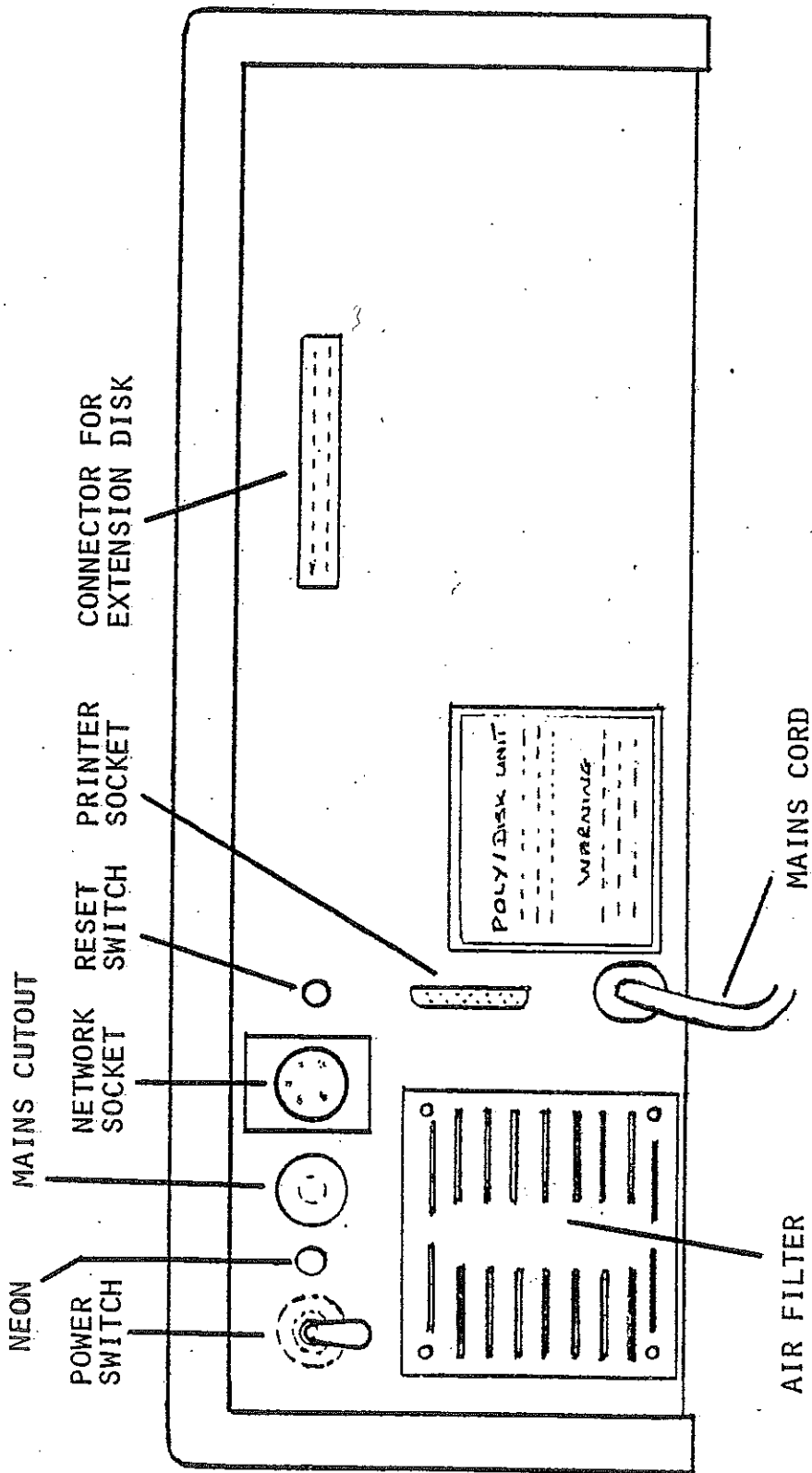
Connection of the printer is via a ribbon cable and oval shaped, multi-pin connector. The connector is a push fit and the shape excludes any possibility of incorrect orientation.

Connection of the network cord is standard in that all POLY units have an identical facility. The connector is circular and has a locking key to prevent accidental withdrawal and incorrect orientation.

The first computer in the system must connect to the disk unit.



POLY1 DISK UNIT



POLY DISK UNIT (BACK)

### 1.1.2 The Printer

A single printer is shared by the system under the control of the disk unit.

The printer links to the disk unit via a flat ribbon cable and an oval connector.

A range of printers may be connected directly to the system. For the printer supplied, a separate manual is included and covers:

- i paper threading instructions
- ii instructions for changing the ribbon
- iii the printer functions such as:
  - a form feed
  - b advance to top of form
- iv power connection, power switch and fuse facilities



### 1.1.3 The POLY Units

Each POLY unit consists of a colour screen and keyboard enclosed in a single case.

The POLY may be operated on its own or, more usually, as part of a network centred in a master disk unit.

In particular, interfacing with peripheral units such as printers and disk storage devices may only be achieved via the disk control unit.

The screen offers full colour together with text, high resolution graphics or mixed text and graphics, as a means of material presentation.

The keyboard is a standard QWERTY keyboard together with a range of special purpose keys (see diagram). The special keys are as follows:

- |                              |   |
|------------------------------|---|
| ENTER                        | - these keys must be used to terminate any line of input  |
| <u>EXIT</u><br><u>BACK</u>   | - Exit - depressing the key, using the SHIFT enables the exit facility. It will terminate the program and return to the menu screen.<br><br>Back - Depressing the key without shift enables the user to return to the previous screen display |
| <u>REPEAT</u><br><u>NEXT</u> | Next - Is used with the shift and enables the user to go forward to the next screen display<br><br>Repeat - Is used without shift to repeat the current screen exercise.  |
| PAUSE                        | - using this key causes the program currently executing to be interrupted. The program may be restarted by pressing any key.  |
| SHIFT                        | - keys which carry double captions require the use of this key to activate the "upper" caption. The SHIFT key must be held down while the key with the required upper caption is depressed.   |
| CAPS LOCK                    | - this key locks when pressed but will be released when pressed again. When depressed all alphabetic characters will appear in upper case.  |
| ARROW KEYS                   | - these four keys have two functions:<br><br>a movement of the cursor<br><br>some user programs permit entry of text. The use of these keys permits   |

the positioning of the cursor to correct the text. When programming in POLYBASIC, or when making any input in response to an input prompt, the left and right arrow keys permit corrections to be made.

EDIT KEYS - these keys are used for editing either text or program source code. When editing of text under software control is being carried out, the use of the keys is defined by the software itself.

Line	Line	
INS	DEL	
Char	Char	)

Line Insert and Delete are used with shift key; Character Insert and Delete are used without the shift key.

If the use of the keys are not specified by a user program, the keys are inactive.

CAL - depressing the CALC key using the shift makes the computer useable as a calculator. This facility is available during the use of standard software. When depressed, the user program is interrupted and one portion of the screen is then cleared to show the operands of the calculation.

Once the calculation is completed, the user presses the CALC key again and the user program is restored and continued.

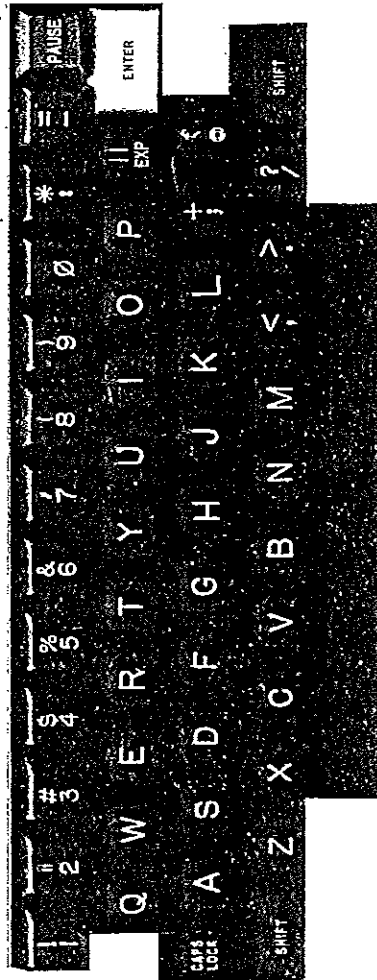
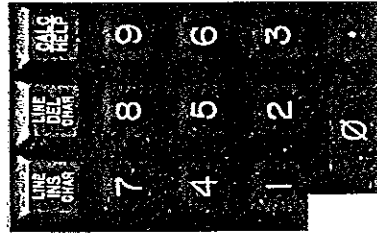
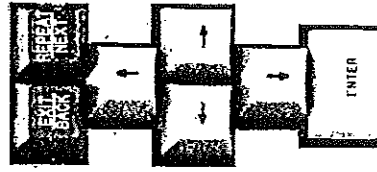
The POLY unit has all external connections located on the rear panel. These are:

- i 230v power source
- ii communications link

Connection of the 230v power source is via the attached cable and plug.

An ON/OFF switch on the rear panel controls the power supply. When the power is switched on, a neon lamp glows. This lamp is located next to the power switch. A power fuse is located on the rear panel. The fuse is removed by unscrewing the plastic cover and withdrawing the fuse.

Connection of the network is via a circular connector. The withdrawal and incorrect orientation.



## 1.2 The Network

The POLY system is designed so that the computer units all share a disk storage device and a printer. To enable this, all POLY units must link to the disk unit. This linking is achieved by linking from POLY unit to POLY unit to form a chain or network. The first POLY only links to the disk unit.

POLY units may be added to or removed from the network at any time. To carry out the removal or addition, the chain must temporarily be broken. Each POLY has a cord terminated by a plug which plugs into a socket in the previous POLY on the chain.

Each POLY has a socket which accepts the link from the next POLY in the chain. The link cord and plug is permanently attached to the POLY (a POLY may be plugged to itself without any damage!).

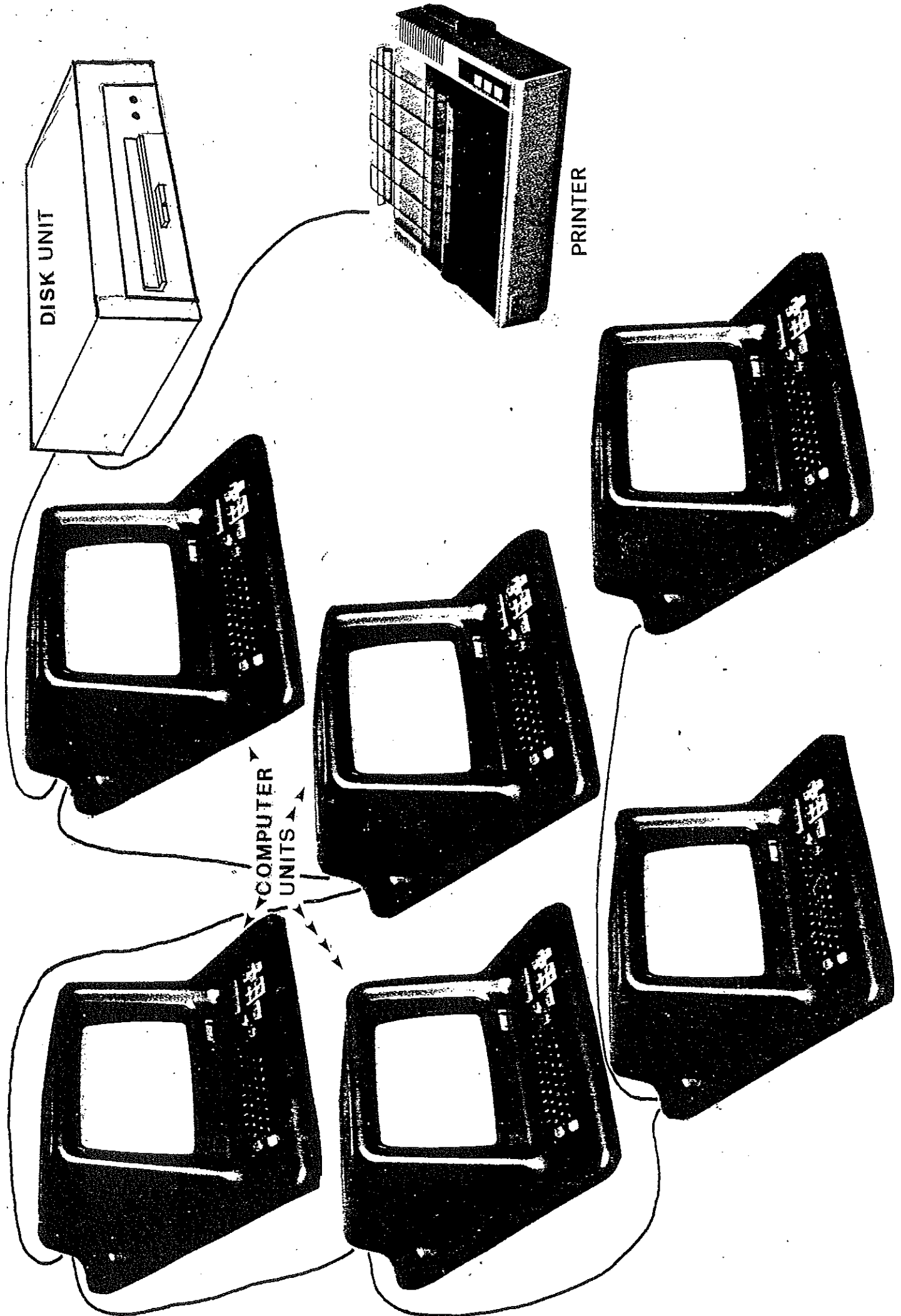
Requests for information from the disk are controlled by the disk unit. If many requests are received, service times increase and the units involved cease to be active.

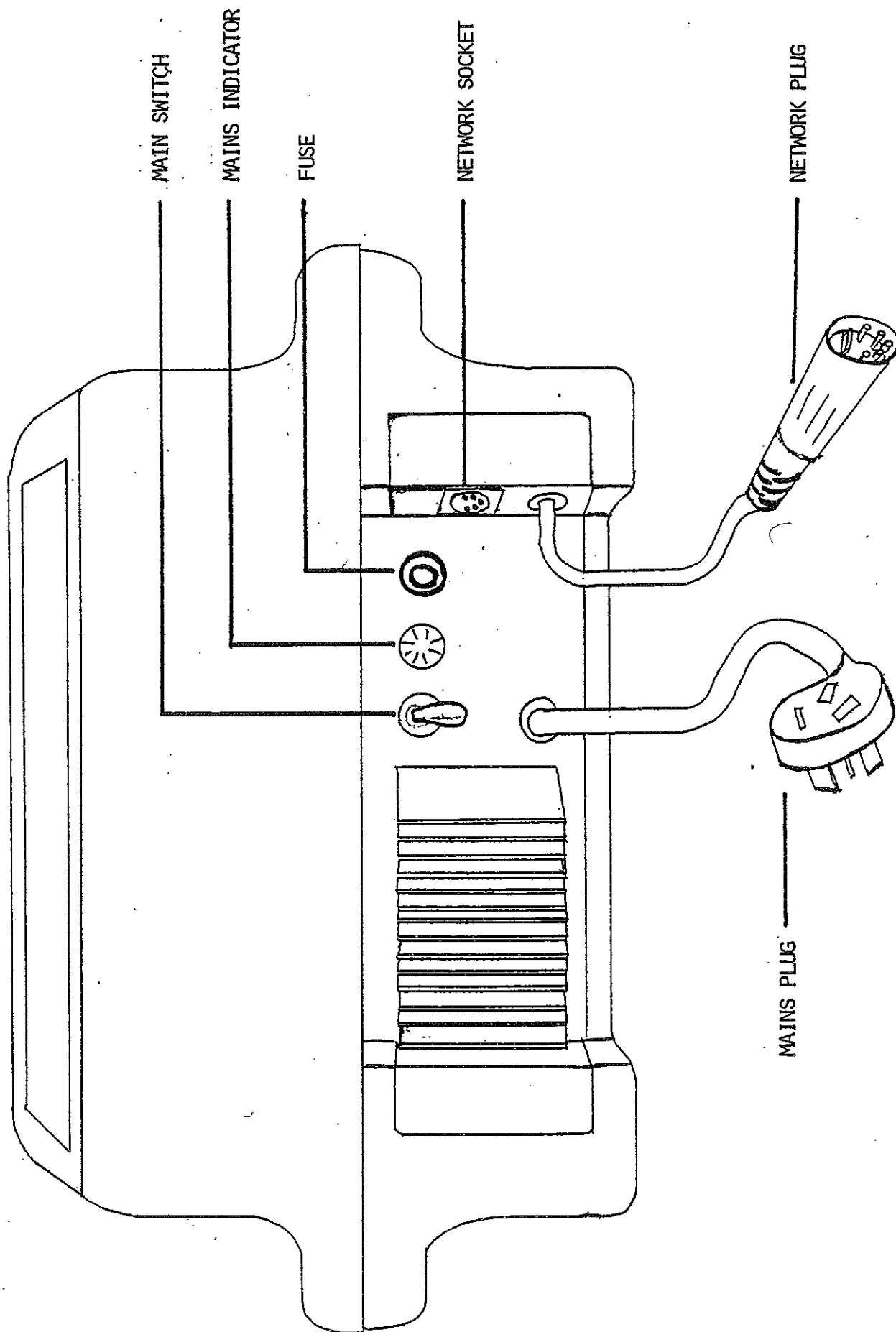
Requests for use of the printer are satisfied by storing a copy of the printed output on disk (ie. the material is spooled).. The information is then printed from the disk by the disk unit.

Whenever information is being passed between the disk unit and the connected POLYs, the network activity lights on the front of the disk unit will glow brightly.

If the network is broken while activity is taking place, information may be lost. Full, automatic recovery in this situation is not provided and the POLYs involved may need to LOG ON to restart.

The network is controlled by the disk unit. The control begins when the disk unit is switched on and the SYSTEM disk is inserted into drive 0. The disk unit then asks for details of the date and the time from all POLYs currently switched on. Only one POLY need provide this information. The information is entered as part of the LOG ON procedure (see section 3).



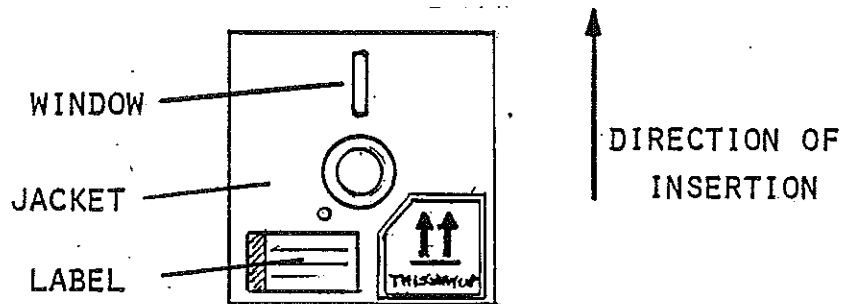


### 1.3 Use of Disks

#### 1.3.1 General Background

The disks used by the system are eight inch, double sided units.

Each floppy disk is enclosed in a special paper jacket. Access to the recording surface is via a cutout window in the jacket.



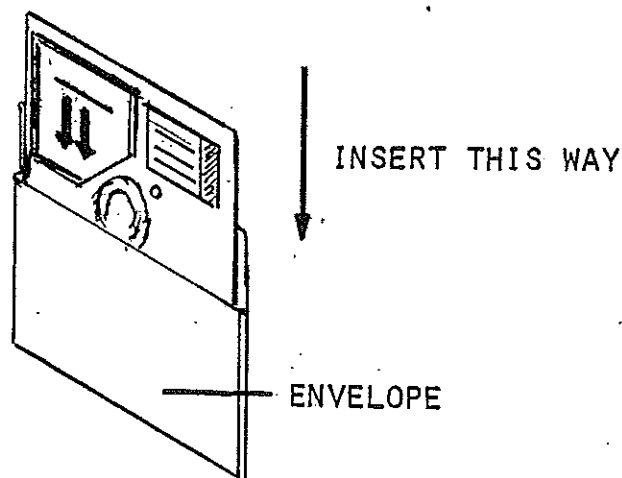
To rotate the disk within the jacket, access to the centre of the disk is provided by a central, circular cutout in the jacket.

A small cutout offset and close to this central cutout provides timing information.

All cutouts on one side of the jacket, have corresponding cutouts on the reverse side.

### 1.3.2 Storage and Labels

When using the disks, never touch the exposed recording material with fingers and avoid any dust settling on the surface. In particular keep the disk in the supplied paper envelope, inserting the disk into the envelope so that the oval cutout enters first (see diagram) and the label faces "outwards".



The label on the disk jacket:

- a provides identification of the disk
- b provides assistance in the orientation of the disk for insertion into the drive.

NEVER write on this label with ballpoint pen or pencil as these will damage the disk surface.

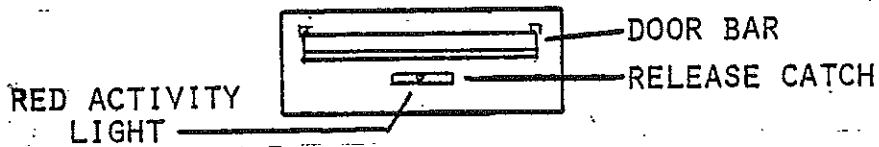
To mark the label use felt pen.



### 1.3.3 Using the Drives

Follow the following rules:

- 1 Ensure that the red light on the release catch is extinguished.



- 2 Depress the release catch
  - the disk door will open
  - any disk currently inserted will be ejected outwards (place this disk in its paper envelope and put carefully away before proceeding further)
- 3 Remove the required disk from its envelope.
- 4 With the label uppermost and the oval cutout facing the disk slot, gently insert the disk into the drive.

The disk is fully inserted when:

- a none of the disk jacket is exposed'
- b gentle resistance is felt to the insertion process.

NEVER force a disk into a drive. If undue resistance is felt draw the disk out and start again.

- c a faint click is heard.
- 5 Now close the disk door by moving the door downwards until an audible click is heard. The door is closed when it stays closed.

## 2. SETTING UP THE SYSTEM

### 2.1 General Points

When setting up the system, the following general points should be considered:

- a furniture within the room will be required by the system as follows:
  - 1 desk/POLY unit
  - 1 desk for the disk unit
  - 1 desk for the printer
- b the furniture must be positioned to allow for:
  - i access to 230v power sources
  - ii linking of POLYs via the network cable.  
(most cables are 2m long)
  - iii pupil participation, especially where more than one pupil per machine is required
  - iv classroom usage other than that involving the microcomputer
  - v room lighting - avoid direct sunlight falling across the screen
  - vi positions of cords and cables. Any cords which cross a walkway must be taped to the floor with wide masking tape or be run up and over the walkway in the form of an "arch" using tape to hold the cords in place.
- c the disk unit must be placed in the most dust free position in the room. In particular keep the disk unit well away from blackboards and associated chalk dust.

## 2.2 Setup Steps

To set up the system:

- 1 position furniture
- 2 place all units as required
- 3 link the first POLY to the disk unit
- 4 link<sup>a</sup> each POLY to the "one before it" in the network
- 5 connect the printer to the disk unit
- 6 connect all units to a 230v power source (use distribution boxes and extension cords).

NOTE: a system of ten POLYs will run from a single, 230v, 10amp outlet

- 7 ensure that all cables are placed to prevent snagging - use tape to attach cables to floor etc.

### 3 TURN ON PROCEDURE

#### 3.1 General Points

When turning ON the system, the following general points should be considered:

a the steps outlined in section 3.2 give a suggested "standard approach". Minor variations can be introduced without damage to the system. It is strongly recommended that the steps given be followed.

b system turn ON may be required:

- i at the beginning of a work session
- ii after a system failure
- iii after a power failure

IN ALL THREE CASES it is strongly suggested that the steps given in section 3.2 be followed.

c the turn on procedure involves:

- i turning ON power switches
- ii insertion of disks
- iii fulfilling the LOG ON requirements

The first two steps are covered in section 1.  
The LOG ON procedure involves entering:

- i the date in the form DD,MM,YY. (Note the commas are optional)
- ii the time in the form HH,SS,DD (again, commas optional)
- iii the user initials and password

When logging on, only one computer should be active so as to avoid contention of several units attempting to enter different times (and possible dates!) at the same time.

#### 3.2 Turn on Procedure

To turn ON the system

- a ensure that all network cables are correctly linked
- b ensure that all units are connected to a 230v supply
- c ensure that there is paper in the printer
- d ensure that all units are switched off (check the switch at the rear of each unit)

- e turn on the 230v wall outlet supplies
- f turn on each computer - the magenta LOG ON screen will appear
- g turn on the printer
- h turn on the switch on the rear panel of the disk unit
- i insert the subject disk in drive 0, making sure that the side with the label faces up.
- j close drive door
- k when the 'scratching' has ceased from 0 drive, LOG ON to the POLY nearest the disk unit:
  - i type first name, press ENTER key
  - ii type surname, press ENTER key
  - iii enter date and time as requested
- l when date and time are entered and the 0 drive ceases to be active, the users on the remaining computers may LOG ON
- m ALL units will then display MENU

To Broadcast

- a follow turn ON procedure, steps a to k on first unit only.
- b when MENU screen appears, type the letters BC (in capitals) - the screen will return to LOADING and then the MENU will again appear
- c select program in the usual manner
- d all units will then go back to LOG ON screen and load the program
- e when loaded the LOG ON screen will flash PROGRAM LOADED
- f all users may then LOG ON in the usual manner

To Select BASIC

(while other programs are running)

Type PB (in capitals) from the MENU

## 4 TURN OFF PROCEDURE

### 4.1 General Points

When turning the system OFF, the following general points should be considered:

- a the steps outlined in section 4.2 give a suggested "standard" approach. Minor variations can be introduced without damage to the system. It is strongly recommended that the steps given should be followed.
- b the need to turn OFF the system arises in the following situations:
  - i at the completion of a work session
  - ii after a system failure
  - iii after a power failure
- c the turn OFF procedure involves:
  - i fulfilling the system requirements - either return to MENU or LOG OFF
  - ii removal of disks from the drives
  - iii turning power switches on all units OFF

Steps ii and iii are covered in section 1. The LOG OFF procedure requires the user to type the letters LOG OFF (letter by letter) followed by the ENTER key. This procedure is only required when:

- i power OFF is being actions before a POLY(s) have displayed the MENU
- ii the machine has been used for programming in BASIC

### 4.2 Turn Off Procedure

To turn the system off:

- a press the EXIT key on all POLYs
- b when all units show either the MENU or the magenta LOG ON screen, open the door of the disk drive by pushing the door release bar
- c remove the disk from drive
- d turn OFF the disk unit
- e turn OFF each POLY unit
- f turn OFF the 230v wall outlet supply

4.3

To Change Disk  
(with one drive system)

- a if you are in the middle of a program, press (BREAK) key and MENU from new disk will load
- b if you are in MENU from old disk, type CD (in capitals) and the new MENU will load

NOTE: If CD is not typed and a pupil selects a program, disk error 4 will occur and the pupil will have to type RUN "MENU"

## 5 FAULT ANALYSIS AND REPORTING

### 5.1 General Description of Faults

There are three levels of faults. These are:

- a faults, both mechanical and electronic, with one or more units (hardware or network faults)
- b faults of a processing or presentation of materials nature which arise from errors in the supplied programs
- c external faults such as power failure to the system

In a and b corrective action is required. To accomplish this corrective action it is imperative that an accurate report of the fault is submitted. A system logbook is provided with the system and details of how to use this book are given later in this section.

The description of the faults and the corresponding corrective action described in this section may involve turning the system either OFF or ON. Where these procedures occur, the turn OFF and ON procedures given in 3.2 and 4.2 should be followed. Clearly when complete power failure has occurred, some steps in the turn OFF procedure cannot be followed. Specifically, typing the BREAK key will have no effect, nor can the user wait until the POLY is displaying the MENU.



## 5.2 General Approach to Fault Analysis

The nature of a fault may be isolated quickly by applying some simple checks. These are:

- a is the fault a result of power failure?
- b is the fault a hardware problem?
- c is the fault a network problem?
- d is the fault a program problem?
- e does the fault affect all units in the system or just one unit?

Details of how these checks may be implemented are given in the following sections.

### 5.3 Power Failure

Power failure may be local (ie it effects one or more system units) or general (ie it effects all system units)

#### 5.3.1 Power Failure Analysis

The steps are:

- 1 determine if failure is local or general.
  - check the neon lights on the rear panel of each unit
  - check the room lights
- 2 if the failure is general, then
  - if the room lights are on and the system is without power

##### CHECK

- the main system supply cord is plugged into the wall and the wall outlet switch is ON
- that the larger of the two buttons on all distribution boxes are pushed down
- the distribution boxes are connected to the wall outlet
- that the fuse for the wall outlet is intact
- if the room lights are out and the system is without power, no action to restore the power can be taken

- 3 if the failure is local, then

##### CHECK

- the distribution box to which the units is connected, is connected to the wall outlet
- the units are connected to a distribution box
- that the larger of the two buttons on the appropriate distribution box is depressed
- that the unit(s) fuse is intact (see section 1 for fuse details)

### 5.3.2 Action to Take for General Power Failure

The steps are:

- 1 turn system off as described in section 4.2
- 2 turn on a room light and wait until power is restored
- 3 after the power is restored, wait until any fluctuations have settled (about 2-3 minutes would be sufficient) and then turn on the system as in section 3.2

NOTE: in the case of a general power failure, it is possible for the power to be restored before any of the steps in section 5.3.2 have been actioned. If this happens, the steps in this section should be followed anyway.

### 5.3.3 Action to Take for a Local Power Failure

The steps are:

- 1 turn the affected units OFF
- 2 locate source of failure and restore power supply
- 3 turn affected units ON then:
  - enter name details
  - the MENU will appear and processing may be resumed

#### 5.4 System Seizure

System seizure occurs when one or more units stop processing and remain stopped for a significant length of time. Power to the units is maintained and the screen shows details which do not change. The keyboard is inactive.

##### 5.4.1 System Seizure Analysis

The steps are:

- 1 check the disk activity lights. If these are extinguished for more than 30s and one or more units appear to be inactive, a system seizure has occurred
- 2 if the disk activity lights continue to flash and one or more units appear inactive, a local seizure has occurred.

##### 5.4.2 Action to Take for System Seizure

The steps are:

- 1 check the network cable from the "first" POLY to the disk unit. Restore if this is removed, and processing will automatically resume.
- 2 turn OFF disk unit, then turn ON disk unit. System processing will then resume. Some POLYs may remain seized and if so, they should be switched OFF then ON also.

##### 5.4.3 Action for One or More Seized POLYs

The steps are:

- 1 check the network cable to each POLY (ensure units are not bypassed or plugged to themselves)
- 2 turn the unit OFF and then ON
- 3 enter name details and processing from the main MENU may resume

## 5.5 Using the Log Book

### 5.5.1 General Background

The Log Book is designed to record system faults which require servicing or action remote from the system site.

Specifically it is not necessary to record in the log book details of power failures either general or local. Likewise it is not necessary to record details of incorrect network connection.

Details to be recorded are:

- 1 mechanical or electronic faults (Hardware)
  - eg - key not operative
  - disk light never comes ON
  - paper cannot be fed into the printer
  - broken cable or connector
  - screen will not come on
- 2 network faults (Hardware)
  - eg - system seizes when running a specific program
  - although correctly connected, one or more units are seized
- 3 program faults
  - eg - program will not accept correct calculated answer on screen x
  - programs fails at particular point in processing and an error screen is displayed

In cases 1-3 above only a few examples of the range of possible errors have been given. Log Book recording must be made whenever any errors in these three areas occur.

### 5.5.2 Log Book Details

The Log Book contains copies of a form in triplicate. A copy of this form is to be found at the end of this section.

The form should be completed as follows:

- 1      System Location      -    give the name of the school or institution etc
- 2      Name of User        -    in a school situation this will be the name of the teacher otherwise enter the name of the person using the system at the time the fault occurred.
- 3      Time                -    enter the time at which the fault occurred
- 4      Date                -    enter the date
- 5      Type of fault       -    decide which category the fault fits best
- 6      Number of Units affected      -    give either a number of units or the word ALL
- 7      Identifies of Unit affected    -    each unit carries a unique number. Enter this number or leave blank if all units were affected
- 8      Program Description        -    briefly describe the program being used at the time the fault occurred.
- 9      Program Code           -    if displayed on the screen, enter this on the form, eg PP12TY
- 10     Screen Number        -    copy this from the screen if displayed
- 11     Error in Line Number       -    copy this from the screen if displayed
- 12     Error Number         -    copy this from the screen if displayed
- 13     Description of Fault       -    give as accurate description as is possible of the fault. If the number of the last screen seen cannot be recalled, describe if appropriate the last screen seen.

### 5.5.3 What to Do With Log Sheets

One copy of each completed log sheet remains in the log book itself.

The other copies are removed from the book and sent to the service agent and/or Polycorp Client Liaison Executive. If a hardware fault, one copy is sent to the service agent and the other to the Polycorp Client Liaison Executive. If a program fault, both copies are sent to the Polycorp Client Liaison Executive and direct action will be initiated to remedy the fault. The location and address of the service agent are specified at the time of system installation.

Polycorp address is - Polycorp Client Liaison Executive  
PO Box 3090, Wellington

### 5.5.4 Where to Keep the Log Book

The Log Book should be kept with the machine so that faults as they occur, can be immediately recorded.

Some measure of security over the Log Book should be maintained to prevent it being destroyed or lost.

6

#### SUGGESTED ROUTINE PROCEDURES

Various routine procedures should be followed to ensure the smooth running and use of the system.

- 1 Pupil access to the system should be carefully controlled. Issue of keys to the room should always be controlled by a teacher.
- 2 Smoking and the consumption of food (especially drinks) should be prohibited from the room housing the system.
- 3 Ensure that all cords are placed so that they cannot be tripped over.
- 4 Do not permit pupils to handle power plugs, distribution boxes etc.
- 5 NEVER permit the pupils to operate the disk unit and specifically they should NEVER handle the subject disks.
- 6 Record all faults as described in section 5 and inform the system supervisor within the school so that the copy may be sent to the Service Agent and/or Polycorp as quickly as possible.
- 7 For classroom use, schools should make copies of their master disks. The master disks should then be kept in a secure place.



7

### SELECTING PROGRAMS

The programs offered by the system are stored on the supplied floppy disks. The programs are allocated to the disks by subject so that all the programs for the subject are stored on one disk.

When the subject disk is inserted into drive #0 or #1 and the system switched ON (see section 3.2), a MENU appears on the screens which displays the programs which can be run. The MENU displays only those programs stored on the disk which is inserted in the drive.

The teacher may further limit the range of programs offered in the MENU so that tight control of pupil activity may be maintained.

Initially all disks supplied each have a default MENU which displays all the options available on the disk. The teacher may restrict this range at any time.

MENU selection requires the pupil to move the cursor to the point on the screen which corresponds to the required program. Cursor movement is controlled via the yellow ARROW keys on the keyboard. Once the cursor is positioned, the selection is completed by typing the ENTER key.

Return to the MENU may be achieved by typing the BREAK key.

To permit programming in BASIC, a subject disk called programming is supplied. The MENU for this disk offers only one choice, namely that of programming. To return to the MENU in this case requires the pupil to type

- 1        RUN "MENU"
- 2        Press the ENTER key

8 1. SUGGESTED CONTROL OF DISKS AND SOFTWARE UPDATES

8.1 Control of Disks

The floppy disks are the only medium through which programs may be made available to the system. Because of their portability and ability to be easily damaged strict control of the floppy disks should be maintained at all times.

To achieve this control the following procedure is suggested:

- 1 Three sets of subject disks are kept in the school. One set is kept in a locked cabinet in the room housing the system.  
One set is kept in the school office.  
One set is kept locked in the school safe. This is the master disk from which the other two sets have been copied.
- 2 Only teachers are permitted to handle disks.
- 3 Disks must never be folded, heated, written on, or exposed to strong magnetic fields.
- 4 Disks must never be forced in or out of the drive units.
- 5 Disks must never be "left" in a drive or left "lying around" - a conscious effort must be made to ensure that disks are always put away after use.

G L O S S A R Y

- CPU - Central Processing Unit. The central electronic part of a computer containing the internal storage control unit and arithmetic unit.
- Cursor - A white block on the screen which indicates where any key which is pressed will be displayed.
- Disk Unit/Control Unit - A unit which controls the POLY system and houses the floppy disk facility
- Edit to - To transform data into some desired form, usually for output.
- Floppy Disk - A circular flexible plastic disk on which data is stored magnetically.
- Graphics - Non-alphabetic data:  
Chunky graphics - teletext graphics  
Fine graphics - utilise 240 or 480 dots across the screen
- Hardware - Physical computer equipment as opposed to software or user programs. Includes peripheral devices.
- Input - Information transferred from keyboard or disk into the internal storage of a data processing system.
- Interface - In the Poly system, the plug or cord joining 2 units.
- LOG-ON - Procedure followed by the user in initiating session with Poly 1.
- LOG-OFF - To terminate a session on Poly 1
- Menu - List of programs (topics) contained in a subject module
- Micro-Computer - A very small computer based on micro-processors
- Network - Communications and cables which link POLYs to disk unit
- Operating System - The computer software providing an interface between the users program and the disk unit for the purposes of normal operation.

Output	- Data sent out of computer to an external storage area, ie to disk, printer or screen.
Printer	- A peripheral device which produces at least one line of print during each cycle of its action.
Program	- The complete sequence of instructions and routines necessary for a computer to carry out a given task.
Software	- The general term for computer programs including compilers and operating systems.
Storage	- Synonym for store:- a device in which data can be recorded, retained and later recovered as required.
Teletext	- Type of character generator used in POLY 1 which allows not only printing of text but also colour, flashing, double height, inverse video and a coarse form of graphics (chunky graphics).
Text	- Alphabetic data
User	- Person using the POLY computer, either in systems or standalone mode.