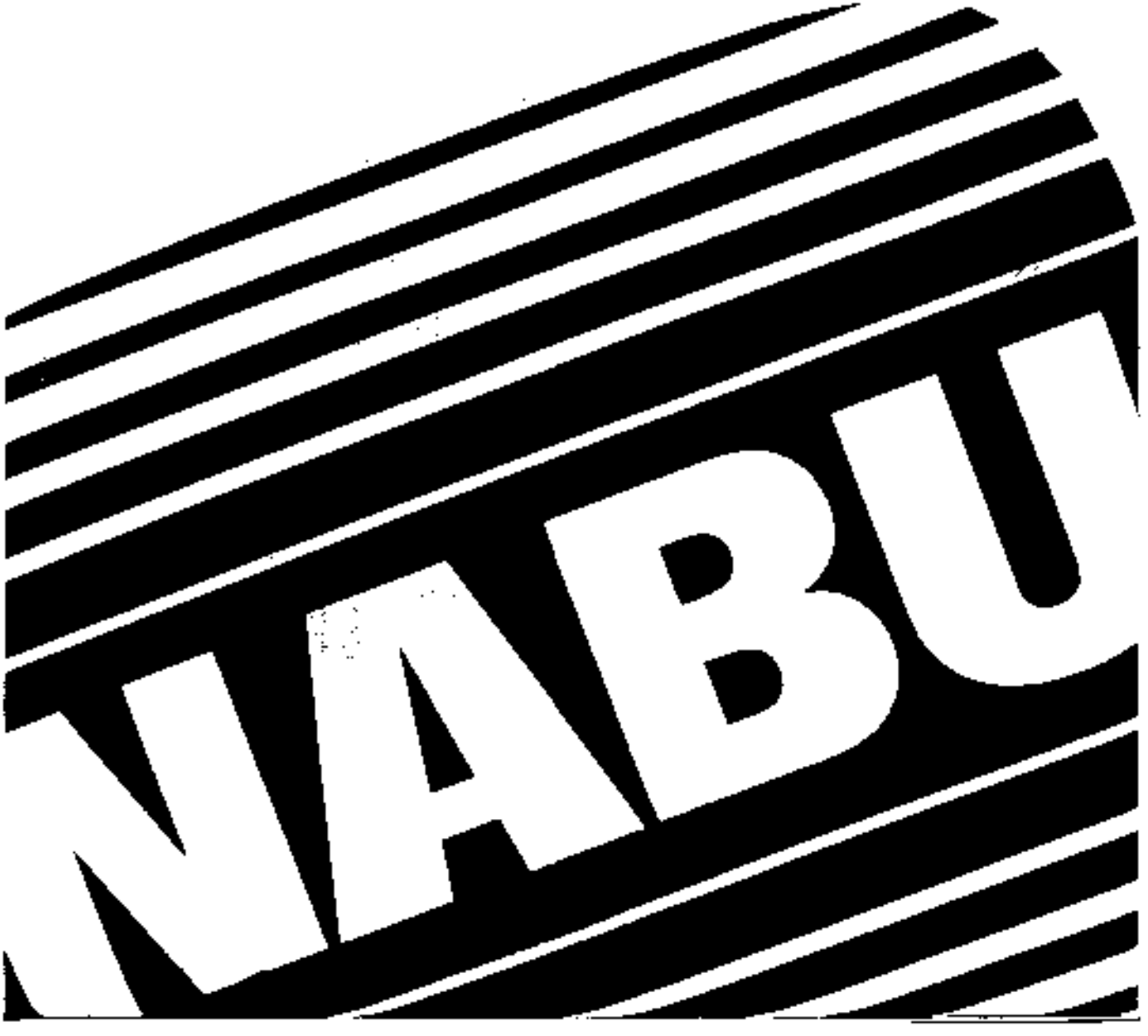

NABU


NABU

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1. SYSTEM OVERVIEW

1.1 Introduction

Congratulations! You have just purchased the NABU 1100 Computer, a simple and efficient computer system. It will be of great assistance to you, the user, but it's important to first become comfortable with it. Don't worry, you don't need to be an expert, or even mildly familiar with computers to use the system. All you need is the ability to read and the willingness to learn. This manual will do the rest!

The NABU 1100 is a Canadian product. It is manufactured by leading engineers who use only the highest quality components and drive systems. This is particularly useful to you in the area of servicing, since your machine can be serviced much more quickly and efficiently, and parts can be easily obtained.

Your new system is extremely versatile and has been designed to adapt itself to all types of business applications, such as Accounts Payable and Receivable, Payroll, Purchasing and Receiving, and Word Processing. Word Processing alone is invaluable, as it reduces the time and cost of paperwork, while increasing productivity. The Accounting packages, which include such functions as Job Costing, Order Entry and Inventory, can take care of your bookkeeping right up to Balance Sheets and Profit/Loss statements.

As well as being versatile, your system is expandable and can grow with your company as the need arises.

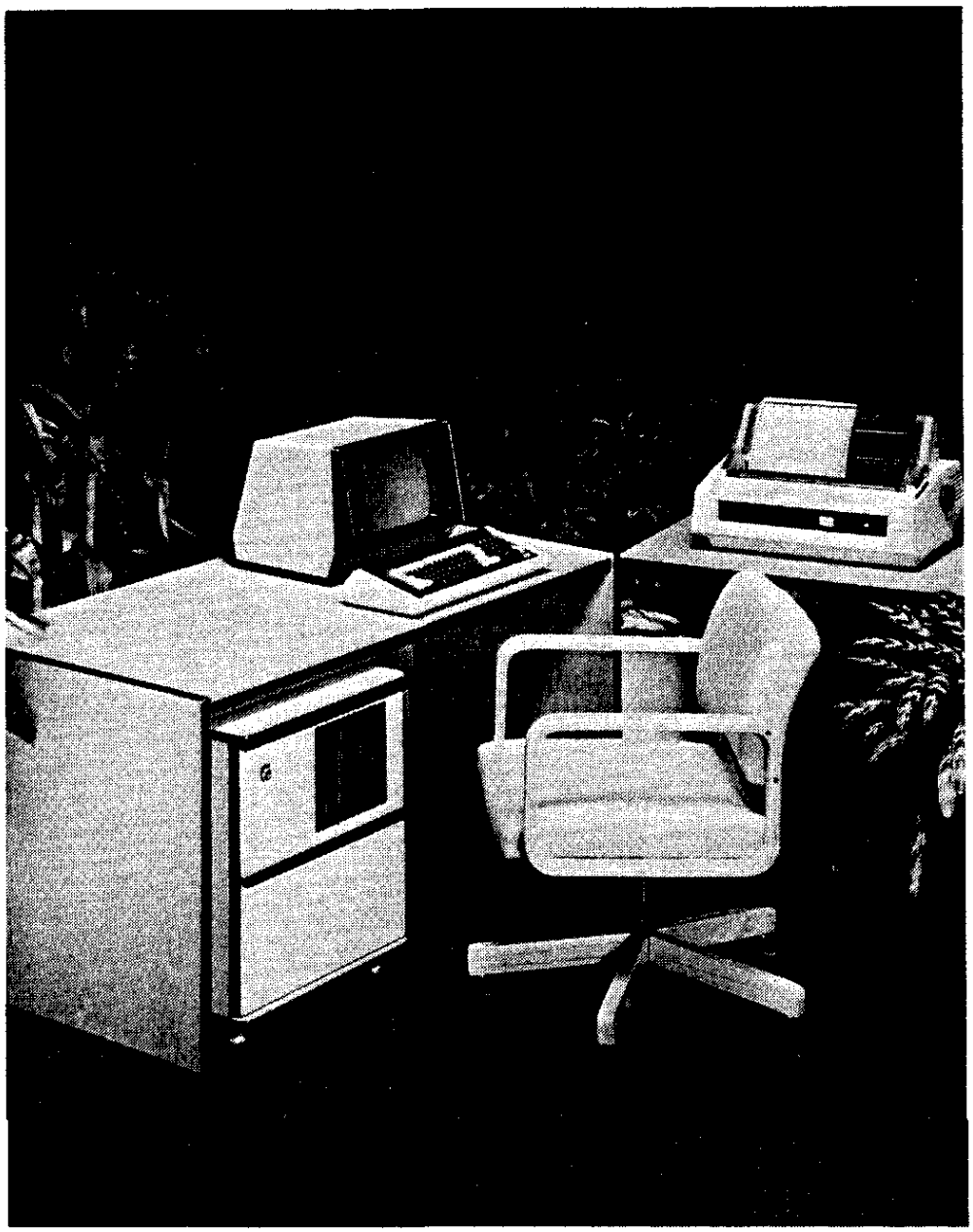

Figure 1.1-1

There are three main pieces of equipment that form your computer system (See Figure 1.1-1). The first is the computer itself, which is the "brains" of the system. It comes housed in a cabinet which has casters on it for manoeuverability, and resembles a small piece of furniture. This part of the system contains the disk drives, into which the "Floppy Diskettes" are inserted. The diskettes, which resemble flexible 45 RPM records, have information stored on them magnetically. From there, the information can be displayed or printed when required.

The next piece of equipment you will be using with the system is the keyboard and terminal (CRT). Here, information is typed into the computer via the keyboard (which resembles a typewriter keyboard) and is displayed on the terminal (screen) as it is typed. This provides for easy editing and fast correction of data. Once the information is complete, it can be permanently stored on the diskettes and recalled at any time.

Finally, the printer (which you may have purchased as an option), has the capacity to provide printed copies of any information you have stored on your diskettes.

The purpose of this manual is to guide you in using the NABU 1100 while introducing you to its basic operating system. Although we assume you will be buying additional programs to use with this system, the following manual should serve as a friendly and general introduction to the world of computers.

1.2 Operational Considerations

Now that you have bought your NABU 1100 System, it's time to make a few decisions. Before the system is unpacked and set up, you should give some consideration as to where you would like it placed. The following section identifies the major requirements of the system to help you take care of it, and decide on the best possible location.

The keyboard/terminal part of your system is attached to the computer by an interconnecting cable, which transmits signals between them. This cable can be up to 20 metres (60 feet) in length, allowing your console to be located in a separate office, away from the computer if desired.

The system requires relatively little power, using a standard 110 V AC 60 Hz power 3-pronged wall receptacle. However, it is advisable to plug it into an independent, separately fused outlet. This will avoid any problems that can occur if, for example, a photocopier machine was plugged into the same outlet, and was constantly being turned on and off. The resultant power surges could cause the computer to malfunction.

More importantly, the AC power source you use must be reliable. Should the power go off for any reason, any programs running would be permanently lost. In addition, programs and data stored in the disk drives may also be lost.

On the computer itself, there is a fan used to provide ventilation. This fan is visible from the rear of the cabinet and should be situated far enough away from the wall to allow for free movement of air. Also, do not allow scrap paper to block the air inlet when the system is operating.

Finally, the computer system should not be operated in any extreme temperatures. As a rule of thumb, any temperature which is uncomfortable for you, (less than 5 or greater than 50 degrees Celsius; less than 41 or greater than 122 degrees Farenheit) could cause permanent damage to the system. If the system is exposed to these temperature extremes, allow it to sit at room temperature for at least one hour before operating it. In addition, food or drink should never be allowed near the computer system or the terminal, as accidental spills can damage the equipment.

Other Operational Considerations

Usually, the NABU 1100 system needs no extra carpentry, electrical wiring or special floors. Thus, the purchase price of the system does not include any renovations to your office. However, you may want to have a separate computer room for security or noise reasons. Remember, the cable between the computer and the terminal can be extended to 20 metres.

It's also a good idea to get extra insurance coverage; after all, you are investing several thousands of dollars in new equipment - protect your investment. There are also several data processing insurance packages available. Contact your agent.

Pre-Operational Period

The two to three month period directly following installation is the pre-operational period. During this "warm-up" stage, you will find an increase in your workload because you are trying to handle your job and learn to operate your system at the same time. During this time, you will need operator training to become familiar with the NABU 1100. Through this training, provided by your local dealer, you will quickly understand the basics such as how to create files. When you become comfortable with the commands and the system operation, your workload will be reduced and you can start enjoying having a computer working for you.

Operational Period

Maintenance and repair of the hardware after the 90 day warranty period can be provided by your local dealer. In addition, further training on the system or other personalized services can also be provided by your dealer. However, none of these extra services are included in the list price of your system. It is recommended that you purchase a service contract from your dealer for at least the first year. Cost is minimal; about 1 - 2 % per month of the cost of the hardware.

2. SYSTEM HARDWARE

Introduction

This section describes each of the hardware components of your NABU 1100 system. Each component description generally consists of the following information:

A. What you should know about the care and use of each component
B. Suggested reading
C. Unpacking information
D. A checklist of what you should find in each of the cartons
E. Set up instructions

Overview

The NABU 1100 computer system consists of three major pieces of equipment: the computer itself (also known as the CPU or Central Processing Unit), the terminal keyboard (also known as the CRT or Cathode Ray Tube); and the optional printer. These are all called "hardware" pieces because they are the physical parts of the computer.

Although it can do only what you, the user, tell it to do, the computer is the "brains" of the system. It is "dumb" when it is turned off, but once you turn it on and insert a diskette, the computer is ready to obey your instructions. You type commands or text (also called "input") on the terminal keyboard, and the information you enter is sent to the computer each time you press the RETURN key. Although the computer is really blind, the keyboard represents its eyes and ears. You see the information on the Cathode Ray Tube (CRT) video display screen as you enter it. If you want a "hard copy" (that is, a copy of your data on paper) the printer will produce it. Other accessories will be discussed later in this section.

2.1 THE COMPUTER COMPONENT

A. What you should know about the care and use of your computer
B. Suggested reading
C. Unpacking information
D. A checklist of what you should find in the carton
E. Set up instructions

A. The NABU 1100 Computer

The computer is the heart of your new system, and comes housed in a cabinet with two disk drives (See Figure 2.1-1). It also contains a "card cage" which holds the electronic circuit cards that enable the computer to function. The computer uses the Zilog Z-80A microprocessor, which together with the memory, forms the computer. The role of the computer is to store and manipulate information which is supplied to it from the floppy diskettes. These diskettes, when placed in the disk drives, are "read" and the information, when required, is stored in the computer's memory.

This memory, Random Access Memory or RAM, is measured in words. In computer terms, a word is equal to a single character or a "byte", which is a measure of storage capacity. The system you have just received has a storage capacity of 64K bytes, where 1K byte means 1024 bytes (or words). This represents a large amount of memory; enough to run any of the general purpose programs such as the word processing and accounting packages that are available.

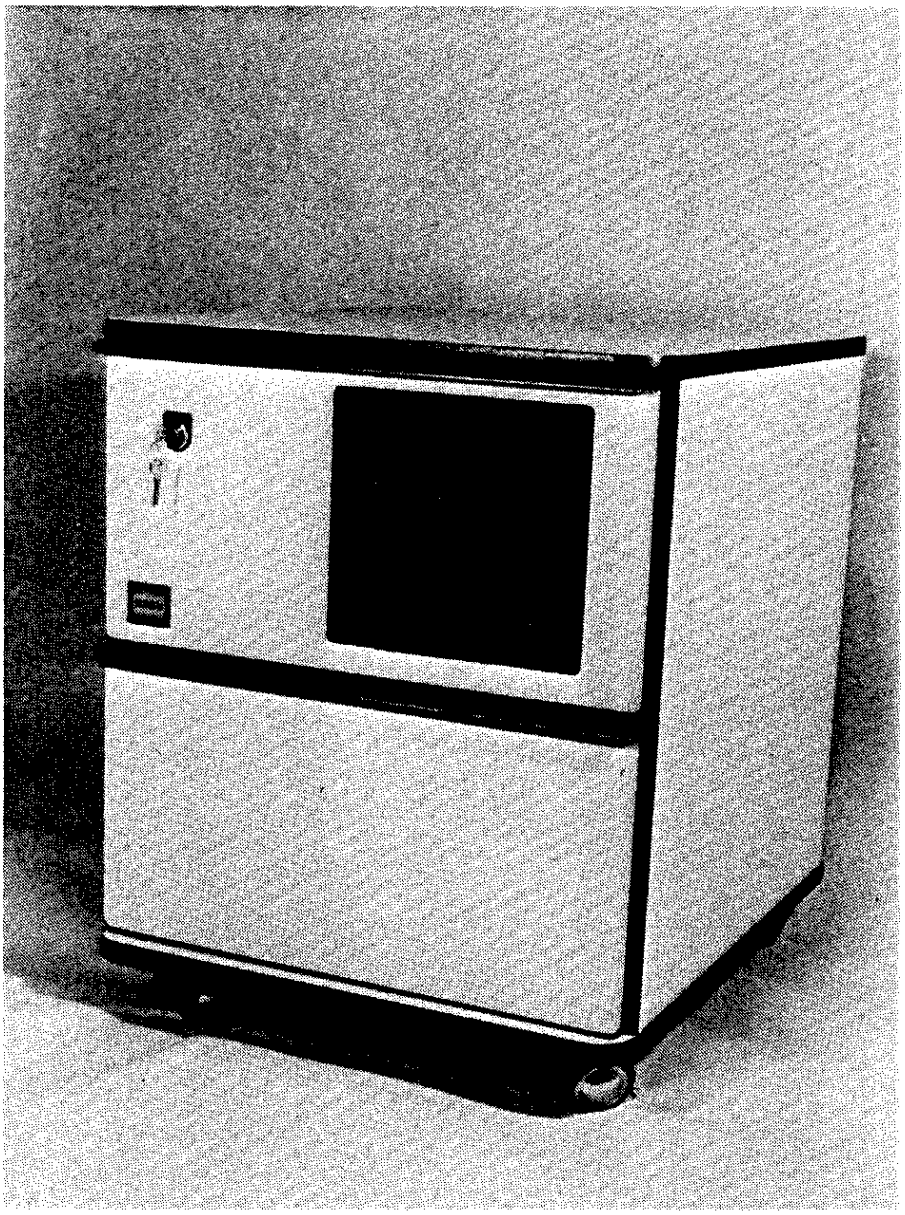

Figure 2.1-1

The computer functions electronically, performing arithmetic and logic operations on data and controlling the rest of the system. It is the programs that YOU enter (via the diskettes supplied) that enable the computer to do its job. When the computer is reset or the power is turned off, the computer's RAM memory "forgets" until you put in a program again; the diskettes provide a permanent record of programs and data - they never "forget" unless they are damaged.

You have been supplied with a master copy and a working copy of the programs. Put the master copy on file and use the working copy to work with. Thus, if the working copy is erased or damaged, you can create a new one using the master copy.

Floppy Diskettes

The basic mechanism of storage with this system is magnetic, and the storage medium used is called a Floppy Diskette (See Figure 2.1-2). The floppy diskettes you have received are 8" in diameter and come housed in a plastic jacket to protect the magnetic surface from dirt and grease. They resemble a 45 RPM record, and are a standard in the computer industry, following much the same principal for recording as magnetic tapes do. Data is stored on the diskette in "tracks" which form concentric circles around the spindle hole (center hole) in the diskette. Each track is subdivided into sectors, which contain 256 bytes of data.

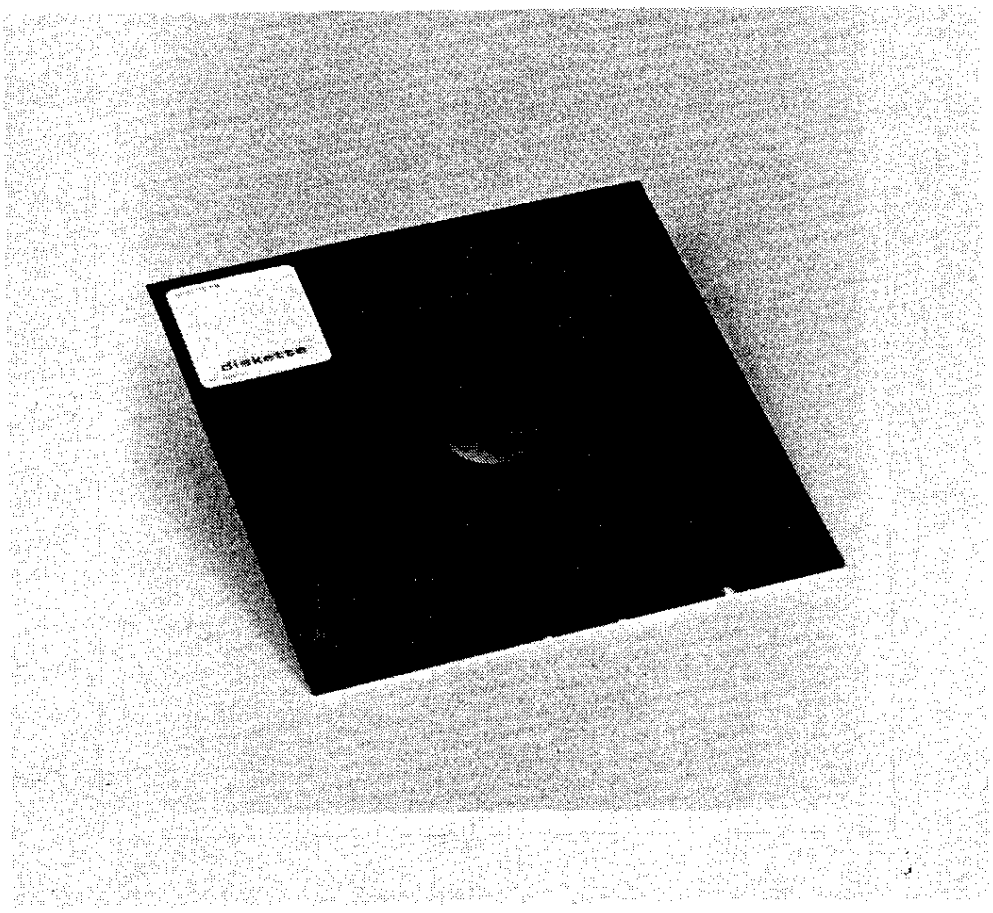

Figure 2.1-2

The two diskettes you have received are **double density**, but are not the only ones that can be used on your system. It is also possible to use single density diskettes, as density only refers to the capacity of the sectors on the disk. However, a double density diskette is capable of storing twice as much information on it as a single density diskette. Diskettes are also available in single-sided or double-sided form. The diskettes you have received are double-sided.

There is a "write protect notch", a small, oval-shaped cut out space, on the bottom right-hand edge of the diskette. This slot is used to prevent any writing onto the diskette. When the slot is exposed, data on the diskette cannot be erased or overwritten, and this is useful for protecting important diskettes from accidental erasures. However, if you wish to record data, the slot can be covered with a small piece of tape (supplied with your diskettes).

When handling a floppy diskette, the "head slot" (the long, oval shaped slot that exposes part of the recording surface) should always be the first part of the diskette that goes into the protective jacket. It is alright to handle the diskette by the spindle (center) hole, but you must never touch the recording surface exposed by the head slot, as this could damage the data stored on the diskette.

During its use, a floppy diskette begins to "wear down" and must be replaced in order to preserve the data stored on it. As a rule, after 6 months of continuous use, the old diskette should be copied onto a new diskette and discarded.

Taking Care Of Your Diskettes

* Never fold, crease, staple, or puncture the diskette.

* Never write on the diskette I.D. label with anything but a soft felt pen.

* Handle diskettes by the protective jacket only - do not touch the recording surface.

* Always keep the diskette in its protective envelope when it is not in the disk drive.

* Store diskettes in a clean, controlled environment, the same as you would for valuable records and tapes.

Inserting and Removing Diskettes

1. Turn the computer on BEFORE you insert a diskette.

2. To insert a diskette:

   Open the disk drive door by pressing the short bar beside the door (See Figure 2.1-3).

   Hold the diskette in your left hand with the square label at the top. The notched edge goes into the drive first. Close the door until you hear a "click".

3. NEVER remove a diskette while processing data.

4. To remove a diskette:

   Press the bar at the access door. (See Figure 2.1-4). The diskette will pop out about an inch and can then be removed and placed in the protective jacket (notched edge first).

5. ALWAYS REMOVE DISKETTES BEFORE YOU TURN OFF THE SYSTEM.

B. Suggested Reading

We suggest that you read this KeyPack thoroughly to become familiar with your system. In addition, the Technical Guide and Software Guide can be used if you are an experienced programmer or technically inclined. The average system user will keep the latter two manuals strictly for reference.

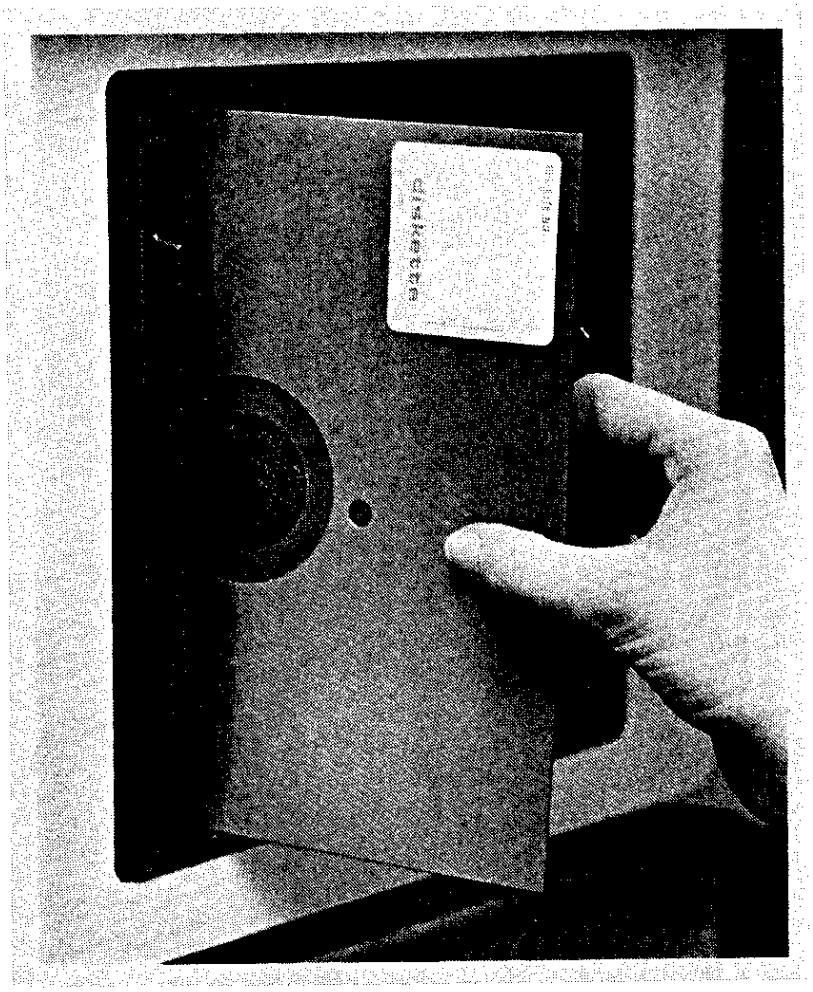

Figure 2.1-3

Inserting a
Diskette

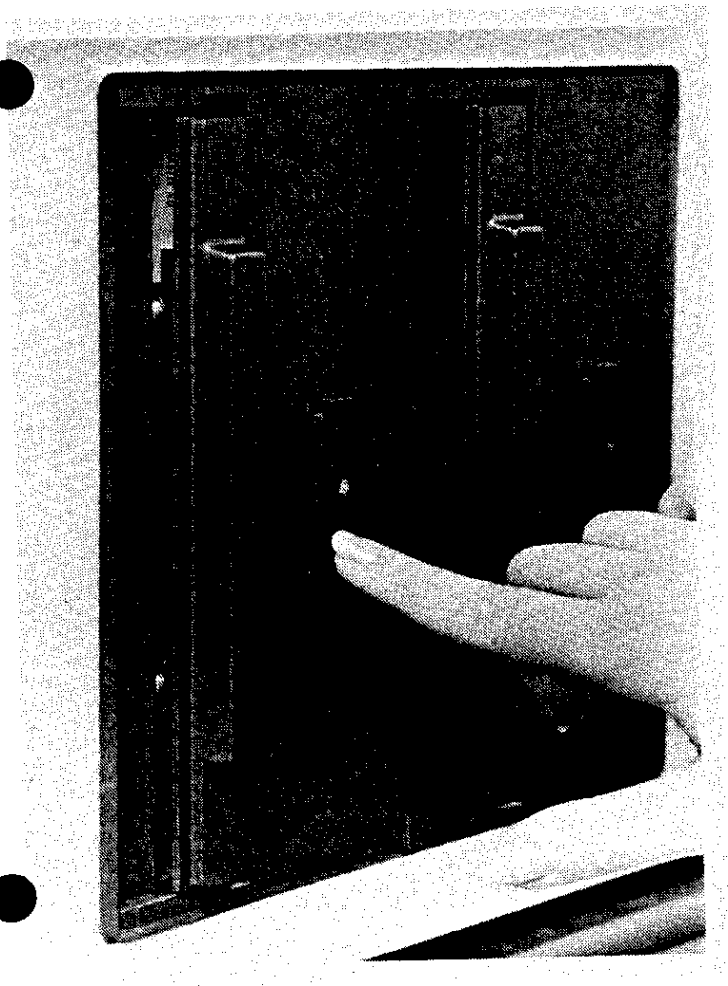

Figure 2.1-4

Removing a
Diskette

C. Procedure for Unpacking

CHECK FOR DAMAGES TO SHIPPING CONTAINER BEFORE UNPACKING. REPORT TRANSIT DAMAGE TO CARRIER.

STEPS FOR UNPACKING CABINET ASSY.

STEP 1 Remove four external straps.

STEP 2 Lift off container lid.

STEP 3 Remove foam package from inside of container.

STEP 4 Slide cardboard container up until clear of cabinet and remove.

STEP 5 Remove two tie down straps securing unit to skid.

STEP 6 Carefully lift cabinet assembly from shipping skid and lower onto level floor surface. (Note: Unit can now be moved on the castors - Release brakes for moving and engage brakes when unit positioned).

STEP 7 Visually inspect unit for damage - check back of cabinet and see if wing nut and washer is in place to secure the drawers.

STEPS FOR UNPACKING COMPUTER DRAWER ASSEMBLY

STEP 1 Remove external straps.

STEP 2 Open lid and remove top foam packing.

STEP 3 Remove computer drawer assembly.

STEP 4 Remove plastic covering.

STEP 5 Inspect for damage.

STEP 6 Install in cabinet per instruction sheet in bottom drawer.

NOTE: PACKING CONTAINER SHOULD BE STORED FOR FUTURE USE FOR MOVEMENT OF COMPUTER TO ANOTHER LOCATION.

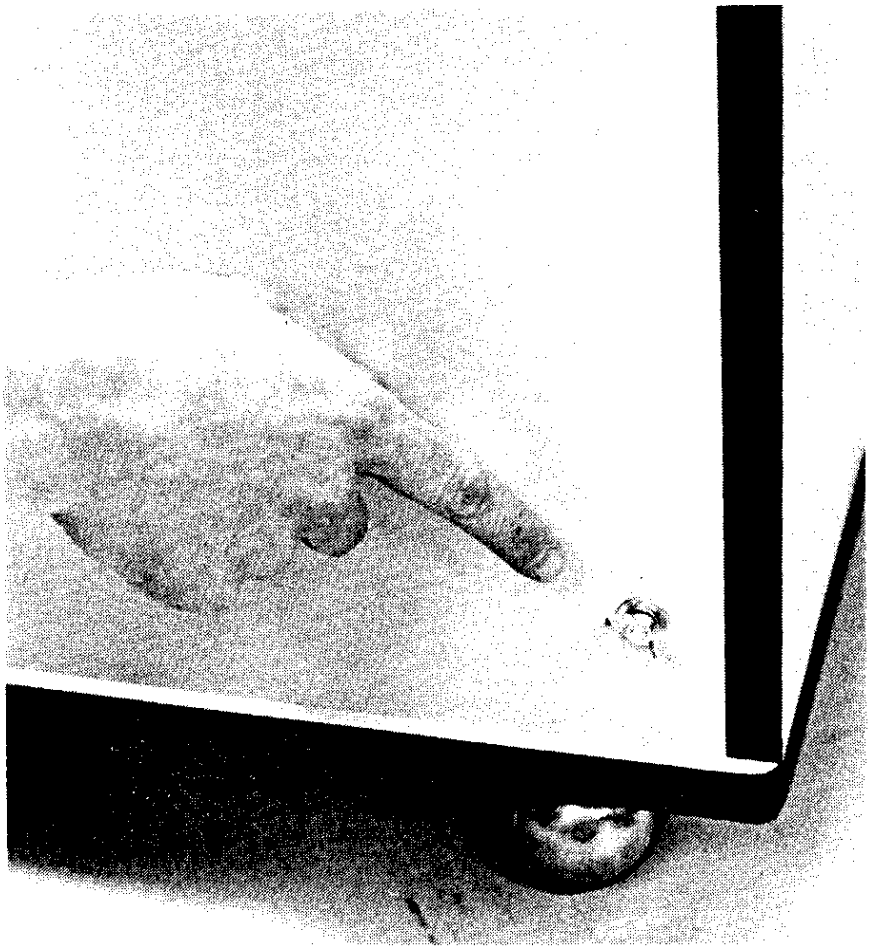

Figure 2.1-5

WARNING - TOP DRAWER should only be opened to check for damage or for servicing the computer by a technician.

TO OPEN DRAWER:

First - Remove wing nut and washer at back of cabinet. (Figure 2.1-5)

Second - Have a second person apply weight to top of cabinet while drawer is opened.

Third - Open drawer carefuly ensuring that unit is supported, to prevent tipping while drawer is open for inspection.

Fourth - Close drawer and re-install wing nut and washer at back of cabinet.

D. Checklist

Obviously the carton contains the NABU 1100. There isn't room for anything else. Remove the wing nut on the back panel of the system for the lower drawer. Check to ensure the following have been included with the system:

NABU 1100 System Software Guide
Machine Test Reports
A/C Power Cord
Pair of Keys
External Cable (To Terminal)
Printer Cable
Instruction Sheet (DWG. 10663 REV.2) For Installation of Computer Drawer Assembly.

E. Set-up Instructions

Now that the system is unpacked you have only to complete the following steps to make your system ready to operate.

1. Remove the white cardboard retainers from the disk drive drawers (See Figure 2.1-6).

2. Press the disk drive release bars and remove the shipping diskettes (See Figure 2.1-7).

3. Place the retainers and shipping diskettes back in the lower drawer in case you have to ship the system someday.

4. Unwrap the power cord (from the bottom drawer) and plug into the appropriate receptacle on the back panel. (See Figure 2.1-8).

5. Put the key into the keylock on the front panel. Put the other key in a safe place in case you lose one.

6. The other plug locations in the upper left portion of the back panel are labelled "CRT Terminal, Parallel I/O and Serial I/O" (See Figure 2.1-9). These are for the appropriate devices and will be referenced later. (See sections on CRT and Printer).

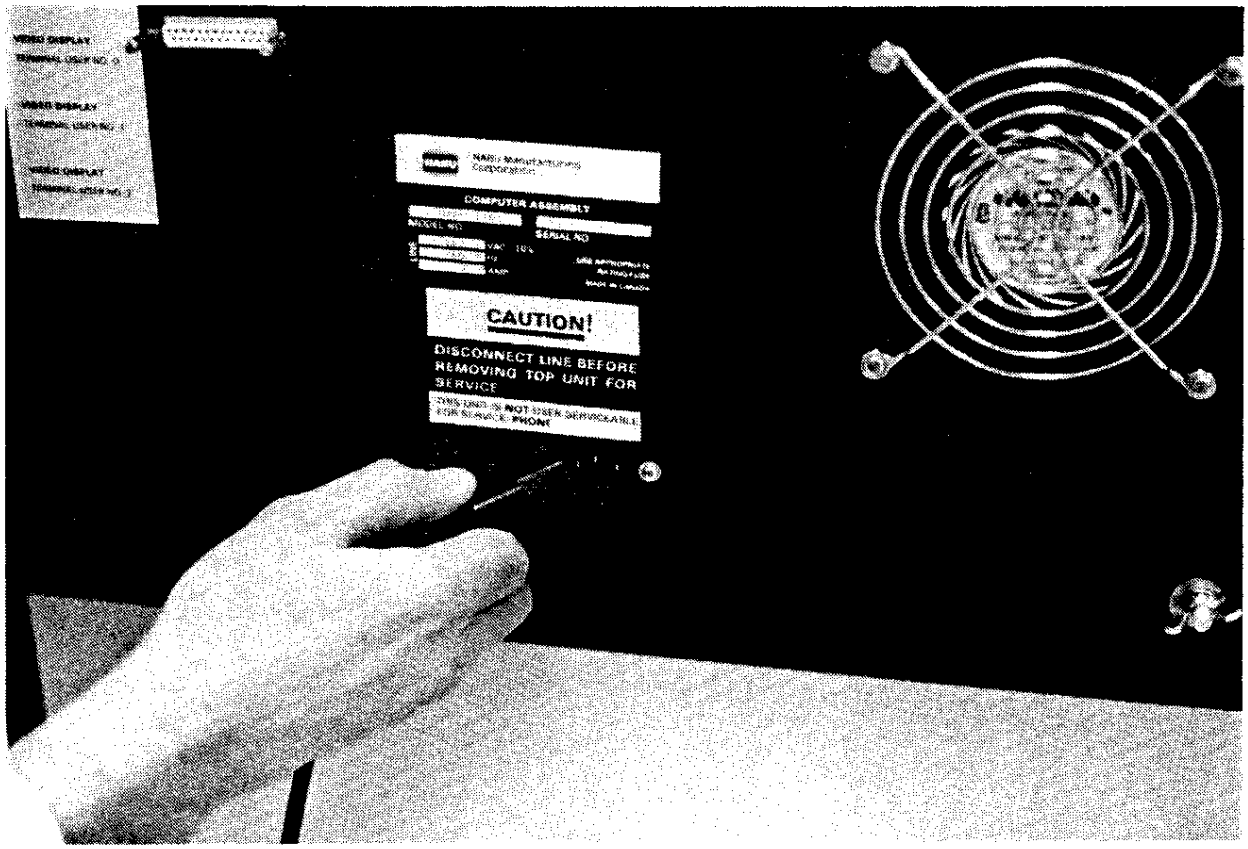

Figure 2.1-8

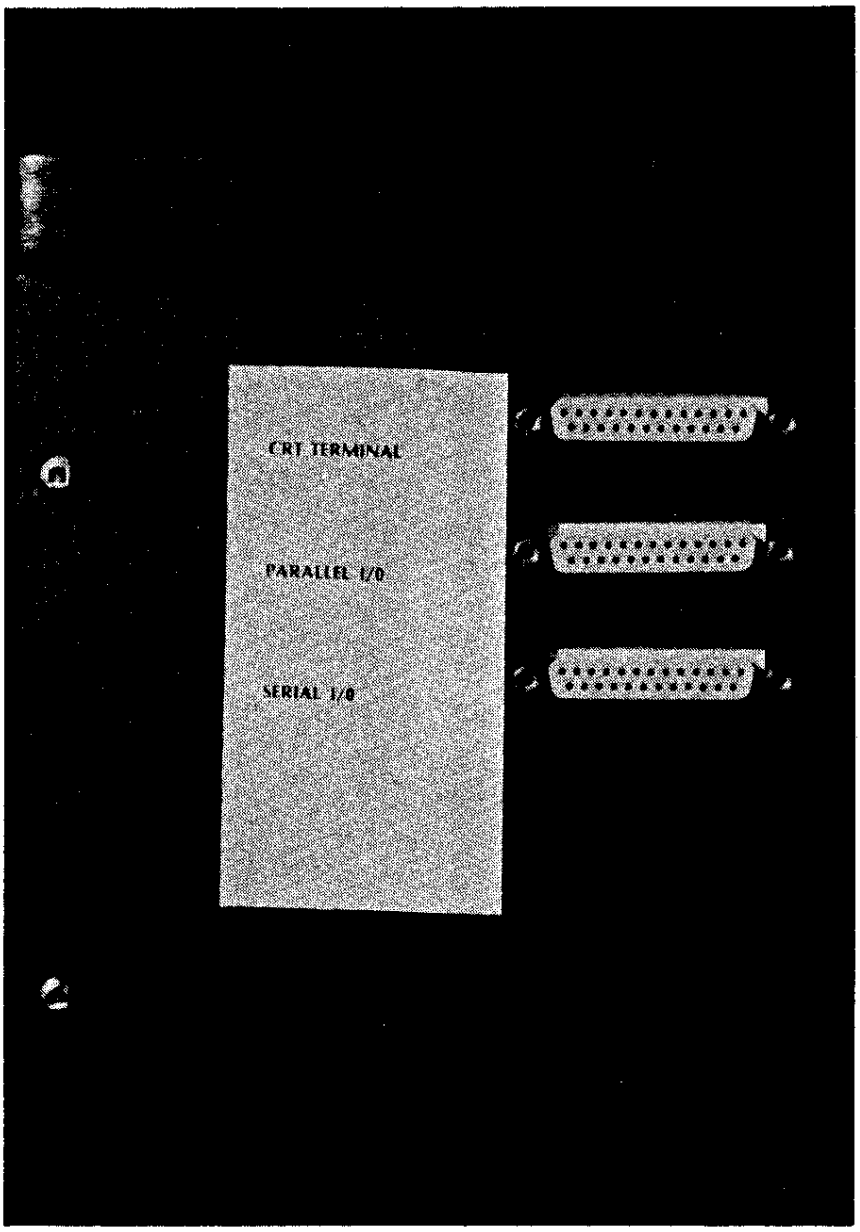

Figure 2.1-9

2.2. CRT COMPONENT

A. What you should know about the care and use of your terminal
B. Suggested reading
C. Unpacking information
D. A checklist of what you should find in the carton
E. Set up instructions

A. The NABU 2144 Terminal

The terminal consists of a television-like screen and a keyboard resembling a typewriter with extra keys.(See Figure 2.2-1). Everything you type shows on the screen, which means you enter data and can immediately correct it if you need to. The screen holds a maximum of 80 characters per line, and has a height of 24 lines vertically. Thus, the screen can contain up to 1,920 characters.

To switch the terminal on or off, there is a round, black knob, below the bottom left-hand corner of the screen, which turns to the right. This knob can also be used to adjust the brightness of the screen display.

The keyboard you will be using is illustrated in Figure 2.2-2. The keys are configured much like the keys on a typewriter, and is just as easy to use. Data is typed into the system using the keyboard, and there are several extra keys on the top row which are used to perform special functions.

The keyboard is composed of three parts:

(1) the main portion resembling a typewriter
(2) the numeric keypad at the right
(3) special function keys

Figure 2.2-1

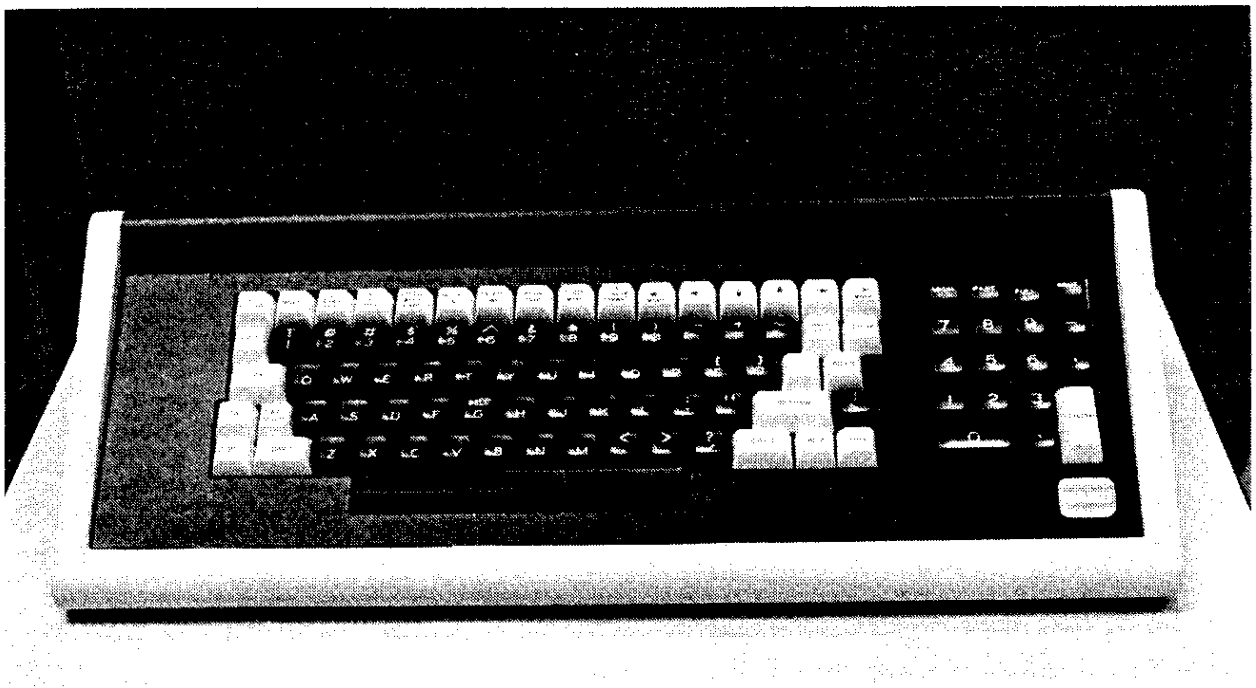

Figure 2.2-2

The special function keys perform various computer related functions. For example, the arrow keys move the flashing cursor on the screen in the direction indicated. If you have purchased a word processing keyboard (for WordStar or Magic Wand), the keys on the top row are labelled with specific functions you will use while running the word processing program (such as Insert, Delete Line, Block Move etc.). If you have purchased the standard 2144 keyboard arrangement, these ten keys will be labelled PF1 to PF10. The control (CTRL) key is used with various letters to execute special commands. The CAPS LOCK key (shift lock on a typewriter) allows you to type in upper-case letters continually.

Some General Keyboard Features

Touch-typing skills transfer readily to the keyboard, and the calculator-type section on the right allows your calculator skills to flourish. With a little practice, you will soon be at home with the system as with other office machines. Data is simply typed in, and the special keys aid in efficiency. Some other features are as follows:

1. A command is not transmitted to the computer UNTIL YOU PRESS THE RETURN KEY. The Return key is like the carriage return key of a typewriter.

2. The Escape key (ESC) allows you to escape from a command.

3. The keys labelled with arrows allow you to move your cursor around the screen.

4. Important: The **"Full"** key must be depressed at all times to operate the terminal.

These are but a few of the features of your keyboard. Operator training will provide you with further knowledge into the various functions.

B. Suggested Reading

Inside the CRT carton is a Volker Craig Users Manual which includes a general description, specifications and other pertinent data. We suggest you take a quick glance at this manual to further familiarize yourself.

C. Unpacking Information

Inspection For In-Shipment Damage

When you receive your terminal, carefully check the shipping carton and its contents for any signs of mishandling and/or damage. The cartons were designed to fully protect the terminal/keyboard, and special care in handling the cartons under normal shipping conditions was ensured. If you find any damage after a visual inspection, do not destroy the evidence. Document the damage, contact the shipping carrier and contact your dealer.

Identification

The identification label located on the back panel of the terminal provides the model number, serial number, line voltage and frequency requirements.

D. Checklist

Your NABU 2144 Terminal comes complete with the terminal (CRT), the moveable keyboard and a technical manual from Volker-Craig. There are no tie-downs or packing materials inside the terminals that need to be removed.

E. Installation

You can easily relocate and change the positions of the terminal and keyboard without worry. Just make sure it's on a level surface, the cord can reach a wall receptacle and the cable can reach the computer. Ensure that the cable and cord will not be inadvertently disturbed by the operator or office traffic.

CAUTION: Make sure the back of the terminal has enough room to provide for air circulation. The terminal has a fan for cooling, and you will notice the grill on the back to aid this function. Also, air is forced out of the terminal through the sides (put your hand close to a side seam and you will feel a slight breeze). To maintain proper air circulation, keep at least 3 1/2 inches of free space around the terminal and at the back.

Dip Switch settings

Two sets of 8 small switches at the back of the terminal control the screen display. Although they are set at the factory, you should check in case they were moved during shipping. They should be set as follows:

Switch 1: 3 and 7 down; 1, 2, 4, 5, 6 and 8 up
Switch 2: 1, 2, 4, 5, 6 and 8 down; 3 and 7 up
(see figure 2.2-3)

Power Connection

Your terminal has a three pronged grounded power cord. To ensure safety, you must always plug into a grounded outlet (3-pronged). If you must use an adapter, be sure to correctly connect the ground lug or pigtail.

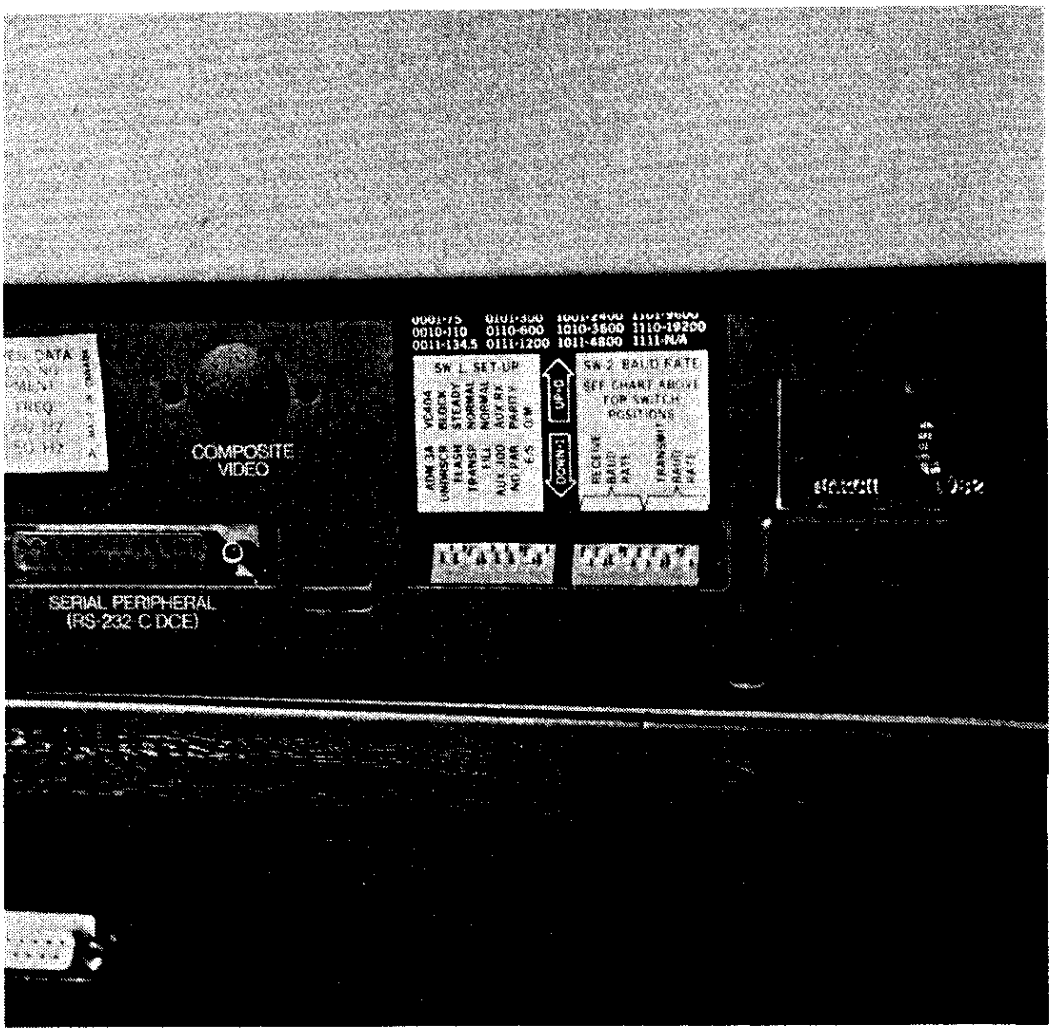
COMPOSITE
VIDEO
SERIAL PERIPHERAL
(RS-232 C DCE)
SW 1 SET-UP
SW 2 BAUD RATE
UP=0
DOWN=1

Figure 2.2.3

Connection to Your System

A "ribbon cable" or standard cable will be supplied with your CRT. One end should be labelled TML. This end connects to the CRT on the back panel. (See Figure 2.2-4). The other end connects to the top connection on the NABU 1100 (labelled CRT Terminal. (see figure 2.2.5). A small screwdriver will assist you in this easy installation task.

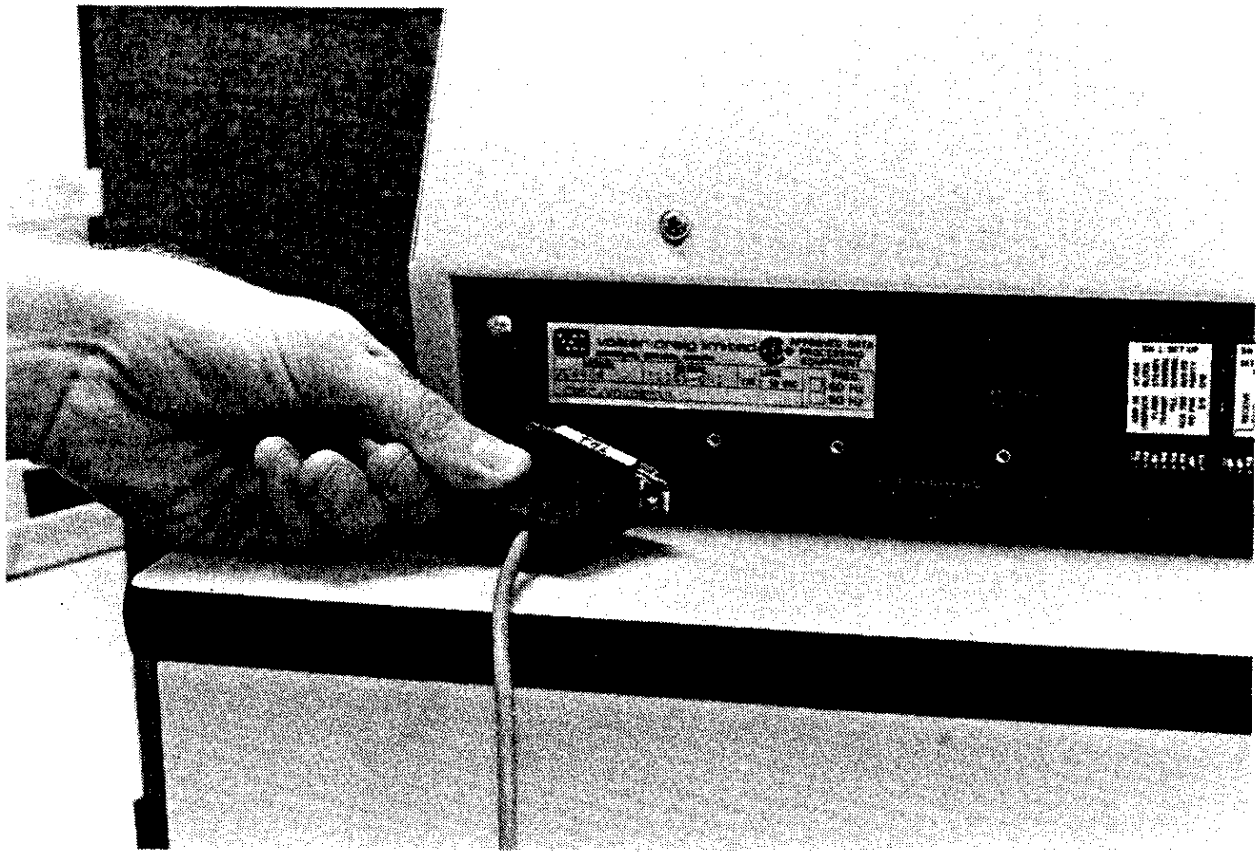

Figure 2.2-4

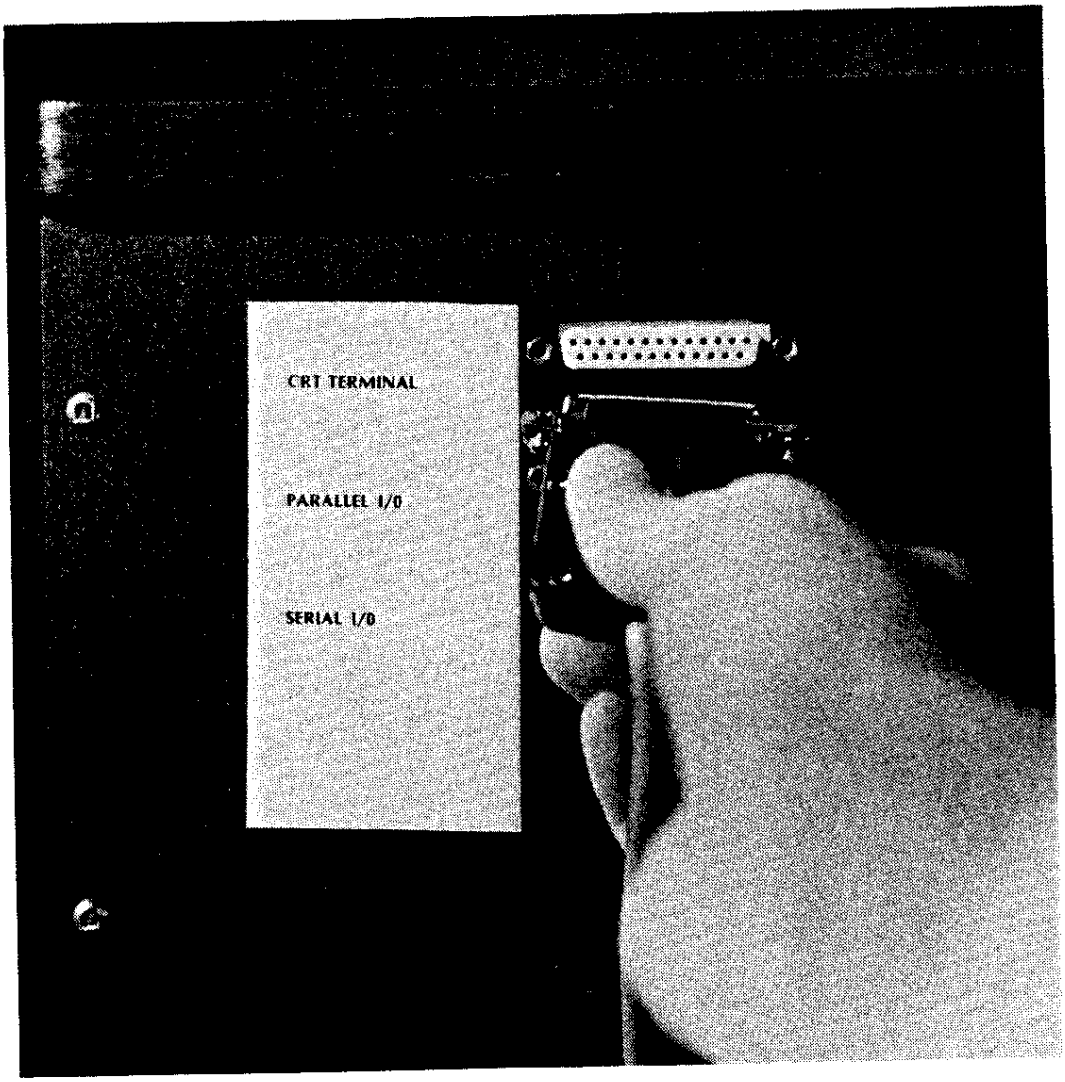

Figure 2.2-5

2.3 PRINTER COMPONENT

A. What you should know about the care and use of your printer
B. Suggested reading
C. Unpacking information
D. A checklist of what you should find in the carton
E. Assembly instructions

A. Printer Overview

The printer is a device which produces a "hard copy" of information stored on a diskette or generated by the computer.

There are currently two types of printers available for your NABU 1100 - letter quality and high speed dot matrix.

Letter Quality Printers

The NABU 3155 or 3135 are modified NEC SPINWRITER (TM) printers. They work with a rotating thimble (which contains all the printing characters) (See Figure 2.3-1) and a disposable ribbon cartridge (See Figure 2.3-2). These printers produce high quality output and are used in word processing applications.

High Speed Dot Matrix Printers

The NABU 3150 or 3152 are modified Centronics (TM) printers. They are versatile rugged devices that produce printed output at up to 150 characters per second.

A ribbon cartridge is also used. These printers are typically for standard data processing applications.

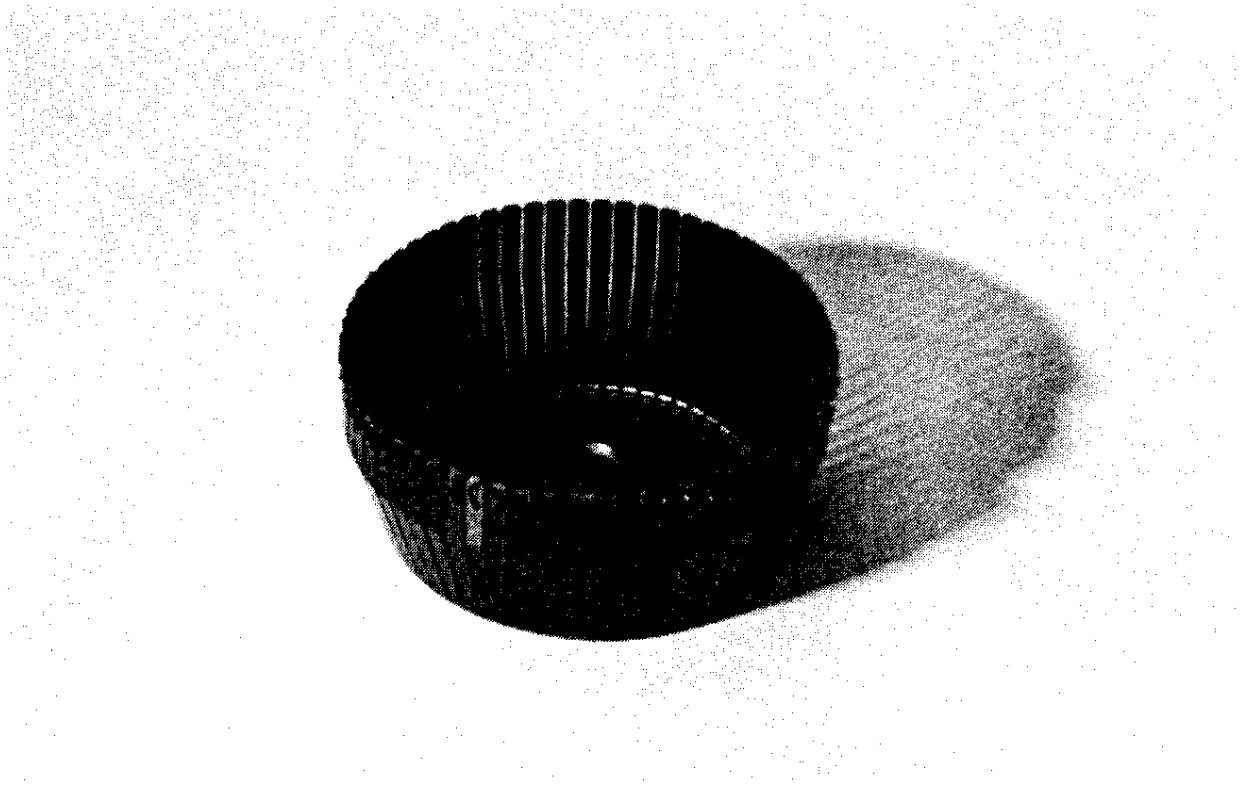

Figure 2.3-1

Figure 2.3-2

We will deal with each type of printer separately. The first section will be for the 3135/55 letter quality printers; the next for the 3150/52 high speed dot matrix printers.

Letter Quality Printers

A. Principals of Operation

The NABU 3135/55 uses a unique small-diameter, low-mass print element. It is a low-cost, long-life, fiberglass reinforced plastic thimble. The thimble (See Figure 2.3-1), is produced by cylindrically arranging and molding 64 individual spring action fingers on which two characters may be mounted, one above the other, for a maximum of 128 characters. Print thimbles that contain up to 125 characters have a cutout so that the last characters printed are fully visible to the operator.

Print thimble rotation is under microprocessor and digital position control for fast, accurate, bidirectional positioning. During operation, the print thimble turns horizontally and moves vertically to the selected print position. The print hammer mounted within the thimble strikes the specified finger, causing it to flex forward and press against the ribbon. This motion transfers the character image onto the paper in a manner similar to a typewriter.

The ribbon is contained in a cartridge that is easily replaced. Ribbons are available in black and red/black colors and come in fabric and multistrike film.

A microprocessor controls character printing intensity depending on the character selected. This feature extends print thimble life and produces high quality printed characters. Also, you can use an impression switch to further adjust the character impressions to produce the print intensity you want.

Spacing and Forms Positioning

Advanced servo motor control design for carriage spacing and print element positioning, and stepper motor control of the paper movement and ribbon drive system result in exceptional print quality.

The NABU 3135/55 offers as a standard feature 10 and 12 pitch, and proportional spacing with bidirectional printing. The printer can print 136 positions per line (10 pitch) or 163 positions per line (12 pitch).

Further versatility is offered by its superscripting and subscripting capabilities. Graphics and plotting capabilities are inherent NABU 3135/55 features. Character and line positions are directly addressable in four axes, left and right horizontal with a resolution of 1/120th of an inch, and up and down vertical with a resolution of 1/48th of an inch.

The print rate is 35 or 55 characters-per-second at 12 characters-per-inch (maximum). Bidirectional printing enables the printer throughput to be increased while eliminating the time consuming and non-productive carriage returns.

Microprocessor control of the preceeding features allows absolute tabbing (tabbing directly to a specified print column or line without having previously set a tab stop), and motion minimization. The motion minimization feature combines a sequence of carriage and paper movement commands into one single operation which moves the print thimble via the shortest path to the position which would result from performing each individual operation. This feature reduces the time consumed by the printer to execute these commands.

Options

Several options are available for the NABU 3135/55. These are described below.

a) Friction Feed Platen: A standard typewriter style friction feed platen is available for single sheets or continuous forms. This option provides positive forward and reverse paper feeding.

b) Friction Attachment: This option, used with the friction feed platen, mounts inside the printer, makes single sheet paper loading easier, and helps prevent paper misalignment. A slide on this attachment can be adjusted to accommodate the width of the paper used.

c) Pin Feed Platen: A pin feed platen is available for various paper widths up to 16 inches.

d) Tractor Feed: This option is easily installed by the operator. Tractors are adjustable from 3 to 16 inches to accommodate various paper widths, and enable multi-part forms to be fed precisely without slippage or misalignment.

e) Bottom Feed: This enables forms to be fed from below the printer, and is especially useful where multiple part forms are used. A "paper out" sensing switch is included with this factory installed option.

f) Silencer Hood: This is a clear plastic cover that keeps foreign objects and dust out of the printer mechanism while reducing printer noise. The hood, available in short and long versions for use with the various forms handling options, has a convenient column scale indicator marked for both 10 and 12 characters-per-inch.

g) Paper Guide: This guides paper into and out of the printer and helps prevent paper skewing and jams.

Supplies And Accessories

Print ribbons are contained in an easily replaceable ribbon cartridge. Single color and two color nylon ribbons are available as well as multi-strike film ribbon.

a) Single Color Ribbon (Black): This ribbon is made of nylon cloth. The ribbon is arranged in a continuous loop and can be used repeatedly. The life of this ribbon is approximately 1.5 million impressions.

b) Two-Color Ribbon (Red/Black): The two-color ribbon is also made of nylon cloth and arranged in a continuous loop. Life of this ribbon is approximately 1.5 million impressions.

c) Multi-Strike Film Ribbon: The multi-strike film ribbon is used when high quality printing is required. Since this ribbon is not of continuous loop construction, it must be replaced after one pass. A ribbon end sensor detects the end of a ribbon and stops NABU 3155 operation. Life of the multi-strike ribbon is approximately 230,000 impressions.

d) Print Thimble: The print thimble is a low cost, low mass, long life, fiberglass reinforced print element with 64 individual, spring action fingers cylindrically arranged and molded. Two characters may be mounted on each finger giving total character capability of 128 characters. Contact Computer Innovations for available fonts or special font requirements.

e) Paper: Paper for your printer comes in many sizes, colors and types. Most people use two standard sizes:

1) 9.5" wide by 11"; when you tear off the perforated edge the paper measures 8.5" by 11", perfect for word processing.

2) 15" wide by 8.5"; this is generally used for rough drafts and wide reports and will fit into computer file folders and binders.

When ordering paper, make sure you include: the width or horizontal size WITH the perforated margins; the length or vertical size; color, weight, and, if desired, the number of copies or parts. Your dealer can help you decide which is best for your use.

It is a good idea to have two sets of cartridge ribbons: a fabric or nylon for rough drafts; and a mutli-strike film ribbon for final copies. Also, keep a spare thimble for emergencies, and have a couple of different type-style thimbles for various documents. Ribbons and thimbles are manufactured by the NEC company.

B. Suggested Reading

Model 35 SPINWRITER Series Operator's Guide, NEC Information Systems, Inc., Document No. 10002

SPINWRITER Maintenance Manual, NEC Information Systems, Inc., Document No. 10000

SPINWRITER Theory of Operation Manual, NEC Information Systems, Inc., Document No. 10001

C. Unpacking And Repacking Information

Before unpacking the printer from its shipping container, inspect the container for any obvious damage that may have occurred during shipment. If damage to the container is apparent, notify the carrier immediately. Do not open the container and remove the contents until the carrier's representative has inspected it. If the container is in good condition, remove the printer. Save all original packing material for reshipment purposes. Be sure to check all items against the packing list and the list of accessories to make sure that all parts have been received. Notify the shipper of any shortages.

NOTE: Failure to adhere to the following instructions could result in voiding the warranty.

a) Unpacking Instructions:

1. Peel off the sealing tape and open the carton flaps.

2. Lift out the molded styrofoam braces from each side of the top of the carton.

3. Remove the plastic sheets.

4. Lift the printer from the carton and put it on a sturdy table (capable of supporting at least 60 pounds).

5. Remove the plastic bag from the power cord and the ties on the paper net (guide).

6. Save all the packing materials and the carton.

7. Remove the manuals from the front of the printer.

8. Tilt the printer up on its back until it settles to expose its base. Keep one hand on the printer to prevent it from falling.

9. Remove the three red thumbscrews in the base by turning them to the left (counter-clockwise). These thumbscrews secure the base plate to the printer assembly. Store them with the other packing materials.

10. Lower the printer to its base.

11. Lift the top cover by pulling on the bar on the front of the printer.

12. Remove the red retaining ring beside the print carriage. First slide the ring to the right, then lift it off.

    NOTE: For your printer to operate properly, you must be sure to perform the next step.

13. Push the print carriage to the center, away from the left margin.

14. Close the top cover; you will hear it snap into place.

15. You are now ready to plug in the power cord and turn on the printer.

16. Refer to the appropriate model printer Operator's Guide for further operations.

b) Repacking Instructions

The repacking procedure is just the reverse of unpacking. Use the carton and packing materials you were instructed to keep.

NOTE: When replacing the three thumbscrews in the base, make sure you do not put one in the hole that is taped closed

D. Checklist

Inside the carton you should find the following:
NEC SPINWRITER
Operators Guide
Product Description Manual

E. Set Up Instructions

Installation of the NABU 3135/55 consists of visual inspection, power application, initialization, and self-test. These procedures are outlined in the Product Description Manual included with your printer. You will find a power cord and 25 pin connector attached to the NABU 3135/55. The power cord should be plugged into an AC receptacle, and the other connector on the rear panel of the NABU 1100.

Ribbon Cartridge Installation

Use this procedure to change the ribbon cartridge.

a) Raise top cover.

b) Grasp the ribbon cartridge lightly and gently spread the two locking tabs that hold the cartridge in place. Lift the cartridge out.

c) Turn the manual feed knob on the new cartridge in the direction of the arrow to put some tension on the ribbon.

d) Place the new ribbon cartridge over the mounting plate. Insert the ribbon between the card holder and the card holder bracket.

e) If you are using a multistrike ribbon, insert the ribbon in the ribbon sensor.

f) Press the ribbon cartridge down until the locking tabs engage.

NOTE: It may be necessary to turn the manual feed knob in the direction of the arrow to ensure proper seating.

g) Close the top cover.

Replace the fabric ribbon cartridge at intervals to maintain clear printing. Replace the multistrike ribbon cartridge when the ribbon fills the ribbon window to E and the ribbon has a yellow cross-hatch pattern.

Print Thimble Replacement

Use this procedure to replace the print thimble.

a) Turn off the power and raise the top cover.

b) Remove the ribbon cartridge.

c) Push the hammer lock lever toward the platen and tilt the hammer cover toward the front of the printer.

d) Slide the lock piece at the center of the print thimble horizontally and then to the upright position.

e) Lift the print thimble upward from the carriage.

NOTE: When handling the print thimble, hold it at the base to avoid possible damage to the character type areas.

f) Place the new print thimble in position, aligning the square hole with the stud.

NOTE: Use light pressure on the thimble to ensure that it is seated fully downward.

g) Lay the lock piece flat and slide it into position.

h) Push the hammer cover into the locked position.

i) Install the ribbon cartridge.

j) Close the top cover and restore AC power.

High Speed Dot Matrix Printer

A. Principals of Operation

The NABU 3150 and 3152 are high speed dot matrix printers that can produce printed output at up to 150 characters per second (CPS). Characters are printed by receiving data from the input device, processing the received data and selectively activating the vertical print wires in the print head. As the print head moves in the forward (left to right) direction, the appropriate print wires are momentarily activated, driving them against the ribbon, paper and platen to form the specified dot pattern. The print commands to the print wires are developed by the microprocessor.

The print head is attached to the carriage assembly which is driven by a stepper motor. When printing the normal characters in a line of data, the carriage is driven in either direction to make the shortest printing path. On completion of printing the line, the carriage is stopped at the last printed character's position until receiving new data.

Paper Motion

Paper is automatically moved one line at the end of print or when a line feed (LF) code is received. When a line feed is performed, the line-feed solenoid is momentarily energized causing the paper to advance one line. The automatic line-feed function may be disabled by resetting a jumper block on the control panel printed circuit board.

Forms Length Section

The model 150-3 is equipped with variable TOP OF FORM from 1/2" to 15 1/2" increments. The form length is set by a DIP switch on the operator's control panel. Once the switch setting has been changed, the power must be cycled off and on so that the microprocessor can be reset. The following table shows the switch settings.

SWITCH NO.	FORMS LENGTH	SWITCH POSITION
4	8" (48 LINES)	ON
5	4" (24 LINES)	ON
6	2" (12 LINES)	ON
7	1" (6 LINES)	ON
8	1/2" (3 LINES)	ON

With switches 4 through 8 all off, the forms length is 11".

B. Suggested Reading

Owners Manual - This manual is included with your printer. We strongly suggest you consult this document for further information.

Centronics Technical Manual - Although this manual is for use by qualified field service personnel, it contains detailed information on the printer theory of operation, maintenance etc.

Illustrated Parts Manual - Contains illustrations and lists of materials detailing all assemblies and sub-assemblies.

C. Unpacking and Repacking Information

Before unpacking the printer from its shipping container, inspect the container for any obvious damage that may have occurred during shipment. If damage to the container is apparent, notify the carrier immediately. Do not open the container and remove the contents until the carrier's representative has inspected it. If the container is in good condition, remove the printer. Save all original packing material for reshipment purposes. Be sure to check all items against the packing list and the list of accessories to make sure that all parts have been received. Notify shipper of any shortages. Remove all shipping tags, tapes, etc., from the printer.

D. Checklist

Inside the carton you should find the printer, and the Owners Manual.

E. Set-Up Instructions

You will find a power cord and a 25 pin connector for the NABU 3150/3152 printers. The power cord should be plugged into an AC receptacle and the other connector into the rear panel of the NABU 1100.

Ribbon Cassette Installation

The procedure for installing or replacing the ribbon cassette is as follows:

1) Place the POWER ON/OFF switch to the OFF position.

2) Lift up the front cover.

3) Remove cassette by holding its sides from the carriage.

4) Set the ribbon and mask portion into the gap between the platen and the head mask, then push the cassette down into the carriage.

5) Turn the knob on cassette in the direction of the arrow to take up slack off the ribbon.

3. SYSTEM SOFTWARE

Introduction

The Nabu 1100 uses the CP/M (Control Program for Microprocessors from Digital Research) operating system which allows the user to transmit and receive information between the keyboard, the computer, and the disk drives. CP/M is the most widely used operating system for microcomputers today and a very large number of software packages have been designed to run under it.

This section describes the basic features of CP/M and gives examples of the program operation. The first-time user should follow through the examples in Section 3.1 to become familiar with the NABU 1100 System. Section 3.2 is a summary of the CP/M commands and programs, and serves as a quick reference guide for those already familiar with CP/M.

As you read through the following sections, try the commands and examples. Have your CP/M master diskette and at least two blank diskettes available. When you come to the section describing backup procedures, make a backup of your CP/M master diskette on one of your blank diskettes and then put the original CP/M master diskette away and continue working with the backup. Use your master diskette to create a backup and then use the backup as your new master diskette.

Feel free to experiment - none of these commands can damage the hardware equipment in any way. FORMAT, and ERA can and will erase information from your master disk so use them with care & understanding!

3.1 An Overview of CP/M

In order to permanently store the information you will be typing into the keyboard (and displaying on the screen), you must create a "file" under which the information can be stored. These data files must be named so that they can be located for editing and printing.

File names contain two parts; the primary name and the extension. The primary name is the name you assign to the "files" of data you create, and can consist of up to 8 letters. You may also add an extension of up to 3 letters to your primary name. To do this, you simply add a period after the primary name and type the extension. The extension may be omitted if desired, but no two filenames can be the same. A typical filename for an exerpt from a textbook might be SAMPLE.TXT, or for some correspondence, LETTER.

The programs that run the computer system are also named in a similar way, except that the extension is always ".COM" (indicating that the program is a "command file"). This extension is helpful for identifying the command files, but these programs can be executed without using the extension. Another type of extension is ".BAK" which is used to indicate a Back-Up file.

One diskette is supplied with your System Software Guide. It is a "System Diskette", which contains the CP/M operating system and programs that enable you to work with the computer.

Diskettes are inserted into the centre slot of the disk drive. To open the door of the drive (called the access door), just press on the bar handle.

To insert, turn the diskette on its side, so that the small square label is in the top right corner and faces towards the key on the computer. Push the diskette completely into the drive until a 'click' is heard; then close the access door (push it to the right) so that it latches shut. To remove the diskette, simply press the bar handle of the access door - the door will open and the diskette will pop out about an inch, to allow easy removal.

Starting the system

To start the system:

1) Turn the key on the computer to the '0' position. A red light will appear on disk drive A (the one closest to the key).

2) Turn the knob on the terminal (screen) to the right. You'll hear the terminal 'beep' after several seconds, and the 'cursor' will appear in the top left hand corner. The cursor is simply a pointer to show where you are on the screen.

3) Insert the system diskette into drive A (the one closest to the key).

4) Turn the key to the '1' position momentarily and release. (What you're doing now is 'booting' the system - enabling the computer to read the diskette). After booting the system, the following message will appear on the screen:

NABU 1100 CP/M (Version 2.2.1)
A>

The "A" that appears on the console means that the computer system is presently **"logged on to"** or using disk drive "A". The ">" symbol is a "prompt message" which tells you that the computer is waiting to receive commands, or 'talk' to you (you have to tell it what to do next). **A>** is also called the "command prompt".

You have just done a 'cold' start or 'boot' on the system. (Power was off and you turned it on). A cold boot reads the operating system of the diskette (CP/M in this case) into the memory of the computer. You really only have to do a cold boot when you first start the system.

If you need to restart the system, (for example, you want to get out of a running program), do a 'warm boot'. A warm boot is accomplished by holding the Control Key (labelled **CTRL**)down while hitting the **"C"** key. Try it. The computer will respond with the command prompt:

A>

You are now ready to try some simple operations and commands on the computer.

First, we'll ask the computer for a listing of all files on the system diskette. On the keyboard, type

DIR

By pressing the carriage return key (labelled **"RETURN"**) on your keyboard, this command will be transmitted to, and executed by, the computer. This command will display the directory, or listing of files on the diskette.

The computer will respond with a list of the programs on disk drive A, which at this stage will probably be just the command programs of CP/M and will be similar to Figure 1 below.

Figure 1: Sample listing of a directory

```
A>DIR
A: STAT     COM: CHECK    COM: FORMAT   COM: SYSTEM   COM
A: BACKUP   COM: PIP      COM: ED       COM: DDT      COM
A: DUMP     COM: LOAD     COM: ASM      COM: LETTERA1 COM
```

Notice the format of the directory as follows:

```
A: xxxxxxxx XXX
(8 alpha numeric) (extension)
```

Each file name begins with a ":" and is listed horizontally. There are 8 alpha/numeric spaces for file name, whether used or not. Also, a space is left between the file name and the extension (instead of the "." used when naming an extension). When referring to a file in a command, remember to include the "." between the file name and extension (if used).

If you make a mistake in typing a command, don't panic! Simply use the backspace key (usually labelled **"BACKSPACE"**) and retype your entry. For example, type in:

DURR

and hit the return key. The computer will respond with:

DURR?
A>

The computer waits for a command it can understand and execute.

Now that you're more familiar with the computer, you'll realize that every command you type in is <u>not</u> executed until you hit the **RETURN** key. This gives you a chance to check your command. So, REMEMBER TO PRESS THE RETURN KEY AFTER TYPING IN YOUR COMMAND.

The **A>** prompt is an indicator that the operating system is **"logged on to"** or using the first drive (referred to as A). Files in the diskette in the A drive are automatically prefixed with the **A:** identifier. To access the second drive (and others if there are more than two), a prefix must be used or you must be "logged" to another drive.

To log on to Drive B insert a diskette into drive B and close the door, type in:

B:

After you press RETURN, the command prompt will change to:

B>

You are now "logged on" to drive B.

CP/M interprets the ":" (colon) symbol as an indicator of a disk drive change so it is important to include it when you want to change drives, when you refer to another drive and when you specify the name of a file on another drive.

For example, to list the directory of drive A while still logged onto drive B, type:

DIR A:

The computer will list out the files on the diskette in drive A.

If there are no files on a diskette, the computer will respond with:

NO FILE

NOTE: There is a text file on your NABU CP/M System Disk called NABU.DOC. It briefly describes all system software and utilities. If there have been any changes or additions since the publication of this KeyPack they will be described and documented in this file. To display this text file on your screen, type:

TYPE NABU.DOC Press RETURN

The text will scroll by quite quickly and you may want to press **CTRL-S** to temporarily suspend the file output. Press any key to start the scrolling again. If you want to print the file as well, press **CTRL-P** before you press RETURN. After the file has been printed, press **CTRL-P** again to de-select your printer.

3.2 Quick Reference Guide

Once you become more familiar with the computer and its operation, you will want to learn and use the programs that are available to you. The following section lists and gives examples of these programs for quick reference. This section is divided into Console Commands and System Utilities.

A Console Command can be entered and executed whenever the prompt message is displayed. Console command programs are stored within the computer memory as a part of the CP/M operating system and can be executed immediately.

System Utilities, on the other hand, are stored on diskette (and therefore listed in your directory) and must be loaded into memory before they can be used.

Console Commands
(also referred to as "intrinsic" or "built in" commands)

DIR - lists the names of files stored on diskette
REN - used to rename a file
ERA - used to erase a file
TYPE - types an alphanumeric file
CTRL-S - temporarily stops character output to the terminal
CTRL-P - sends all character output to the printer device
CTRL-C - "warm boot" to CP/M (see page 3.4)
CTRL-X - cancels the current line being typed on the terminal

A brief description and some examples of the use of each of the console commands follows.

DIR (remember to press **RETURN**)

This command lists the file directory of the currently logged drive. The directory consists of the names of all files on the diskette. To list the directory, type:

DIR

To list the directory of drive B while logged on to drive A, type:

DIR B:

You can also use the DIR command to search a diskette for a particular file. To see if file TEST.ONE is on a diskette, type:

DIR TEST.ONE

If the file is on the diskette, the computer will respond with:

A:TEST ONE

If not, the computer will respond with:

NO FILE

You can also get a listing of all files on a diskette with a given file name or extension. For example, for a list of all files on drive B with extension ONE type in:

DIR B:*.ONE

REN

The REN command is used to change the name of a file stored on a diskette. For example, to rename the stored file "OLDNAME.DAT" to the new name "NEWNAME.DAT", type:

```
REN NEWNAME.DAT=OLDNAME.DAT
```

This command does not duplicate files, it merely changes the name of an existing file. If the old file name is not on the diskette, the NO FILE message will be displayed. If the selected new name already exists on the diskette, the computer will respond with:

```
FILE EXISTS
```

If this message is displayed, ensure that you have used the above format for renaming a file, ie. the "new name" after the command **REN**.

ERA

To erase or delete a file from a diskette, use the ERA command. For example, to erase the file 'OLD.DAT':

```
ERA OLD.DAT
```

To erase all files with extension 'DAT', use the following form:

```
ERA *.DAT
```

To erase all files on a diskette, type:

```
ERA *.*
```

This last command will produce a prompt from the computer, asking if all files are to be deleted.

```
All (Y/N)?
```

If you respond with N, the command prompt will return. If you respond with Y, all files will be erased.

WARNING: ERASED FILES ARE LOST FOREVER - USE WITH CAUTION.

TYPE

To list the contents of a file onto the terminal screen, use the TYPE command. For example, to display the contents of the file 'TEST.ONE', use the form as follows:

```
TYPE TEST.ONE
```

The contents of the file named TEST.ONE will be displayed on the screen. The display will be readable only if it is an alphanumeric file. If you try to print a file that is made up of machine language code, many of the characters can not be displayed, and the system may "lock-up" on you. If this occurs, reset the system with the key, and, if necessary, switch the terminal off and on.

If you wish to freeze the screen display at any point, simply hold the Control Key down and hit the "S" key. The display will be temporarily halted. To resume scanning, press any key.

The following commands, are "output control" commands, and are used to control output from the system. They are entered by holding the "**CTRL**" key down and pressing the proper keys indicated.

CTRL-S: Used to temporarily suspend character output to the terminal. Program execution and character output resume when any key is pressed. See the example using the console comand TYPE.

CTRL-P: Sends all character output to the printer (if attached and selected) as well as to the terminal. Output printed on the printer will be concurrently displayed on the CRT, until another CTRL-P is keyed. Example: To get a "hard copy" of the directory on drive A type: **DIR A: CTRL-P.**

CRTL-C: Performs a "warm-boot" for CP/M and effectively aborts most program execution. More importantly it is used to log new diskettes on to the system.

CTRL-X: Cancels the current line you are typing on the terminal. It clears the current line and repositions the cursor at the command prompt. It is useful if you have realized that you have made a typo or are about to send the computer an unwanted command and you want to start again.

Changing CP/M Disks

To change a disk in the system, you must inform the system that you have done so, because CP/M keeps the current directory of the disks in use in it's memory. To let CP/M know that you have changed diskettes, type CTRL-C to execute a "warm boot". This will log the new disk directory into the system.

IMPORTANT: If you do not execute a CTRL-C after changing disks, the system may display the following error message:

Bdos Read Err
WARNING -- IGNORING THIS ERROR MAY HAVE UNPREDICTABLE CONSEQUENCES
Ignore it? (Y/N)

This message replaces the standard CP/M error message:

BDOS ERR ON X : Disk R/O

(where X is the specified drive)

To recover from this error, press the "RETURN" key or the "N" key and you will return to CP/M.

PLEASE NOTE:

This message may appear during normal file access and during **PIP** or **BACKUP**. (These commands are discussed below.)

NABU-1100 CP/M Version 2.2.1 permits the user to optionally ignore a disk read error by pressing **Y**. Although **NOT** normally recommended, it is made available as a last-ditch method of recovering the unaffected parts of a file. A file with one bad sector may be PIPed onto a good diskette, and when the read error occurs, CP/M can be instructed to ignore the error. The copy will proceed as though nothing had happened, but the bad sector will of course be garbled.

System Utilities

(also referred to as "transient" commands.)

XDIR - displays an alphabetically sorted directory on the CRT
STAT - used to determine the size of files stored on diskette
FORMAT - used to format a blank diskette
BACKUP - used to backup an entire diskette
PIP - used to transfer files
COPYSYS - used to copy the CP/M operating system from one diskette to another
PRTBAUD - used to set up the serial printer interface
CHECK - used to check a diskette for various errors
SETUP - used to alter certain system parameters

System utility programs are stored on diskette with extensions of .COM (indicating that they are in machine language code and cannot be TYPEd). When a utility command is issued after the prompt, CP/M loads the program in from the diskette and executes it. A brief description and examples of the use of the utilities follows.

XDIR

XDIR displays an alphabetically sorted directory on the CRT, one page or screen at a time. Originally from the CP/M User's Group (CPMUG), **XDIR** has been improved to use multiple screens so it can handle more than 85 files. Use XDIR the same way as DIR, type:

```
XDIR
XDIR A:
XDIR B:*.COM
```

Are all valid command lines for XDIR.

An alphabetically sorted directory will appear on the screen. If there are more files than can be displayed on one screen, press any key if you want to see the next screen.

STAT

STAT is used to find the status of the diskette and the amount of space left on the diskette. To use it, type:

```
STAT
```

The computer will respond with: (for example)

```
A: R/W , SPACE: 272K
```

The 'A:' means Drive A, 'R/W' means you can read and write on the diskette, and there are 272K bytes remaining on the diskette.

The "write protect" notch (refer to System Hardware Section 2.1) on the floppy diskette prevents the drive from writing on the diskette. To allow read and write, tape was put over the notch. As a further measure of protection, the STAT function can be used to set a drive to R/W or R/O (Read Only). For example, the command:

STAT A:=R/O

changes the status of the A drive to Read Only. If you type in STAT again, the response will show the disk drive is R/O.

After a "warm boot", the drives will be reset to read/write, so to change the disk drive back to Read/Write, type:

CTRL C

As well as finding the status of a diskette, you can also find the status of an individual file. For example:

STAT FILENAME.EXT

The computer will respond in this form:

```
Recs   Bytes   Ext Acc
   6      2K     1 R/W A:FILENAME.EXT

Bytes Remaining on A:   150K
```

The column labelled 'Acc' tells you if the file is 'write protected' or not. To change the status of a file, (in this case, from Read/Write to Read Only), type in:

STAT FILENAME.EXT $R/O

To change it back, just change the last part to **'$R/W'**.

To get a read-out of all files and their status at a slow speed (so if the list is long the screen won't advance faster than you can read it), type in:

STAT *.* $S

This function is extremely useful when you're trying to see if a diskette has a particular program or file you want. Refer to the CP/M manual "An Introduction to CP/M Features and Facilities" for other functions of the **STAT** command.

FORMAT

The FORMAT program formats a diskette into tracks and sectors. If you format a diskette with existing files, ALL DATA STORED ON THAT DISKETTE IS ERASED. Your NABU 1100 has two methods of storing data: Single Density or Double Density. You must format the diskette prior to use.

Place a system diskette (one with the utility programs on it) in drive A, and a new blank diskette into drive B. (Remember to cover the "write protect notch" on the diskette in drive B with the tape provided). Type the command:

FORMAT B: S (to format B in single density)
FORMAT B: D (to format B in double density)

and press the RETURN key. The system responds with:

NABU-1100 Format (Version 2.2.1)

TRACK
000 and the system formats each track until it is finished and displays the message:

Format completed

If you wish to format more than one diskette type the command:

FORMAT

and press the RETURN key. The system responds with:

NABU-1100 Format (Version 2.2.1)

(Control-C to exit)

Drive A or B? Press B and the system responds with:

Double density ? (Y/N):

Press **Y** (unless you're using single density), and the computer will respond with:

Format diskette in drive B, double density ? (Y/N):

The system is requesting verification of the information you have just given it. REMEMBER all information on the diskette is erased during Format. Press **Y** and the formatting begins. Pressing **N** will cause the program to start all over. Any other key will be ignored.

After the track information is displayed and formatting completed the system responds with:

Another format ? (Y/N):

Press **Y** to continue. If you press **N** the system responds with:

Place System disk in drive A, and type <RETURN>:

Ensure that you have a System disk with "boot" information on it and press the RETURN key.

If you have tried to format a "write protected" disk, ie. you did not cover the notch on the lower right hand corner, the system will inform you of this and return to the command level.

You may abort the formatting operation at any time by entering **CTRL-C**.

BACKUP

The **BACKUP** program is used to copy the entire contents of one diskette to another, operating system and all! Use this program to make back-up copies of your diskette, so you'll always have a copy of your files in case something happens to a diskette. get into the habit of always having a back-up copy of your diskettes.

To copy a diskette place the diskette to be copied in drive A and a properly formatted diskette in drive B. Type:

BACKUP A: B: (copies A: onto B:)

and press RETURN. The program will also work if you wish to copy B: to A: by typing:

BACKUP B: A: (copies B: onto A:)

Press the RETURN key, and the computer will respond with:

NABU-1100 Backup (Version 2.2.1)

Track
000 and it goes through each track as it copies then finishes by telling you:

Backup completed.

If you wish to backup more than one diskette type the command:

BACKUP

and press the RETURN key. The system responds with:

NABU-1100 Backup (Version 2.2.1)

(Control-C to exit)

Name of source drive:

Press **A** if you are backing up drive A, **B** for drive B.

Name of destination drive:

Press **B** if you want to copy onto the diskette in drive B. The computer will verify all of this by displaying:

Place source diskette in drive A.
Place destination diskette in drive B.

Copy diskette from drive A to drive B? (Y/N):

Press **Y** and the backup procedure begins. Pressing **N** will cause the program to start all over. Any other key will be ignored.

After the track information is displayed and the backup is finished the system responds with:

Another backup ? (Y/N):

Press **Y** to continue and change your diskettes. If you press **N** the system responds with:

Place System disk in drive A, and type <RETURN>:

Ensure that you have a System disk with "boot" information on it and press the RETURN key.

If you have tried to copy onto a "write protected" disk, ie. you did not cover the notch on the lower right hand corner, the system will inform you of this and return to the command level.

You may abort the backup operation at any time by entering **CTRL-C**.

If the diskettes you are using in this procedure are not identical in format, ie. in density (double or single) or sides (single or double), the system will respond with:

Disk format or size not identical

and return to the command level.

There are two options available to recover from this condition:

1) Change the format of the disk you are copying to (use FORMAT previously described).
2) Use the PIP commmand which follows.

BACKUP copies the operating system as well as all CP/M files. Thus:

BACKUP A: B: is equivalent to ERA B:*.*
PIP B:=A:*.*
COPYSYS A: B:

As with PIP, the diskette to be copied onto must have already been formatted.

PIP

The PIP program is used to transfer files. The most common use of PIP is to copy files from one diskette to another.

You can copy each file on a diskette, one at a time, and after each command is executed, another PIP prompt will appear. To exit from the program, just hit the RETURN key.

As an example, to copy a file called LETTER.TXT from the current drive (A:) to a diskette in drive B, type:

PIP

The computer will respond with the PIP prompt:

*

Type in:

B:=A:LETTER.TXT[V]

This command will copy LETTER.TXT from drive A onto drive B. There should be a slight delay before the system responds with another PIP prompt (*), indicating the copy has been made. The [V] at the end of the line is optional and performs an automatic verification to ensure that the copy operation was successful.

NOTE: The destination drive (drive that you want the program copied to) is always typed first.

If only one file is to be copied, you can place the command on the same line as the 'PIP' command. For example, the following command would perform the same function as illustrated above:

PIP B:=A:LETTER.TXT[V]

To copy all the files on drive A to drive B, use the command:

PIP B:=A:*.*[V]

This is a useful operation to perform when formatting a diskette, as you can install all the operating programs on it at once, rather than one at a time. However, any other files you have created on your diskette will also be copied. Refer to the CP/M manual "An Introduction to CP/M Features and Facilities" for additional file references.

CHECK

This utility program checks the tracks of a diskette and informs you of any errors.

CHECK operates much the same as FORMAT and BACKUP. It can accept an argument (i.e. a Drive Name) from the command line:

CHECK A: (checks diskette A:)
CHECK B: (checks diskette B:)

The system displays track information as it checks each track and sector. When completed, the system responds with:

CHECK COMPLETED

If the command is entered without an argument:

CHECK

the program enters a question-and-answer mode identical to FORMAT and BACKUP. This is useful in checking more than one diskette.

If the diskette you're checking has errors on it (scratches, or errors), the CHECK program will list the errors by track and sector> If it is a new diskette, DON'T PUT YOUR FILES ON IT. If it contains some of your files, don't put any more new files on it and transfer the existing files to another diskette as soon as possible using **PIP**. Most diskettes can be reformatted and used again if they fail this check test. Examin the diskette for physical damages i.e. scratches etc. If there is no apparent damage try reformatting and re-using the diskette.

COPYSYS

COPYSYS copies the operating system **(NABU-1100 CP/M)** from one diskette to another. CP/M cannot be copied by PIP because it is not a CP/M file.

COPYSYS can accept arguments from the command line:

COPYSYS A: B: (copies CP/M from A: onto B:)
COPYSYS B: A: (copies CP/M from B: onto A:)

If the command is entered without any arguments:

COPYSYS

The program enters a question-and-answer mode. The computer will respond with:

NABU-1100 Copysys (Version 2.2.1)

(Control-C to exit)

Source drive name (or <RETURN> to skip):

The system is asking you to place a system disk (one with the CP/M boot) into the computer. In our example, the diskette is in drive A (the source drive) press:

A

The system will respond with:

Source on A, then type <RETURN>:

Press RETURN

The system will respond with

Function complete.

Destination drive name:

We are copying from drive A to drive B (the destination drive.), press:

B

The system will respond with:

Destination on B, then type <RETURN>:

Press RETURN

The system will respond with:

Function complete.

Copysys completed.

Another copysys ? (Y/N):

Pressing **Y** will return you to the destination prompt. If your destination is drive B, change diskettes in drive B and press **B.** Pressing **N** (ie. if you do not want to copy the boot information to any other diskettes) will abort the program and the system will instruct you to:

Place System disk in drive A, and type <RETURN>:

This message will also appear if you enter CTRL-C at any time during the Copysys program. Ensure that you have a System disk with "boot" information on it and press the RETURN key.

If you have tried to copy onto a "write protected" disk, ie. you did not cover the notch on the lower right hand corner, the system will inform you of this and return to the command level.

FF

FF stands for "form feed", and that's what it does. It causes the printer attached to the system to eject one page of paper. It's convenient for those who don't have a top-of-form button on their printer.

The FF command has only one form:

```
FF
```

CP/M (including STARTUP)

Part of the NABU 1100 CP/M (Version 2.2.1) is contained in a file called **STARTUP.COM**. This program is exectuted automatically every time you turn the key to re-boot the system.If you get the message "STARTUP?" at cold boot, it means the file is missing (because, for example, you have used ERA *.*).

TO BOOT THE SYSTEM, a diskette must have both CP/M and STARTUP.COM.

USE COPYSYS TO COPY THE CP/M SYSTEM AREA FROM ONE DISK TO ANOTHER AND PIP TO COPY STARTUP.COM.

As supplied, the NABU 1100 CP/M allows you to attach a "parallel" type printer. You may change this default option using **SETUP** (see below) You may use **STAT** to temporarily change this default. Refer to NABU.DOC on your CP/M System disk and page 14 of "An Introduction to CP/M Features and Facilities" for further information.

SETUP

SETUP is used to alter the default parameters within the NABU-1100 CP/M. **SETUP** allows you to change any of the following parameters:

- serial or parallel printer
- serial port baud rate
- startup command

To use **SETUP**, type:

SETUP and press RETURN

The system responds with:

```
NABU-1100 Setup (Version 2.2.1)

To retain any parameter as-is, type return
To escape without making any changes, type control/c

Serial or parallel printer? (S/P) (default = P)
```

If a "serial" type printer is to be used type:
S and press RETURN.

The system responds with:

Serial baud rate? (110/300/600/1200/2400/4800/9600) (default=300)

The default setting of 300 baud is generally for communication devices such as telephone MODEMs. Most serial printers operate at 1200 baud and this is generally the value you must enter. If you are not using any serial devices (Printers or MODEMs), just press RETURN. The system will then ask:

Set new startup command? (Y/N) (default = N)

This is a very handy feature of this version of CP/M. The startup command is passed on to CP/M as a command line whenever the system cold-boots (i.e. by turning the key). For example, if you were making up a disk to use as a master disk for word processing with WordStar, you would enter **Y** and press return. The computer responds with:

Enter new command line:

You would type:

WS and press RETURN

The system will then perform a cold-boot and begin running WordStar automatically. This disk will now run WordStar every time you turn the key to re-boot. The command line can be any valid CP/M command such as **TYPE FILENAME.TXT,DIR** or **RUN GL** etc.

PRTBAUD

PRTBAUD sets the serial port baud rate to match the speed at which a printer or other serial device attached to it accepts and sends information. The speed is set to some default value by **STARTUP**, but can be changed at any time using **PRTBAUD.**

PRTBAUD can accept the selected baud rate from the command line. For example typing:

PRTBAUD 300 sets the serial port to 300 baud

Allowable baud rates are 110, 150, 300, 600, 1200, 2400, 4800, and 9600. If the command is entered without any arguments:

PRTBAUD

The system will respond with:

NABU-1100 Prtbaud (Version 2.2.1)

(Control-C to exit)

0 = 110
1 = 150
2 = 300
3 = 600
4 = 1200
5 = 2400
6 = 4800
7 = 9600

Please type a number between 0 and 7

You should respond with the appropriate number. Your system is now prepared to use the serial printer (or other serial device).

4. SYSTEM MAINTENANCE

Introduction

There may be infrequent occasions when your NABU 1100 does not perform the way it should. Most of these problems will have simple solutions that do not require a service technician.

This section outlines a few of the most common of these situations, their causes, and remedies. In addition, there are a few things you can do to prevent problems from occuring.

Many businessmen also find a maintenance agreement is a worthwhile investment. A copy of this agreement is enclosed.

4.1 Checklist

SYMPTOM	PROBABLE CAUSE	REMEDY
-No display on terminal	-no AC power	-turn intensity control up -check line cord - is it properly plugged in -check fuse at the back of terminal
-Drive A lights on, No CP/M prompt on terminal	-terminal not connected	-check terminal cable connection to NABU 1100 and terminal
	-defective or no CP/M boot diskette	-check if the proper diskette is in drive A -ensure that a good CP/M diskette is in drive A

SYMPTOM	PROBABLE CAUSE	REMEDY
-Disk drive light does not come on	-no AC power	-check line cord - is it properly plugged in -check the line fuse at the back of the NABU. If it is blown, call your local Computer Innovations Service Centre
	-computer requires reset	-reset computer
-Keyboard entry prints double	-Terminal incorrectly set for full duplex rather than half	-set terminal to half duplex
-Keyboard locks up after print command CTRL P releases keyboard	-printer is not enabled	-check if paper is in printer -check if printer is "ON LINE" or "ENABLED" -check if ribbon is out, replace -check cables to printer and NABU 1100 -check if printer is "ON" and plugged in. -Check if proper printer driver is installed i.e. serial or parallel

For all other problems please call your local Computer Innovations Service Centre.

The following are some problems that could develop on the 3135/3155 printers.

SYMPTOM	PROBABLE CAUSE	REMEDY
-Does not print (Fan not running)	-Power source	-Is printer connected to AC power? -Is POWER switch in ON position?
-Does not print. No carriage movement. Alarm sounds.	-Cover open	-Close cover. -"CHECK" indicator lights
-Alarm sounds. "RIBBON" and "CHECK" indicators light.	-Ribbon end	-Check ribbon cartridge. If using a multistrike cartridge, check to see if ribbon is at end (window on the cartridge should be empty). Press RESET switch.
-Alarm sounds. "PAPER and CHECK" indictors light.	-Paper out	-Check paper supply. Is paper loaded correctly? Press RESET switch.
-Carriage movement but does not print	-Ribbon broken or not installed properly	-Replace if necessary. -Are ribbon and thimble installed properly?

SYMPTOM	PROBABLE CAUSE	REMEDY
-Carriage movement but does not print	-Thimble broken or not installed properly.	-Replace thimble if necessary.
-Printing but no carriage movement. Alarm may sound.	-Broken carriage cable. -Obstruction in path of carriage.	-Call Service Representative
-Paper tearing	-Paper not loaded properly. -Obstruction in paper path. -If using forms tractor, too much tension may exist. -Paper release lever may be engaged.	-Check paper loading. -Adjust tractors. -Check paper release lever.

SYMPTOM	PROBABLE CAUSE	REMEDY
-Printing light or not sharp	-Ribbon worn, jammed, or broken.	-Replace if necessary.
	-Ribbon or thimble not properly installed.	-Check installation.
	-Copy control lever set incorrectly.	-Check position of copy control.
	-Impression switch set incorrectly.	-Check switch setting.
	-Damaged platen or thimble.	-Inspect for marks or abrasions. Replace if necessary.

The following are some problems that could develop on the 3150/3152 printers.

SYMPTOM	PROBABLE CAUSE	REMEDY
-Print too light	-Worn or defective ribbon	-Replace ribbon.
-Roll Paper/ Single Sheet paper does not advance.	-Pinch roller release lever in open position.	-Check ribbon threading diagram and correct as required.
-Printer completely inoperative.	-AC input plug not connected	-Connect AC input plug to power source.
	-Paper jam	-Set POWER switch to OFF position and carefully clear paper jam. Check condition of ribbon before setting POWER switch to ON position.

SYMPTOM	PROBABLE CAUSE	REMEDY
-Power applied/ data sent - printer does not print.	-Cable between input device and printer not connected.	-Check that connectors at both ends of data input cable are properly connected to mating connectors.
	-SELECT switch in DESELECT position.	-Depress switch in SELECT position.
-Fanfold paper does not advance properly.	-Pinch roller release lever in close position.	-Push pinch roller release lever backward to open position.

4.2 Installation

The proper installation of a NABU 1100 System will guarantee months of trouble-free operation. Your Computer Innovations Service Centre will install your system within 30 kms of the Service Centre for a flat rate of $200.00. With each system installation, your Computer Innovation Service Representative will:

- -interconnect your peripherals, as required;
- -perform start-up procedures, execute the standard verification tests, and make any adjustments necessary to ensure that your system is operational;
- -provide on-site service during the warranty period.

NABU 1100 Preventive Maintenance Record

Date of Purchase _____ Model _____ Serial # _____

Terminal _____ Make _____Model _____

Serial Number _____ Printer _____ Make _____

Model _____ Serial Number _____

Installation

Date_____ By _____

C.I.S.C. #_____

Note: If the system has not been installed by a Computer Innovations Service Centre, and it fails during the warranty period, the customer has the option of:

a) on-site service at a minimum of $50.00 per service call to cover travel charges;

or b) carry in service at no charge. The customer assumes all liabilities. Computer Innovations reserves the right to determine if the failure is operator error or warranty, and charge accordingly. All decisions are final.

I have read the above and do not want the system installed.

Customer name_____

Date_____

Salesperson_____

Preventive Maintenance

Date_____ W.O. #_____

System_____ Problem_____

Solution_____ Technician_____

C.I.S.C. #_____ Date_____

W.O. #_____ System_____

Problem_____ Solution_____

Technician _____ C.I.S.C. #_____

Date_____ W.O. #_____

System_____ Problem_____

Solution_____ Technician_____

Technician_____ C.I.S.C. #_____

4.3 **Preventive Maintenance**

Your computer system requires very little user preventive maintenance. No periodic disassembly, oil changing, or lubes are required. Occasional cleaning is the primary maintenance task. Because the CRT screen, like your home television screen, attracts dust, we recommend that you clean it with a damp cloth or window cleaner at least twice a month if you want a clear view of your input.

The performance of disk drives and diskettes can be seriously degraded by dust and dirt. The area around the computer should be vacuum cleaned thoroughly and routinely. This cleaning should be done, however, only when the computer system is off, or the static electricity generated by most vacuum cleaners may temporarily disrupt your computer's operation.

Printers get dirty from paper dust and paper "holes" as well as from ink smudges. The Technical Manual that comes with your printer has a list of instructions for preventive maintenance. You should review it.

By purchasing a Maintenance Contract, the Computer Innovations Service Centre will maintain your system worry-free. Routine preventive maintenance inspections will ensure that your system will remain in tiptop condition.

4.4 Maintenance Contract

Computer Innovations has established a new standard of service in the business microcomputer industry. The goal of every Computer Innovations Service Centre is 4 hour turnaround (repair) time for all maintenance contract customers. To accomplish this, Computer Innovations has created the "Service in a Suitcase", a modular replacement package containing all the modules which make up a NABU 1100 system. In the event of a system failure, one call to your local Computer Innovations Service Centre will usually rectify your problem.

Why should you buy a Maintenance Contract?

A maintenance contract is like an insurance policy to the customer. It provides the customer with the knowledge that should his system ever stop functioning, it will be repaired or replaced within a few hours.

Other customer benefits:

1. Fixed annual cost of ownership for system maintenance.
2. Same day repair.
3. Priority response.
4. On-site warranty service, automatically, when the service contract is purchased with your system or prior to the expiration of an existing warranty.
5. Large network of Computer Innovations Service Centres you can count on.
6. Modular exchange forestalls technical obsolescence. Every replacement module has the latest engineering update.
7. Renewable in yearly increments.

On-site service is just a phone call away. Our team is ready to provide you with prompt dependable service when you need it.

Where do I purchase a Maintenance Agreement?

The Computer Innovations Service Centre Maintenance Agreement is available only through Factory-Trained Computer Innovations Service Centres, at any Computer Innovations store. The reasoning behind this is that only C.I. Service Centres can implement the service product. Without the diagnostics, spare modules, and documentation of the "Service in a Suitcase", consistent performance on the Maintenance Contract is not possible.

What Do I Do When I Need Service?

The following steps should be taken to obtain service for your unit:

a) Document the problem.
b) Call your Computer Innovations Service Centre.

Document the Problem

This is one of the most important things to be done when your unit is malfunctioning. A properly documented problem can be repaired in less time and more accurately than one that is not. When something goes wrong, grab a pen and a sheet of paper and describe what happened. Include the date, time and any other times that the same problem occurred. The more you can tell us about the problem, the better the chances of us finding the problem right away.