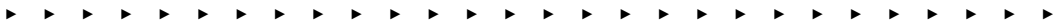




6200 Hand-Held Computer
USER'S GUIDE



NPN: 961-028-075
Revision A
June 1995

► **NOTICE**

This publication contains information proprietary to Norand Corporation. It is being supplied to you with the express understanding that the information contained herein is for the benefit of the contracting party only, and may not be copied, distributed, or displayed to third parties without the express written consent of Norand Corporation, and shall be returned to Norand Corporation upon written request. If a purchase, license, or nondisclosure agreement has been executed, the terms of that agreement shall govern this document.

This publication is furnished for information only, and the information in it is subject to change without notice. Although every effort has been made to provide complete and accurate information, Norand Corporation assumes no responsibility or liability for any errors or inaccuracies that may appear in this document.

We welcome your comments concerning this publication. Although every effort has been made to keep it free of errors, some may occur. When reporting a specific problem, please describe it briefly and include the book title and part number, as well as the paragraph or figure number and the page number.

Send your comments to:
Publications Department
Norand Corporation
550 Second Street SE
Cedar Rapids, IA 52401
Telephone (319) 369-3100
Faxsimile (319) 369-3453

® Registered trademark; Marca Registrada by Norand Corporation, Cedar Rapids, Iowa, U.S.A.

™ Trademark, Norand Corporation, Cedar Rapids, Iowa, U.S.A.

© Copyright 1994 Norand Corporation. All rights reserved.



This publication printed on recycled paper.

Acknowledgments

Microsoft, MS, and MS-DOS are registered trademarks and *Windows, Visual Basic for Windows, and Windows for Pen* are trademarks of Microsoft Corporation.

FCC Computer Compliance

► NOTICE

This equipment meets Class B digital device limits per Part 15 of FCC Rules. These limits protect against interference in a residential area. It emits, uses, and can radiate radio frequency energy. If you do not install and use the equipment according to its instructions, it may interfere with radio signals. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning our equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the radio or television receiving antenna.
- Increase the separation between the computer equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the radio or television receiver is connected.
- Consult the dealer or an experienced radio or television technician for help.

Canadian Computer Compliance

► NOTICE

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe B prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

Telephone Installation Warning Notices

The following notices apply to equipment that may be connected to telephone lines or systems. For your personal safety, and to protect this equipment from potential electrical or physical damage, do NOT connect equipment to telephone lines or data communication equipment unless the following warnings have been read, understood, and complied with.

- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.
- Avoid using telephone (other than cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.
- Do not use the telephone to report a gas leak in the vicinity of the leak.

Installation du téléphone : avertissements

Les avertissements qui suivent s'appliquent à tout équipement qui peut être branché aux lignes ou systèmes téléphoniques. Pour votre sécurité personnelle et pour protéger l'équipement de tout dommage électrique ou physique potentiel, NE PAS brancher un ordinateur tablette électronique ou ses périphériques aux lignes téléphoniques ou équipements avant que les avertissements suivants aient été lus, compris et observés :

- Ne jamais installer de câblage téléphonique pendant un orage électrique.
- Ne jamais installer de prise téléphonique dans un endroit humide à moins que la prise ait été spécifiquement conçue pour être utilisée dans les endroits humides.
- Ne jamais toucher les fils de téléphone ou de l'équipement terminal non isolés à moins que la ligne téléphonique n'ait été débranchée de l'interface réseau.
- User de prudence lors de l'installation ou de la modification de lignes téléphoniques.
- Éviter d'utiliser un téléphone (autre qu'un appareil téléphonique sans fil) pendant un orage électrique. Il pourrait y avoir un faible risque d'électrocution par la foudre.
- Ne pas utiliser le téléphone afin de signaler une fuite de gaz à proximité de la fuite.

CONTENTS



SECTION 1

General Information	1-1
About this User's Guide	1-1
Summary of Sections	1-1
Section 1	1-1
Section 2	1-1
Section 3	1-1
Section 4	1-1
Section 5	1-2
Section 6	1-2
Section 7	1-2
Hand-Held Computer Description	1-2
Hand-Held Computer Keyboard	1-6
Display	1-9
Battery	1-9
Memory	1-10
Main Memory	1-10
Flash ROM	1-11
CMOS RAM	1-11
PCMCIA Memory Cards	1-11
Diagnostic EEPROM	1-13
Reset Switch	1-13
Part Number Description for Your Hand-Held Computer	1-13
Hand-Held Computer Specifications	1-15

SECTION 2

Hand-Held Computer Operation	2-1
Introduction	2-1
Using PCMCIA Cards to Load Your Programs	2-2
Installing PCMCIA Cards	2-2
Removing PCMCIA Cards	2-4
Main Battery Installation	2-5
Charging Your Battery Pack	2-8
Backup Battery	2-8
Installing the Backup Battery	2-9
Backup Battery Life	2-11
Dead Backup Battery	2-11
Downloading Programs into Your Hand-Held Computer	2-12
Reset Switch	2-13

SECTION 3

Routine Care and Maintenance	3-1
Introduction	3-1
Main Battery Care	3-1
LOW BATTERY Indication	3-1
Charging the Main Battery	3-2
Charging the Battery in Your Hand-Held Computer	3-2
Dead Backup Battery	3-2
Replacing the Backup Battery	3-3
Hand Strap Replacement	3-6
Cleaning Your Hand-Held Computer	3-9
Case and Display	3-9
Keyboard	3-9
Surface Connectors	3-10

SECTION 4

Troubleshooting	4-1
Introduction	4-1
Troubleshooting Chart	4-2
Diagnostic EEPROM	4-3
Repair Service	4-3

SECTION 5

Connector Pin-Outs	5-1
15-Pin Female D-Sub Connector (standard)	5-1
12-Pin Surface Contact Connector (standard)	5-2
4-Pin RJ11 Connector (optional)	5-3

SECTION 6

Norand Utilities Program	6-1
Introduction	6-1
Program Conventions	6-1
Main Screens	6-3
Pop-Up Menus	6-3
Drop Down Lists	6-3
Keyboard Standards	6-4
Boot Drive Utility	6-5
Screen Diagrams	6-6
Main Menu Entry Point	6-6
Language Selection Menu	6-6
Program Load/Main Menu	6-7
Modem Parameters	6-9
Communication Status	6-10
Advanced Utilities Menu	6-11
Format RAM Cards	6-12

SECTION 7

Advanced Power Management System	7-1
Introduction	7-1
Battery Management Icons	7-3

FIGURES

Figure 1-1 6200 Hand-Held Computer Front View	1-4
Figure 1-2 6200 Hand-Held Computer Back View	1-5
Figure 1-3 6200 Hand-Held Computer With 30-Key Keyboard	1-7
Figure 1-4 6200 Hand-Held Computer With 56-Key Keyboard	1-8
Figure 1-5 PCMCIA Memory Card Slots	1-12
Figure 1-6 Part Number Identification	1-14
Figure 2-1 Installing and Ejecting PCMCIA Cards	2-3
Figure 2-2 Opening Main Battery Compartment	2-5
Figure 2-3 Main Battery Compartment	2-6
Figure 2-4 Installing Rechargeable Main Battery Pack	2-7
Figure 2-5 Top End Hand Strap Removal	2-9
Figure 2-6 Backup Battery Replacement	2-10
Figure 2-7 Reset Switch	2-13
Figure 3-1 Top End Hand Strap Removal	3-4
Figure 3-2 Backup Battery Replacement	3-5
Figure 3-3 Removing The Hand Strap	3-7
Figure 3-4 Removing Hand Strap Screws	3-8
Figure 3-5 Keyboard Removal	3-10
Figure 7-1 Graphic Mode Icons	7-3
Figure 7-2 Text Mode Icons	7-4

TABLES

Table 4-1 Basic Troubleshooting	4-2
---------------------------------------	-----

Section 1

General Information



About this User's Guide

This user's guide is divided into seven sections. Sections 1 and 2 help you to become familiar with your new hand-held computer, and Section 3 is for routine maintenance. Section 4 is for troubleshooting system problems. Section 5 provides the pin-outs for the external connectors on your hand-held computer. Section 6 contains the Norand Utilities Program screens for setting the parameters for your system. Section 7 contains the Advanced Battery Management System instructions.

Summary of Sections

Section 1

Section 1 contains general information about the components of your 6200 Hand-Held Computer. This includes telling you how the user guide is organized, a summary of the sections, and the specifications for your hand-held computer.

Section 2

Section 2 tells you how to prepare for using your 6200 Hand-Held Computer.

Section 3

Section 3 contains routine maintenance for your 6200 Hand-Held Computer. Routine maintenance includes recharging the main battery pack, replacing the backup battery and hand strap, and cleaning the hand-held computer.

Section 4

Section 4 steps you through some procedures to use when troubleshooting your hand-held computer. This section does not contain all troubleshooting

that can be done by an authorized Norand Customer Support Specialist, but does contain information to aid you in determining the level of assistance you may need.

Section 5

Section 5 contains the pin-outs for the external connectors of your 6200 hand-held computer. This section is not usually needed for day to day tasks but more to provide technical assistance for interfacing to other manufacturer's products.

Section 6

Section 6 contains the Norand Utilities Program screens. This is system level information and is intended to be used by your system administration people when defining and setting parameters to support your application.

Section 7

Section 7 contains the Advanced Battery Management System information for running under DOS.

Hand-Held Computer Description

NORAND[®] hand-held computers are used in the mobile systems marketplace to perform a wide variety of tasks. Technology advances allow the design team at Norand to provide features and benefits to you in the 6200 hand-held computer that have not been available before. Some of these benefits include:

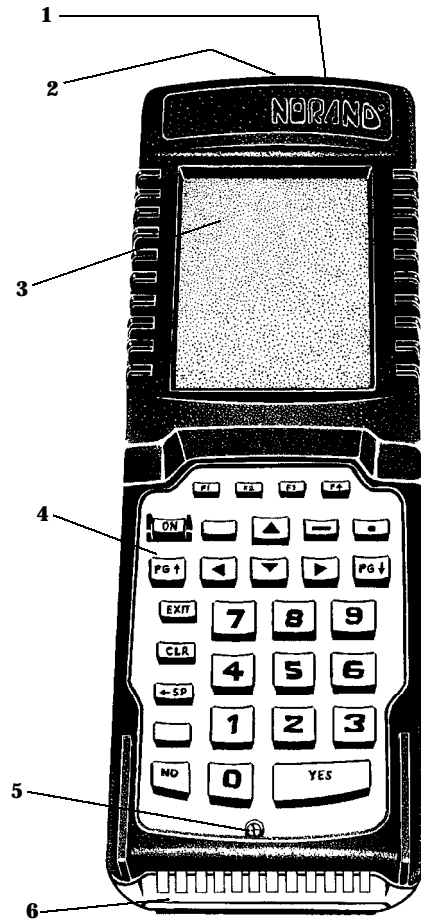
- ▶ Faster processing of data
- ▶ Larger data and program storage
- ▶ PCMCIA (Personal Computer Memory Card International Association) Memory cards
- ▶ Internal modem with PCMCIA card form factor
- ▶ Touch screen display
- ▶ Signature capture

Norand continues its tradition of providing compatibility with previous models. Most applications will work with either your new 6200 hand-held

computer or previous 4000 Series models of NORAND hand-held computers.

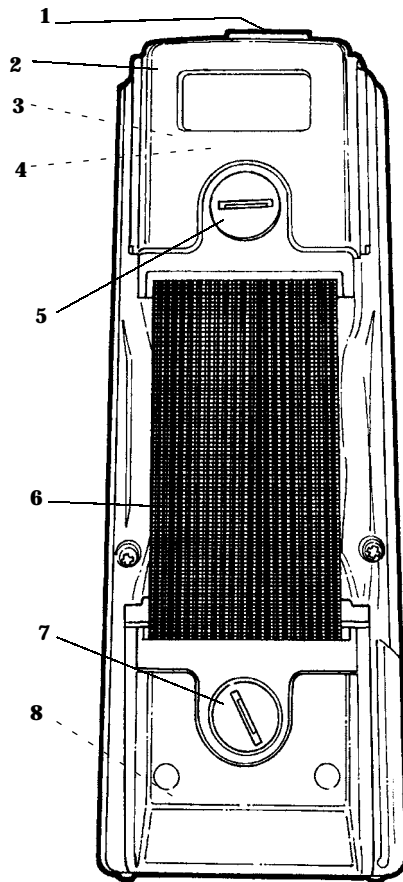
Additionally, your 6200 hand-held computer will work with the 4000 Series of printers, communications controllers and communication docks.

The following descriptions will familiarize you with the name, function, and locations of the main hand-held computer components. Figure 1-1 and Figure 1-2 on pages 1-4 and 1-5 show you the location of these key components.



- 1. 15-Pin Females D-sub connector
- 2. RJ-11 jack (Optional)
- 3. Display (Optional touch screen)
- 4. Keyboard
- 5. Keyboard mounting screw
- 6. 12-Pin surface contact connector

Figure 1-1
6200 Hand-Held Computer Front View



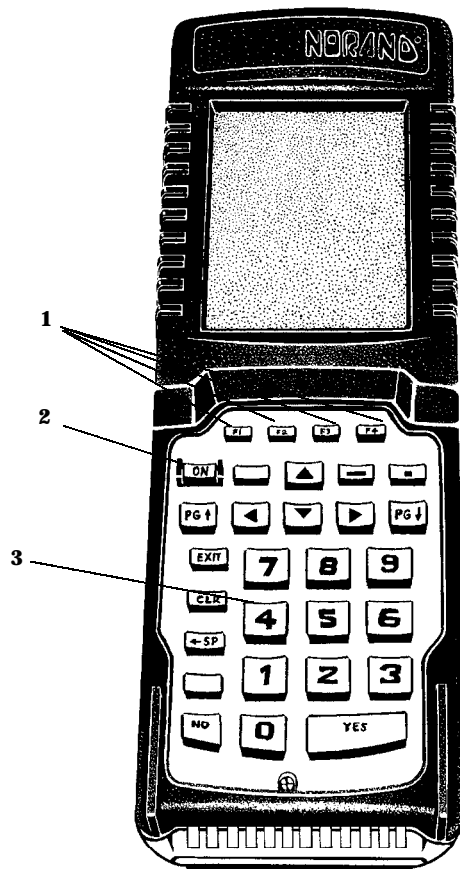
1. 15-Pin female D-sub connector
2. PCMCIA memory card door
3. Backup battery (inside)
4. Reset switch (inside)
5. PCMCIA latch knob
6. Hand strap
7. Main battery latch knob
8. Main battery pack (inside)

Figure 1-2
6200 Hand-Held Computer Back View

Hand-Held Computer Keyboard

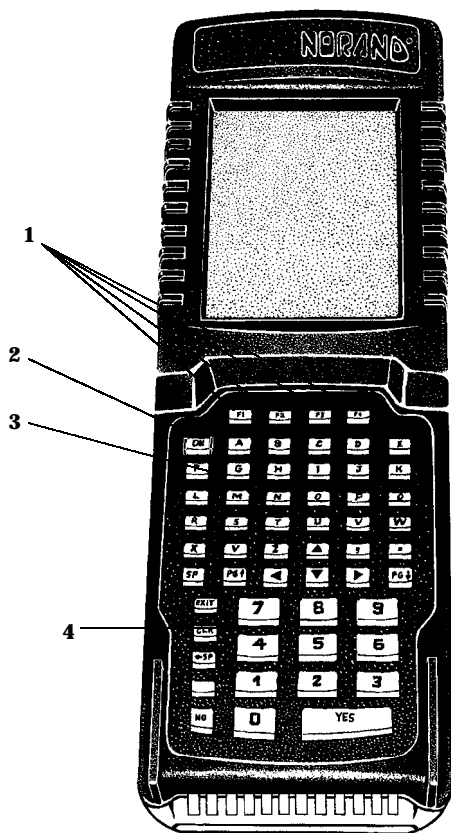
The 6200 hand-held computer provides four keyboard options. Figure 1-3 on page 1-7 and Figure 1-4 on page 1-8 detail the 30 and 56 key keyboards.

- ▶ 30 key fully numeric and special alphabetic characters using the shift key, with touch screen
- ▶ 30 key full numeric and special alphabetic characters using the shift key, without touch screen
- ▶ 56 key full numeric and alphabetic, with touch screen
- ▶ 56 key full numeric and alphabetic, without touch screen



1. Special function keys
2. ON/OFF key
3. Numeric keys

Figure 1-3
6200 Hand-Held Computer With 30-Key Keyboard



- 1. Special function keys
- 2. ON/OFF key
- 3. Alphabetic keys
- 4. Numeric keys

Figure 1-4
6200 Hand-Held Computer With 56-Key Keyboard

Display

The 6200 hand-held computer has two display options.

- ▶ With Touch Screen
- ▶ Without Touch Screen

The display shows status messages, keyed-in entries, customer or product lists, calculations, and prompts which request a response from you.

The touch screen display can be used with a stylus pencil, or by using your finger to choose the function of the terminal, capture signature, or enter data.

Your hand-held computer display contains a backlighting feature. Backlighting the display helps when using your hand-held in dark rooms or during early or late hours on the job. Through your application software you can adjust the brightness and contrast of the display screen.

Backlighting provides a great benefit in dark conditions. Backlighting does, however, reduce battery life, therefore, turn off when done using. The default setting for the backlighting feature shuts itself off after two minutes of use. This time can be adjusted through your application settings. The Norand Pen*Key Programmer's Reference Guide NPN: 977-028-014 contains details for adjusting contrast of the display, and backlight setting.

Additional benefits of your 6200 hand-held computer are:

- ▶ Default VGA fonts or scaled font sizes
- ▶ Graphic driver

Battery

The 6200 hand-held computer can be used with three main battery pack options:

- ▶ Alkaline
- ▶ Nickel Cadmium (NiCd)
- ▶ Nickel Metal Hydride (NiMh), available in the future

Your 6200 hand-held computer knows the kind of batteries you have installed. If you are using alkaline, nickel cadmium (NiCd) or nickel metal hydride (NiMh) batteries, your hand-held computer senses the amount of charge left in your main battery pack before it goes into a low battery condition.

When your hand-held computer goes into a shutdown mode because of low battery condition, the data is protected by the backup battery. Your 6200 hand-held computer will not accept data or process transactions until you deal with the low battery condition. The job of the backup battery is to protect the data you entered.

Your 6200 hand-held computer contains a replaceable alkaline backup battery. Most of the time the backup battery is in a rest mode, ready to take over data protection instantly when the main battery cells are in low condition or out of the hand-held computer.

This User's Guide may occasionally use the term "cycles" when presenting rechargeable battery instructions. Cycles, are the number of times the rechargeable battery pack can be charged, used, and recharged during the life of battery. The rechargeable battery design should give you approximately 500 cycles of use. There are no guarantees on this number because it depends greatly on how the battery pack is used and cared for.

The **Routing Care and Maintenance** section beginning on page 3-1 of this User's Guide provides detailed instructions for maintaining the rechargeable battery pack. Your 6200 hand-held computer will display an icon indicating battery energy level. The complete information describing these is contained in Section 7 beginning on page 7-1.

Memory

The 6200 hand-held computer design uses these types of memory:

- ▶ Main Memory DRAM
- ▶ Flash ROM
- ▶ EEPROM
- ▶ CMOS RAM
- ▶ PCMCIA Memory Cards

Main Memory

Your main memory DRAM options available are 2 or 4 Megabytes. The 6200 hand-held computer main memory was ordered at the time your unit was purchased. You are not able to upgrade to a higher memory size. A new memory host board must be installed at your Norand Customer Support Center. This memory is protected by the backup battery during low main battery conditions or when the main battery pack is removed.

Flash ROM

Your hand-held computer has 512K of flash ROM. This stores the BIOS and DOS firmware. Applications stored in flash ROM are copied into DRAM for execution.

CMOS RAM

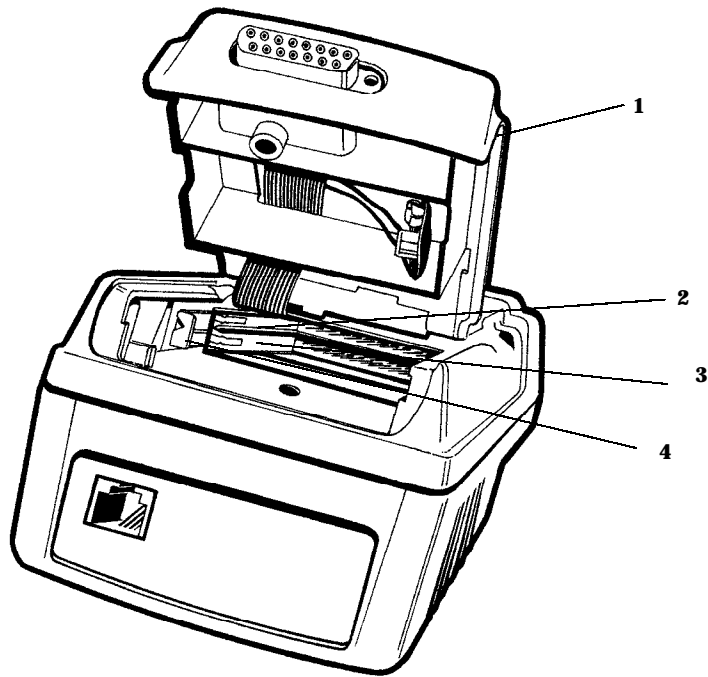
The 6200 hand-held computer contains 178 bytes of CMOS RAM and contains the system configuration parameters. This CMOS RAM is powered from the backup battery.

PCMCIA Memory Cards

Different brands of PCMCIA memory cards can be used in your 6200 hand-held computer. These memory cards are available in a variety of memory sizes and types. Check with your Norand Sales Representative or System Engineer for specific options.

Your 6200 hand-held computer provides two PCMCIA slots. Each slot accepts one PCMCIA Type 2 or Type 3 card. These slots are used primarily for storage of data on a memory card, much like a floppy disk drive on a PC. You can use Type 2 or Type 3 cards in both Drive B (upper) and A (lower). Type 3 cards include pagers, disk drives, network adapters, radios, and other future options.

You can use a Type 2 card in Drive A and Drive B at the same time. If you have a Type 3 card in Drive A you can not use Drive B. Figure 1-5, page 1-12 shows the locations and access to the memory card slots.



1. PCMCIA door (backup battery not shown in compartment)
2. Upper memory card (drive B) type 2 or type 3 cards
3. Lower PCMCIA memory card (drive A) type 2 or type 3 cards
4. Memory card eject buttons (one on each side)

Figure 1-5
PCMCIA Memory Card Slots

Diagnostic EEPROM

The 6200 hand-held computer contains a 256 byte serial access EEPROM. This EEPROM is a nonvolatile storage place for system, service, and diagnostic information. This provides useful information to a Norand Customer Support Specialist should your hand-held computer fail to operate. You will be instructed by the Norand personnel to complete any steps while they are troubleshooting your terminal with you.

Reset Switch

All computers lock-up (fail to operate) from time to time. With your 6200 hand-held computer, when it fails due to a lockup, pressing the RESET switch will take you to the first screen of the application you were in.

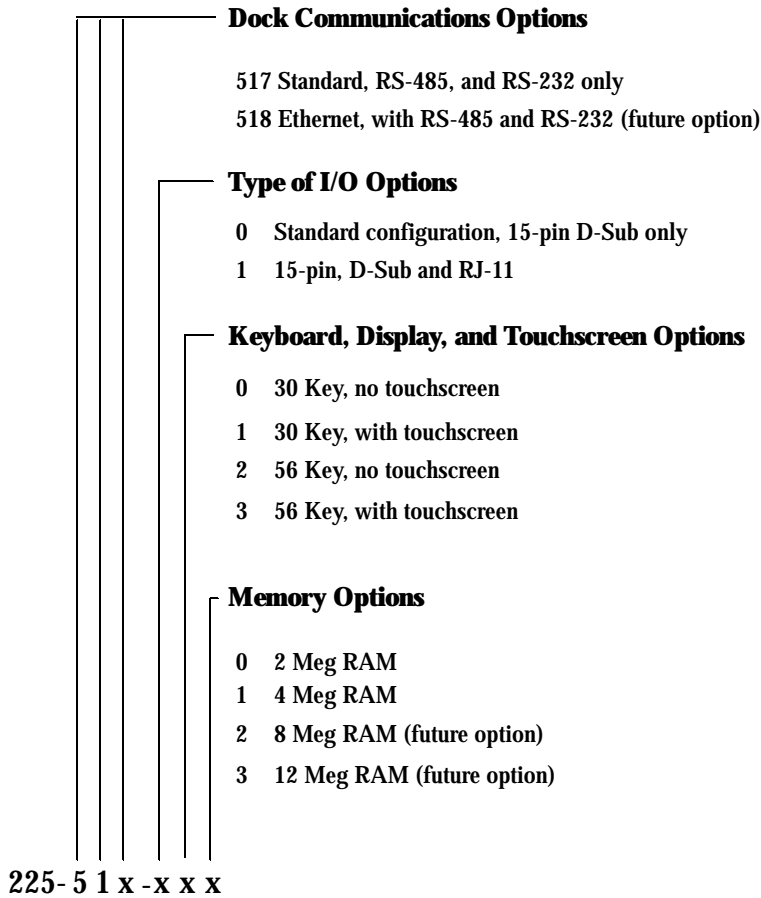
It may be helpful to you to have either your company system programmers, or the Norand System Engineer, work with you to make sure all the ROM Utility Application parameters are set correctly.

The Reset Switch on your 6200 hand-held computer is located so you cannot accidentally hit it. Section 2 shows you where and how to reset this switch.

Part Number Description for Your Hand-Held Computer

The part number label (located under the hand strap) for your 6200 hand-held computer indicates the features that make up your particular model (see Figure 1-6 on page 1-14). This information will be helpful when you call your Norand Customer Support Center with questions regarding maintenance, service, or system support.

6200 Hand-Held Computer Part Number



Example: Part Number 225-517-031
4 meg RAM, 56-key with touch screen, and 15-pin I/O connector

Figure 1-6
Part Number Identification

Hand-Held Computer Specifications

Size:	9.575 inches (24.32 cm) long 3.312 inches (8.41 cm) wide 2.8 inches (7.11 cm) tall
Temperature:	
Operating:	-20 to +60°C (4 to +140°F)
Storage:	-30 to +70°C (-22 to +158°F)
Weight:	30 ounces (850.5 g)
Humidity:	5 to 90% noncondensing
Static Protection:	20 kV
Power source:	
Main battery:	AA size alkaline (standard) NiCd battery pack (standard) Nickel metal hydride pack (<i>optional</i>)
Backup battery:	9 volt alkaline (standard)
Charging rate:	
0 to +60 °C: (+14 to 140 °F)	Normal charge (fully charge ≈ 2.5 hours)
Below 0 °C:	Trickle charge
Communication:	
Interface:	RS-232 and RS-485 Ethernet (<i>optional</i>)
Protocol:	Norand Proprietary Communications Protocol (NPCP), X modem, Y modem

System Components:

FLASH

EPROM: 512K byte FLASH array

DRAM: 2 or 4 megabytes

Card Options: Two PCMCIA slots; one type 2, and one type 3, or both can use type 2 cards

Processor: AM386XLV, 3.3 volt, 25 Mhz.

Display:

Type: VGA compatible LCD (standard)
touch screen (optional)

Size: 160 (wide) by 200 (long) pixel portrait orientation
160 (wide) by 300 (long) pixel (available at a later date)

Section 2

Hand-Held Computer Operation



Introduction

Unpack your NORAND® 6200 hand-held computer and inspect it for signs of physical damage that may have occurred in shipment or storage.

This section tells you how to:

- ▶ Install the main and backup batteries
- ▶ “Power-up” your hand-held computer
- ▶ Install optional memory cards
- ▶ Connect to peripheral devices
- ▶ Use the Reset Switch

When you start using your 6200 hand-held computer or any time that all power has been completely removed, you are “cold starting” (or “cold booting”) your hand-held computer. The method you use to “cold start” your hand-held computer depends on your application.

For example you may download (transfer from the host computer to your hand-held computer) the application and data into your hand-held computer. Or, you may use PCMCIA cards to load the application and data into your hand-held computer.

Depending on the method you are using, the result will be the same but the steps you go through may vary from the way this User’s Guide presents the material.

Using PCMCIA Cards to Load Your Programs

To load the programs into your hand-held computer using the PCMCIA card method requires a “boot” card in either the upper card or lower card slot. The upper slot may be referred to by your application commands as “Drive B.” The lower card slot may be referred to as “Drive A.”

In order to boot your 6200 hand-held computer in this manner the card in the slot or drive must be a “bootable” card and your 6200 must be programmed to attempt to boot from the A or B drive. Typically, your PCMCIA should contain at a minimum these statements on your card.

In the CONFIG.SYS:

```
shell=a:\command.com a:\vp  
device=d:\norpm.exe  
files=128  
buffers=40
```

In the root directory you should have a copy of the MS-DOS 5.0 version of COMMAND.COM.

For complete details regarding creating a “boot” card, refer to the instructions in the Pen*Key™ Programmer’s Reference Guide NPN: 977-028-014.

Put the “boot” card in Drive A or B, before the main battery pack is installed (see Figure 2-1 on page 2-3, for card slot identification). If a startup card is not inserted before you attempt to start your hand-held computer, the display will show the NORAND UTILITIES LOAD PROGRAMS/ DATA screen. Section Six (see page 6-1) contains the menu screens and explanations for those procedures.

Installing PCMCIA Cards

1. Use a flat blade screwdriver or the edge of a coin, to open the door. Use a screwdriver or coin that fits the slot properly or in time it will wear away the corners of the latch knob.
2. Open the PCMCIA card compartment by turning the latch knob 1/4-turn clockwise (see Figure 2-1 on page 2-3).
3. Slide the door about 1/8 inch towards the end of your hand-held computer, then the door will open.

4. Slide the card, connector-end first, into the slot. If it resists going in, flip the card over and try again.
5. Reinstall the compartment door and turn the latch knob 1/4-turn counterclockwise to lock it.



1. Upper PCMCIA card (drive B) type 2 or type 3 cards
2. Lower PCMCIA card (drive A) type 2 or type 3 cards
3. Memory card eject buttons (one on the other side not shown)
button on left is for drive B (upper), button on right is for drive A (lower)

Figure 2 1
Installing and Ejecting PCMCIA Cards

Once the “boot” disk is inserted in the Type 2 slot, you can either remove and install the main battery pack, or press the reset button (refer to page 2-13 before pushing the reset button) to perform a cold start.

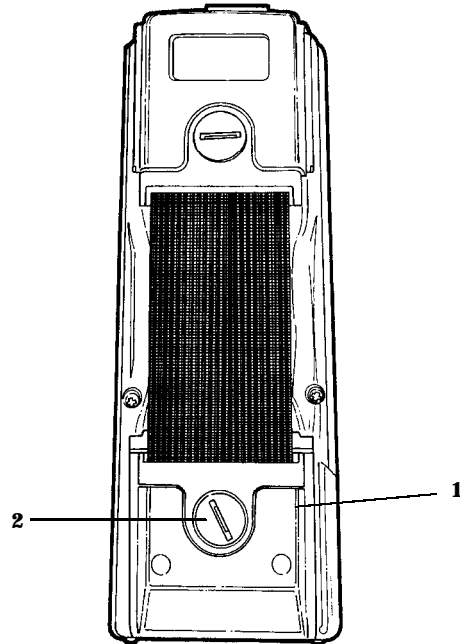
Removing PCMCIA Cards

The PCMCIA card compartment contains Ejection Buttons for removing the cards from the slots (refer to Figure 2-1 on page 2-3 for location).

These buttons have an arrow on them to identify the ejector for either the upper slot (Drive B) or the lower (Drive A) slot. Press in on the ejector button to release and eject the card. The button will eject the card far enough out so you can pull it the rest of the way with your fingers.

Main Battery Installation

1. Open the battery compartment door by turning the latch knob, on the hand strap, (see Figure 2-2, Figure 2-3 and Figure 2-4, on pages 2-5, 2-6, and 2-7) 1/4-turn counterclockwise. Use a flat blade screwdriver or the edge of a coin, to open the door. Use a screwdriver or coin that fits the slot properly or in time it will wear away the corners of the latch knob.



1. Main battery compartment
2. Latch knob (turn counterclockwise to open, clockwise to close)

Figure 2 2
Opening Main Battery Compartment

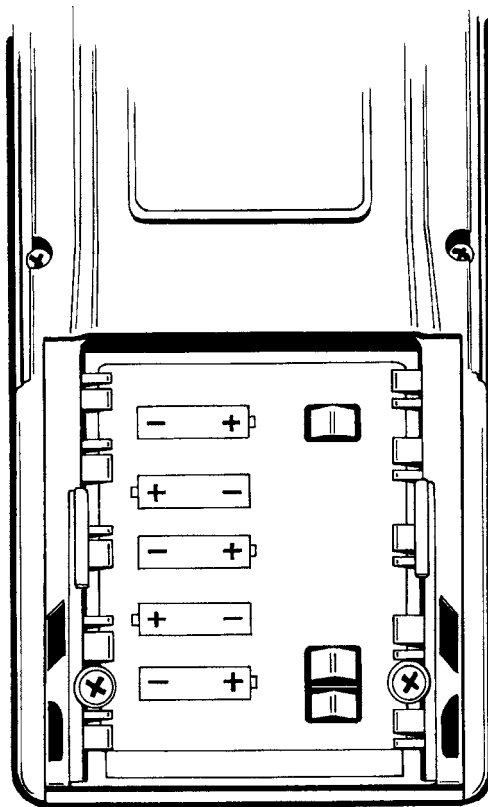


Figure 2 3
Main Battery Compartment

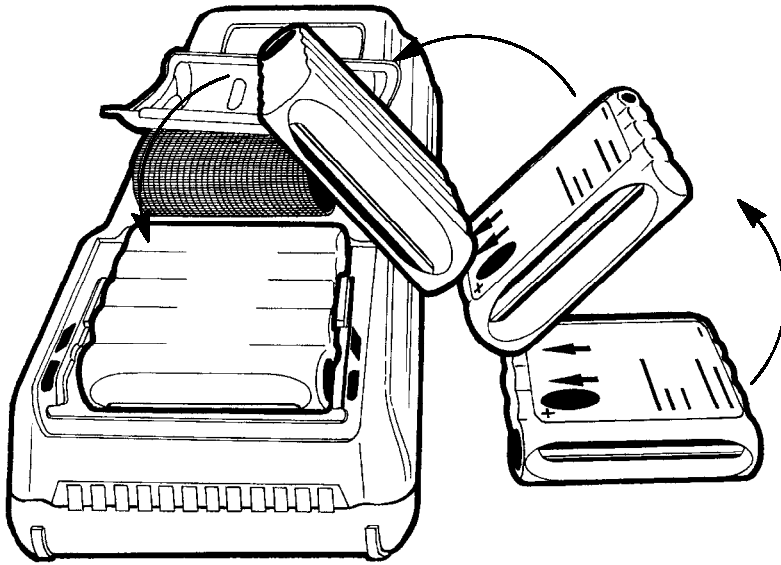


Figure 2 4
Installing Rechargeable Main Battery Pack

2. With the battery pack contacts facing into the terminal and with the flat and curved portions aligned with the battery compartment opening, slide the battery pack into the compartment. The battery compartment contains a label showing the proper positioning of the pack with markings for placement of the positive and negative contacts.

The nickel cadmium (NiCd) or nickel metal hydride (NiMh) battery packs have three exposed electrical contacts. The two round contacts are for the positive and negative terminals of the battery pack, while the round surface contact is a switch plate that completes the charging circuit.

3. Reinstall the door and turn the latch knob 1/4-turn clockwise to lock it.

▶ **NOTE:**

*Fully charge the battery pack before using your 6200 hand-held computer for the first time. Charging time takes about 3-4 hours. See *Charging Your Battery Pack* on page 2-8 for instructions.*

Charging Your Battery Pack

Charging your NiCd battery can be done either in your hand-held computer or outside in a charger. The following devices provide charging of the batteries while they are in the hand-held computer:

- ▶ 4960 MultiDock
- ▶ 4950 Single Dock
- ▶ 4810, 4815 and 4820 Fixed-mount Printer
- ▶ Many modems

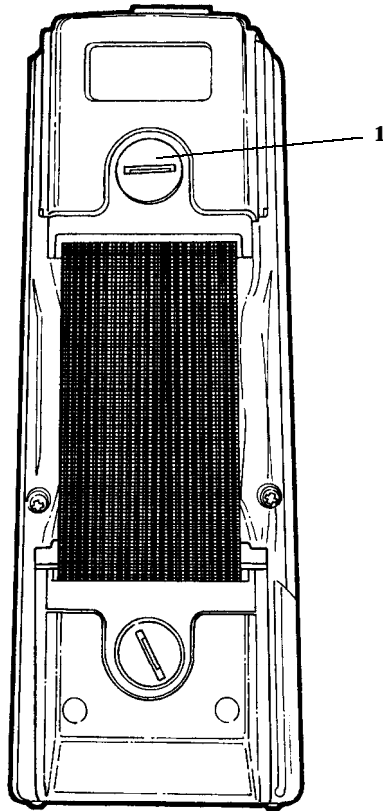
Backup Battery

Your 6200 hand-held computer comes with a 9-volt alkaline backup battery. This battery provides protection of your data when the main battery is removed from the hand-held computer or when the main battery goes into a low battery condition.

The backup battery will provide protection for maintaining data approximately 24-30 hours with the main battery removed or completely run down.

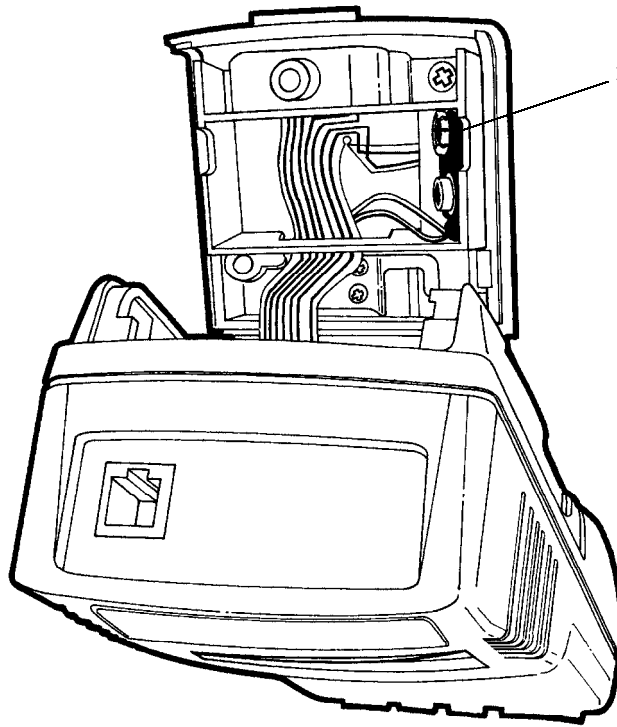
Installing the Backup Battery

1. Place your 6200 hand-held computer on a flat surface. Put it on a soft cloth or mat to prevent scratching it.
2. Open the latch knob on the top end of the hand strap. Refer to Figure 2-5 and Figure 2-6 on page 2-9 and 2-10 for hand strap and battery compartment part location.



1. Latch knob (turn clockwise to open, counterclockwise to close)

Figure 2 5
Top End Hand Strap Removal



1. Backup battery connector

Figure 2 6
Backup Battery Replacement

3. Snap the backup battery connector onto the battery.
4. Slip the battery inside the holder and replace hand strap end cap.
5. Close the latch knob.

Backup Battery Life

A frequently run down main battery drains energy from the backup battery. If your backup battery is not called upon to often to maintain the data when the main battery is low or removed, it contains enough energy for about 12 months. Whenever your hand-held computer alerts you that the backup is low, replace the battery as soon as you can. It protects your data.

Dead Backup Battery

If both the main and backup batteries are dead, you must reload your application program. Usually, your backup battery will fail only if the main battery is dead and the backup has maintained data in your hand-held computer for approximately 24-30 hours.

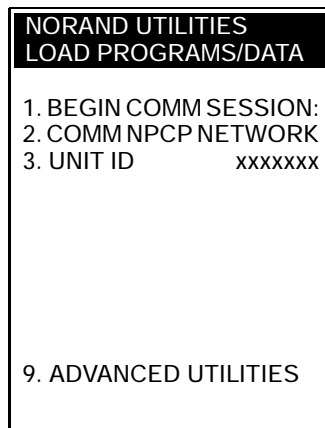
The Specification sheet in Section One (page 1-15) shows you the type of backup battery to use.

Downloading Programs into Your Hand-Held Computer

Downloading programs into your hand-held computer requires placing your computer into a docking device instead of loading from PCMCIA cards. Using this method, install and charge the main and backup batteries before downloading the programs.

Turn your hand-held computer on by pushing the ON button. Then insert your computer into the downloading device. The first screen you see will show you general information, that being Norand Corporation, program version, and copyright data. Press the **[YES]** key and continue.

This next screen will follow:



The default setting (BEGIN COMM SESSION) will be highlighted. If this is the setting you want press the **[YES]** key and continue. If you want to change the parameters to something other than the default:

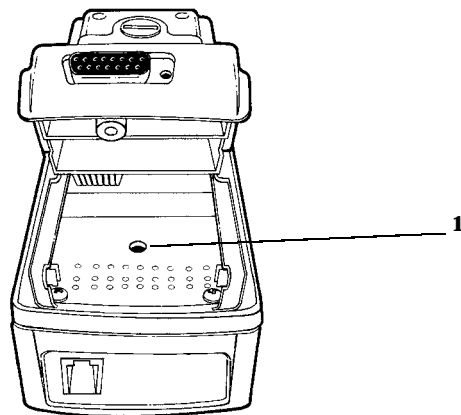
- Press the number of the menu option you want,
- or
- Use the arrow keys to highlight the desired selection
- then press the **[ENTER]** key.

At this point go to Section 6 on page 66-1 for the Norand Utilities Programs procedures.

Reset Switch

Section One of this User's Guide alerts you that all computers lock-up from time-to-time. You might fear losing your hard work. You may be tempted to push this switch at first. Please call a Norand Customer Support Specialist before you reset your hand-held computer. They might help you prevent resetting your hand-held computer, and losing your data. The 6200 hand-held computer design provides a starting point so you do not have to completely start over.

Figure 2-7 on page 2-13, shows the location of the Reset Switch. Use a ballpoint pen when pushing the Reset Switch instead of a lead pencil. Lead could break off and get lost in the compartment. This could cause serious damage to the hand-held computer and frustration for you.



1. Reset switch location

Figure 2 7
Reset Switch

Section 3

Routine Care and Maintenance



Introduction

Your 6200 hand-held computer is designed to withstand normal use in harsh environments. Occasional maintenance is required to ensure trouble-free operation. The procedures in this section should help keep your hand-held computer in good working condition.

Your hand-held computer draws power and charges from most devices you connect to it. Do not leave your hand-held computer on a charging device all the time since this can shorten the life of your battery pack. Rechargeable battery technology works best when batteries rely on their own energy, use that up, and are then recharged.

The 6200 hand-held computer protects itself from potential overcharges. But leaving it out of charging sources ensures the longest battery life.

Maintenance procedures included in this section provides instructions on identifying Low Battery conditions, replacing the hand strap, and cleaning your hand-held computer.

Main Battery Care

When your 6200 hand-held computer displays LOW BATTERY, it is time to replace the alkaline battery or to recharge the Nickel Cadmium (NiCd) or Nickel Metal Hydride (NiMh) battery pack.

LOW BATTERY Indication

The display on your hand-held computer alerts you when the battery is reaching the low battery condition. There will be several graduated warn-

ings such as “30 Minutes Remaining” (changing to 20 minutes, then 10 minutes, etc.) to give you an idea of the relative useful battery life remaining. If your application allows icons to display, the complete information describing that is contained in Section 7 beginning on page 7-1. When you notice the first low battery warning, it is time to plan to either recharge the battery pack or replace the alkaline batteries.

When you turn your hand-held computer ON and it is either slow to respond or does not respond at all, this usually indicates a low main battery condition. If this occurs, turn your hand-held computer OFF, then ON again: listen for a series of three long “beeps.” This signals that the main battery is too low to operate your hand-held computer. Just to be sure, though, insert your hand-held computer in a printer or other charging source, turn it ON, and see if the hand-held computer responds. If it does, follow **Charging the Main Battery** instructions that follows. If it does not respond when inserted in the equipment that provides charging, another problem could exist. Refer to the **Troubleshooting** section for solutions.

Charging the Main Battery

The battery pack will recharge in 3-4 hours either in or out of your hand-held computer. You must charge a new battery pack before using it. To give you the most service from your rechargeable battery pack Norand recommends completely reconditioning the battery pack every two months. Reconditioning instructions are documented in your application software, refer to that documentation for complete details.

Charging the Battery in Your Hand-Held Computer

The rechargeable battery pack in your hand-held computer is being recharged every time it is inserted in a charging source (e.g. printer, dock, etc.). If you intend to charge the battery pack after a Low Battery indication occurs, then you must leave your hand-held computer in that charging source for at least 3-4 hours to fully recharge the pack.

Dead Backup Battery

If both your main and backup batteries are dead, you must reload your application program. Usually, your backup battery will die only if the main

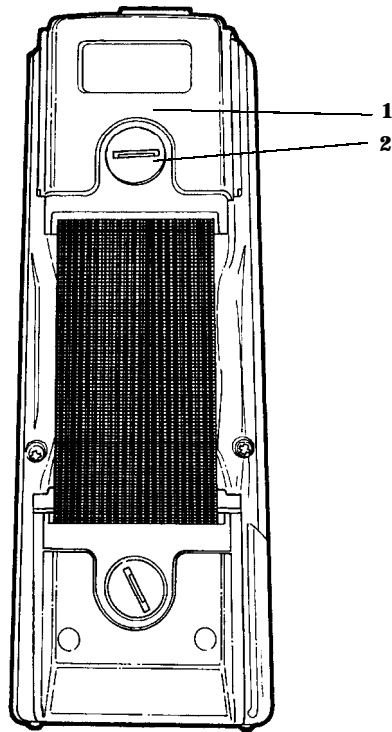
battery is dead and the backup has maintained data in your hand-held computer for over 30 hours.

Before you reload your application program, replace the backup battery and fully charge (or replace the alkaline battery) your main battery pack.

The Specification sheet in Section One (page 1-15) indicates the type of backup battery to use.

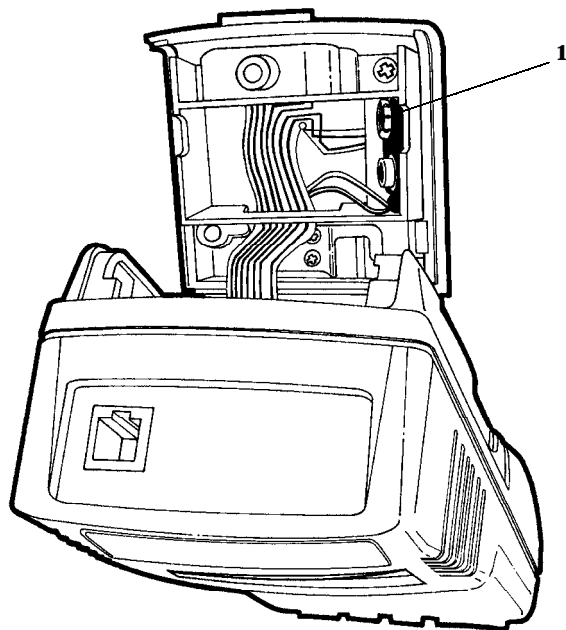
Replacing the Backup Battery

1. Place your 6200 hand-held computer on a flat surface. Put it on a soft cloth or mat to prevent scratching it.
2. Open the latch knob on the top end of the hand strap. Refer to Figure 3-1 and Figure 3-2 on page 3-4 and 3-5 for hand strap part location. Use a flat blade screwdriver or the edge of a coin, to open the door. Use a screwdriver or coin that fits the slot properly or in time it will wear away the corners of the latch knob.



1. **Directional arrow on case**
2. **Latch knob (turn in direction of arrow to open)**

Figure 3-1
Top End Hand Strap Removal



1. Backup battery connector

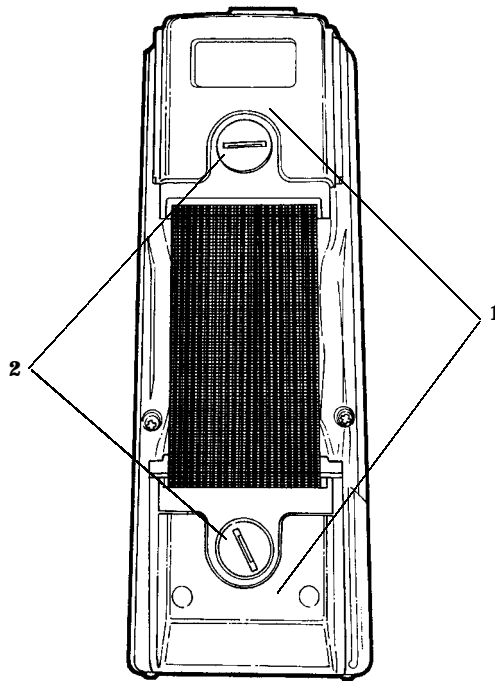
Figure 3-2
Backup Battery Replacement

3. Remove the battery from the connector, and lift battery out.
4. Snap the connector onto the new battery.
5. Slip the new battery in the holder inside your hand-held computer.
6. Close the latch knob.

Hand Strap Replacement

If the hand strap shows obvious signs of wear or breaks, it should be replaced. To replace it follow these steps.

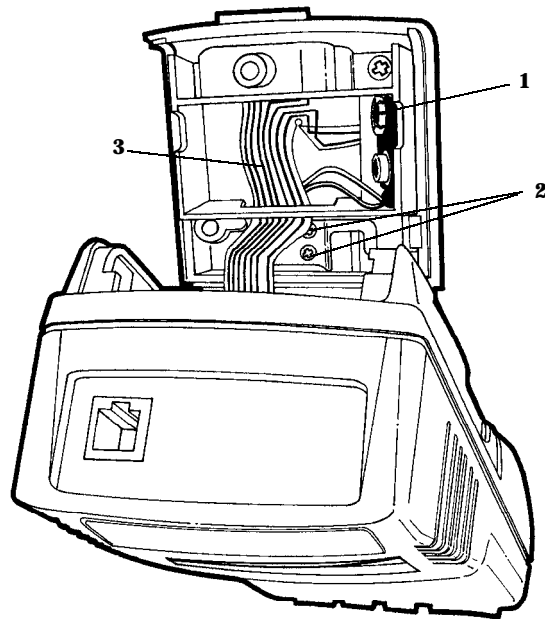
1. Open the bottom knob latch (in the direction of the arrow on the case) with a coin or flat blade screwdriver. Refer to Figure 3-3 on page 3-7 for help with these steps. Use a flat blade screwdriver or the edge of a coin, to open the door. Use a screwdriver or coin that fits the slot properly or in time it will wear away the corners of the latch knob.
2. Slide the hand strap off of the battery compartment. This end stays with the hand strap. You will install the whole piece with your new hand strap.



1. Directional arrows on case (top and bottom)
2. Latch knobs (top and bottom)

Figure 3-3
Removing The Hand Strap

3. Open the top latch knob (in the direction of the arrow) and swing the latch open.
4. Remove the backup battery. You may need to refer to Replacing the Backup Battery steps on page 3-3.
5. Remove the two small screws inside the backup battery compartment, (see Figure 3-4 on page 3-8). **Be careful not to lose the screws inside the case.** If they slip out of your fingers when you are removing them, turn your hand-held upward and gently shake the hand-held computer to remove the screws. If you do not recover them you will experience problems installing memory cards and they could become permanently lodged inside causing other problems.



1. Backup battery connector (backup battery removed)
2. Screws securing hand strap clip
3. Ribbon cable

Figure 3-4
Removing Hand Strap Screws

6. Align the new hand strap to the attachment holes on your hand-held computer and reinstall the two screws. Be sure you tighten them snugly.
7. Close the latch knob on the top hand strap holder.
8. Slide the bottom end of the hand strap over the battery compartment and close the latch knob.

Cleaning Your Hand-Held Computer

Periodic cleaning helps maintain the appearance and reliability of your hand-held computer. When cleaning your hand-held computer, inspect the

keyboard, hand strap, covers, display, connectors, and peripheral products for obvious signs of damage or wear.

▼ **CAUTION:**

Do not use any abrasive cleaning compounds, ketonic solvents (acetone or ketone) or aromatic solvents (toluene or xylene) to clean any part of your hand-held computer. These solutions will cause permanent damage to your hand-held computer.

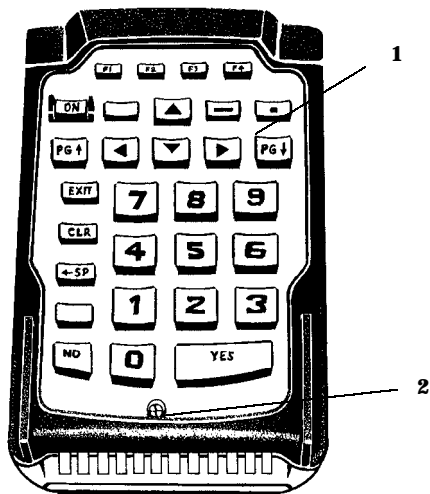
Never pour cleaners directly on the display or the case. Instead put the cleanser on a soft cloth and gently wipe the case.

Case and Display

Norand Corporation recommends cleaning the exterior of your 6200 hand-held computer using a soft cloth dampened with MICRO-CLEAN II cleanser, made by Foresight International, Inc. 4887 F Street, Omaha, NE 68127-0205.

Keyboard

If necessary, use a dry toothbrush to dislodge accumulated dust or grim around the keyboard keys. The keyboard can be removed by taking out the screw that secures it (see Figure 3-5 on page 3-10 for location of retaining screw).



- 1. Keyboard
- 2. Retaining screw

*Figure 3-5
Keyboard Removal*

Surface Connectors

If surface connectors become dirty or tarnished, clean them with a cotton swab dipped in alcohol. It may also be necessary to lightly burnish them with a pencil eraser.

Section 4

Troubleshooting



Introduction

Should you encounter difficulties in routine operation, printing, or communications, there are a few things you may be able to do to correct the problem.

- ▶ Refer to your applications (software user) manual for printing and telecommunication procedures.
- ▶ Ensure that electrical and mechanical connections are secure and undamaged.

Troubleshooting Chart

This Troubleshooting table lists conditions you might see and offers some basic remedies:

Table 4.1
Basic Troubleshooting

Condition	Solution
Low Battery	Replace main alkaline cells or recharge the main NiCd or NiMh battery pack
Printer Not Ready	<ul style="list-style-type: none"> * Check to make sure there is power to printer. * Check cable connections. * Check for paper jam. * Check to make sure there is paper in paper compartment.
Intermittent Connection	Place your 6200 in the printer and try the printing again. After a limited amount of printing has occurred remove the 6200 from the dock then connect again. The printed result should occur despite the interruptions. An error message indicating a "Printer Error 102, CHECK CONNECTION" should appear during the interruptions. Try this action several times.
Bad TCOM	Review and retry communications procedures.

If these basic solutions do not solve your problem, there could be a number of reasons. Additional things to do are:

- If you have available the Norand Error Codes Reference Guide (NPN: 979-000-001), check the Table of Contents for the problem you are having.
- Refer to the software documentation written for your application. This documentation contains troubleshooting information.

- ▶ Contact the Customer Support Specialist at your Norand Customer Service Center. Your regional Norand Customer Service Center is fully staffed and equipped to repair your hand-held computer. Customer Support Center addresses and telephone numbers are printed on a Product Service Information card. This document is packed with all NORAND® products.
- ▶ Call the Norand 24-hour Customer Response Hot-Line at 1-800-221-9236 U.S. or 800-633-6149 in Canada.

Diagnostic EEPROM

Your 6200 hand-held computer is equipped with a diagnostic EEPROM. This EEPROM stores system, service, and diagnostic data. It operates all the time but you are not normally aware of it. You may be asked to perform tasks to help Norand Customer Support Specialist or the Customer Response Hot-Line Specialist, diagnosis problems you are having. They will give you specific instructions as needed.

Repair Service

Be sure to carefully pack the unit and include a description of the problem and the measures you took to correct it.

If possible, include any printout (if applicable) or write down displayed error messages to illustrate the problem.

4-4 *6200 Hand-Held Computer*

Section 5

Connector Pin-Outs



15-Pin Female D-Sub Connector (standard)

<u>Pin</u>	<u>Signal</u>	<u>Function</u>
1	RI	RS-232 Ring Indicator
2	DTR	RS-232 Data Terminal Ready
3	RTS	RS-232 Request To Send
4	TXD	RS-232 Transmitted Data
5	RXD	RS-232 Received Data
6	CTS	RS-232 Clear To Send
7	DSR	RS-232 Data Set Ready
8	CHARGE_EXT	External Charge Voltage
9	GND	Ground
10	DCD	RS-232 Carrier Detect
11	Not Used	
12	Not Used	
13	Not Used	
14	Not Used	
15	SW_V+	Switched 5.0 volt peripheral power

12-Pin Surface Contact Connector (standard)

Pin	Signal	Function
1	GND	Ground (rightmost side)
2	TPON	Ethernet Output
3	485- & TPOP	RS-485 I/O and Ethernet Output
4	TXD	RS-232 Transmitted Data
5	RTS	RS-232 Request To Send
6	DTR	RS-232 Data Terminal Ready
7	DSR	RS-232 Data Set Ready
8	CTS	RS-232 Clear To Send
9	RXD	RS-232 Received Data
10	485+ & TPIP	RS-485 I/O and Ethernet Input
11	TPIN	Ethernet Input
12	CHARGE_DOCK	Dock Charge Voltage (leftmost side)

4-Pin RJ11 Connector (optional)

<u>Pin</u>	<u>Signal</u>	<u>Function</u>
1		
2	TIP	Modem TIP
3	RING	Modem RING
4		

5-4 *6200 Hand-Held Computer*

Section 6

Norand Utilities Program



Introduction

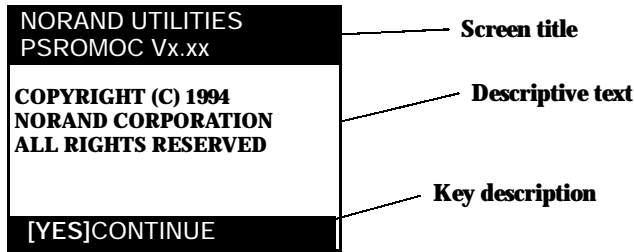
The Norand Utilities Program provides the basic functions required to prepare your 6200 hand-held computer for use.

This program may contain up to 10 languages for use in various countries throughout the world. If your application does not require languages other than English, your 6200 hand-held computer will automatically bypass this option.

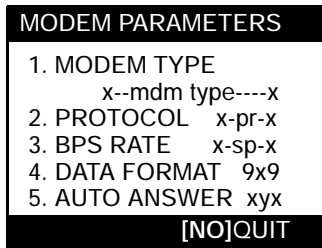
Program Conventions

The display screen consists of a screen title, main screen, pop-up menus, drop-down lists, descriptive text, and keyboard key definitions. Depending on your application needs, you may not see some of these elements. An example of what some of these screens might look like follows.

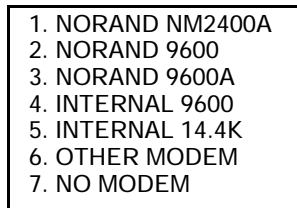
Entry Point



Pop-Up A



Drop Down A1



The keys you are instructed to use will show in the display in square brackets, e.g. **[YES]**, in both the screen diagrams and descriptive text.

Fixed fields are represented by all uppercase letters on screen diagrams and in text, MODEM PARAMETERS.

Variable fields are represented by at least one lower case character, using "x" and "-" characters as required to show the full size of the field. In descriptive text, the "x-.-x" portion of the literal is not referenced. Variable literal values are defined in the descriptive text.

Fields that require you to fill-in information are represented by combinations of the characters, X, Y, and 9. “X” implies alphanumeric input, “9” implies numeric input, and “Z” indicates an optional character in conjunction with either X or 9.

In this User’s Guide, main screens and pop-up screens use white characters on a black background to represent reverse video, just as they appear in your application. Screen diagrams may not always be shown at their full height in this User’s Guide.

Main Screens

The top two lines of the main screen contain the name of the application (“Norand Utilities”), and the name of the specific screen (e.g. Main Menu). This information will be displayed in reverse video.

The bottom lines of the main screen will contain fields defining “action” keys that are enabled. This information will be displayed in reverse video. Keys used to move within the screen, e.g. arrow keys, are not shown. When the following keys are present, they will be displayed in the indicated positions:

- [NO] QUIT: last line, right justified
- [YES] literal: last line, left justified, or second to the last line, if too long to fit on the same line with [NO] QUIT.

The second and third lines from the bottom are used to define key actions specific to each screen. These lines are not used on all screens.

Pop-Up Menus

Pop-Up menus are displayed immediately above or below the menu option that invokes them where possible. The pop-up menus not invoked via a menu option are located close to the vertical center of the display.

Drop Down Lists

Drop down lists are used under main screen and pop-up menus to further define requests for information. The arrow keys move the highlight on the drop down list; [YES] selects the highlighted option, or the number of an

option may be entered to select it. You select only one option from a drop down list. **[NO]** clears the list and does not update the current selection.

Keyboard Standards

[YES] CONTINUE, **[YES]** BEGIN, and **[YES]** OK imply that the next logical step in a process will be executed. **[YES]** UPDATE writes the new value of one or more fields on the current screen to memory. In addition, the updated screen is cleared, and control moves to the location indicated. **[YES]** inputs the value entered in a user input field.

[NO] QUIT cancels an operation, returning control to the prior logical step, thereby skipping the current operation.

[DEL] deletes the character to the left of the cursor in fields you enter.

Boot Drive Utility

If you are wanting to use a drive other than the default you will need to change the default. Do not have a PCMCIA card in either Drive A or B. You will not be able to change drives if you have a card in either of the slots.

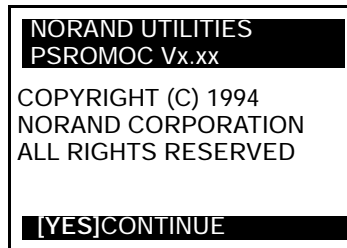
After you RESET your 6200 hand-held computer, press the F4 key. The following popup menu will display.

ROM DOS 5
Start From:
1) Memory Card 1 =A:
2) Memory Card 2 =B:
3) RAM Drive =C:
4) ROM Drive =D:

Make your selection.

Screen Diagrams

Main Menu Entry Point



Press [YES] to continue.

Language Selection Menu

Your application checks files to determine available language options. English will always be the first option, followed by up to nine additional choices. If no resource files on language exist, this menu will not display.



Select the appropriate language by pressing the number associated with your choice, or press [NO] to quit and go to Main Menu.

Program Load/Main Menu

NORAND UTILITIES LOAD PROGRAMS/DATA	
1.	BEGIN COMM SESSION
2.	COM x-comm set -- x
3.	UNIT ID ZZZZZZX
4.	X -- mdm type -- x xprotx sbpsx xfx
5.	PHONE NUMBER ZZZZZZZZZZZZZX
9.	ADVANCED UTILITIES
[NO]QUIT	

- **Menu options 4-5 visible only if comm set = MODEM**
- **comm set = value from Drop Down B
Default = NPCP NETWORK**
- **mdm type, prot, bps, f = value from Modem Parameters,
Drop Down A1 - A4**
- **Unit ID defaults to serial ID field unless modified by
previously loaded application.**

- [1] **If comm set = HAND HELD then to Pop-Up A.
Else go to Communication Status**
- [2] **Drop Down B.**
- [3] **Pop-Up C.**
- [4] **Go to Modem Parameters, Pop-Up A**
- [5] **Pop-Up D**
- [9] **Go to Advanced Utilities menu**

Pop-Up A

LD FROM HAND HELD	
MAKE CONNECTION BETWEEN HAND HELD COMPUTERS	
[YES]OK	[NO]QUIT

Pop-Up C

CHANGE UNIT ID	
XZZZZZZ	
[F4] RESET FACTORY	
[YES]OK	[NO]QUIT

Pop-Up D

PHONE NUMBER	
XZZZZZZZZZZZZZZZZ	
[.] DIALING PAUSE	
[YES]OK	[NO]QUIT

Pop-Up E

COMM SETTINGS HAVE BEEN CHANGED. -----	
[YES] SAVE SETTINGS	
[NO] DO NOT SAVE	

Pop-Up A

[YES] Go to Communications Status
[NO] Return to main screen

Drop Down B

- | |
|---|
| <ol style="list-style-type: none"> 1. NPCP NETWORK 2. MODEM 3. ACCESSORY CARD 4. NOVELL 5. TCP/IP BOOTP 6. INTERSVR 7. HAND HELD |
|---|

Pop-Up C & D

First alphanumeric character input character clears current field contents.

[DEL] deletes right-most character of current field contents.

[F4] (Pop-Up C) Restore field value to EEPROM serial identification number.

[.] (period) (Pop-Up D) inserts pause character into dialing string.

[YES] Update field; return to main screen.

[NO] Do not update; return to main screen.

Pop-Up E

[YES] Update comm settings; go to Program Load

[NO] Do not update comm settings; go to Program Load.

Modem Parameters

Pop-Up A

MODEM PARAMETERS
1. MODEM TYPE x -- mdm type -- x
2. PROTOCOL x-pr-x
3. BPS RATE xsp-x
4. DATA FORMAT 9x9
[NO]QUIT

Pop-Up A

User selects parameters [1] - [4] from corresponding drop-down boxes. In drop-down boxes, [=/O] highlight option

[YES] selects, or user can select option by number.

Drop Down A1

1. NORAND NM2400A
2. NORAND 9600
3. NORAND 9600A
4. INTERNAL 9600
5. INTERNAL 14.4K
6. OTHER MODEM
7. NO MODEM

[6] To Pop-up A16

Pop-Up A16

MODEM INIT STRING
XZZZZZZZZZZZZZZZZ
XZZZZZZZZZZZZZZZZ
XZZZ
[F2] TEST STRING
[YES]OK [NO]QUIT

Pop-Up A16

[F2] Display "PLEASE WAIT. . ." on blank line and send modem string. Upon modem response, display "RESULT: 99" on blank line, where 99 = modem response code.

[YES] Update modem initialization string; Pop-Up A note: string will not be saved if blank.

[NO] Do not modify initialization string; return to Pop-Up A.

Drop Down A2

1. ACN
2. TTY
3. YMODEM

Drop Down A3

1. 1200
2. 2400
3. 4800
4. 9600
5. 19200
6. 38400
7. 57600

Drop Down A4

1. 8N1
2. 7E1

Communication Status

```

NORAND UTILITIES
COMMUNICATIONS

COMM SETTINGS:
x--comm settings---x
  xprotx  xbpsx  xfx
PHONE NUMBER:
      ZZZZZZZZZX
UNIT ID:      ZZZZZX
x ---- status ---- x
x-   filename   -x
BYTES:      ZZZZZ9
ERRORS:     ZZZ9

[NO]STOP COMM
    
```

Comm Settings Menu

comm settings = Program Load, comm set field.
If comm set = Modem, then Program Load, mdm type appended to comm settings. mdm type, prot, bps, f = Program Load, menu option 4 Above line and phone number fields visible only if comm set = MODEM. Status field displays current status of session:

**CONFIGURING
 DIALING
 SIGNING ON**

**SENDING
 x-filename-x**

**LOADING
 x-filename-x**

SIGNING OFF

Filename field displays name of the file being processed when SENDING or LOADING.

**Byte count applicable to current file only.
 Error count is the total number of protocol errors in the current comm session.**

[NO] Pop-Up A

Pop-Up A

```

ARE YOU SURE YOU
WANT TO STOP
COMMUNICATIONS NOW

[YES] STOP
[NO]RESUME
    
```

Pop-Up A

**[YES] Go to Program Load
 [NO] Return to main screen**

Advanced Utilities Menu

NORAND UTILITIES ADVANCED UTILITIES	
1. SET DATE/TIME	
2.	
3. FORMAT DRIVE C:	
4. FORMAT RAM CARD	
5. SET BOOT DRIVE	
[NO] QUIT	

Pop-Up A

SET DATE/TIME	
DATE:	99/99/99
TIME:	99:99:99
[YES] OK	[NO] QUIT

Pop-Up C1

FORMAT DRIVE C:	
Z9 MB Z9 KB	
[YES] OK	[NO] QUIT

Pop-Up D1

FORMAT RAM CARD	
1. A:	
2. B:	
[YES] OK	[NO] QUIT

Option [4] appears only if FORMAT.COM found in path. FORMAT.COM not present in default 6200 configuration.

- [1] **Pop-Up A**
- [3] **Pop-Up C1**
- [4] **Pop-Up D1**
- [5] **Pop-Up E**

[NO] **Go to Program Load/Main Menu**

Pop-Up A

Date and time are not modified unless new values are entered, i.e. changing the date does not affect the current time.

Date format is MM/DD/YY; year is assumed 1980-2079.

Time format is HH:MM:SS; based on 24-hour clock. Maximum entry is 23:59:59. Punctuation is supplied by application and is not entered.

[YES] **Update system clock with date and time entries; return to Main Screen.**

[NO] **Return to Main Screen.**

Pop-Up C1 & D1

[#] **Pop-Up 2**

[NO] **Return to Advanced Utilities Menu**

Format RAM Cards

Pop-Up 2

```
X-----title -----X
ALL DATA ON
X-----media-----X
WILL BE DESTROYED !

OK TO CONTINUE ?

[YES]OK   [NO]QUIT
```

Pop-Up 2

title = **FORMAT DRIVE c:**
 or
 FORMAT RAM CARD

media = **EXISTING RAM DRIVE or RAM CARD**

[YES] **Format selected media, and return to main screen**

[NO] **Return to main screen**

Pop-Up E

```
SET BOOT DRIVE
1. A:
2. B:
3. C:
4. D:

[YES] OK   [NO]QUIT
```

Pop-Up E

[YES] **Set boot drive CMOS variable, and return to main screen**

[NO] **Return to main screen**

Section 7

Advanced Power Management System



Introduction

BATWARN is an *optional* part of the Advanced Power Management (APM) system when running under DOS. When certain power conditions occur, BATWARN displays a pop-up window.

This pop-up window will remain displayed for a defined period of time and then the screen will be restored to its original condition. Alternatively, you can clear the pop-up window by pressing a key. In addition, certain system activities can prevent a pop-up from occurring or clear one that is already displayed.

Certain applications may put the screen information into a mode that BATWARN does not support, in which case no pop-up will occur. A warning BEEP will signal that a pop-up did not appear because the videocontroller was in an unsupported mode.

Power conditions which will cause a pop-up window to appear are:

- ▶ Backup Battery Low
- ▶ 10 minutes left on main battery
- ▶ 20 minutes left on main battery
- ▶ 30 minutes left on main battery
- ▶ In Charger
- ▶ Battery Critical
- ▶ Battery Full

All pop-ups occur immediately upon detecting the power condition, except Battery Critical and Battery Full. The Battery Critical event is not handled

by BATWARN. Instead, BATWARN checks for Battery Critical at each resume and displays the pop-up if appropriate. In addition BATWARN will also display low battery warnings at resume time (10, 20, & 30 minute) as well as when the actual event occurs. Battery Full is only displayed when the unit is removed from the charger and the battery full flag is set by the APM.

Battery Management Icons

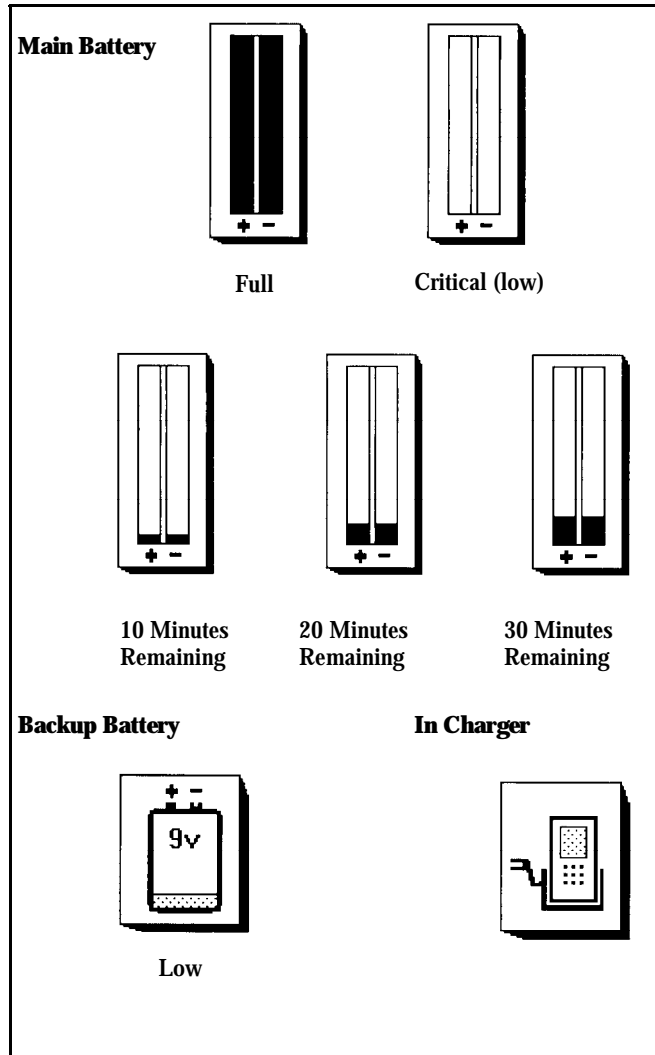


Figure 7-1
Graphic Mode Icons

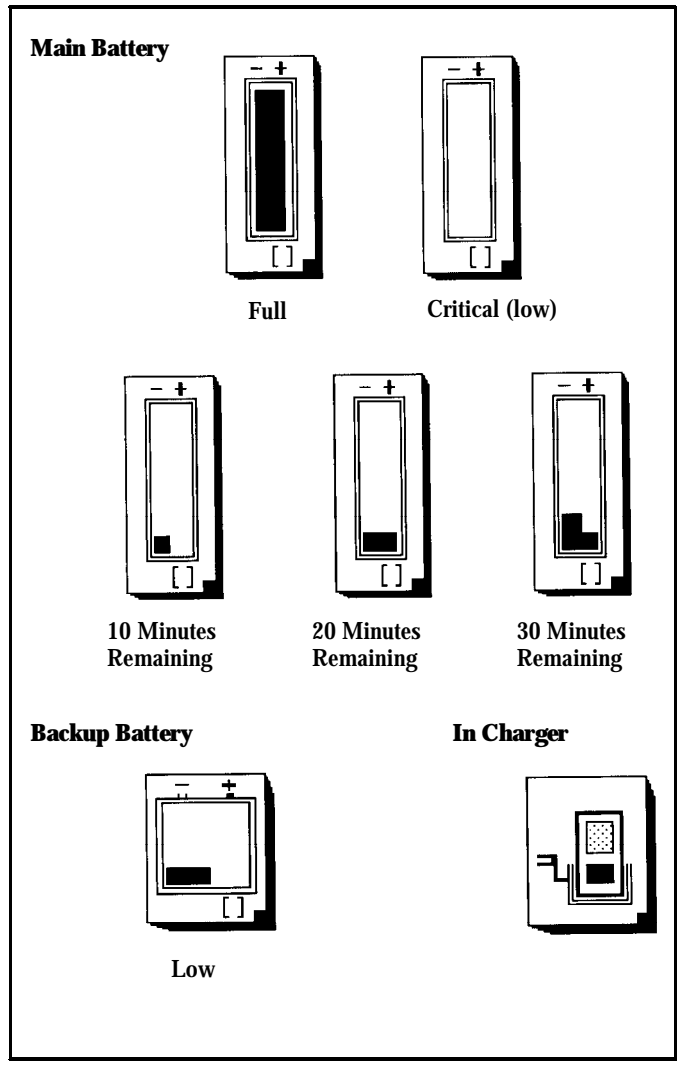


Figure 7-2
Text Mode Icons

INDEX**NUMBERS**

6200 Benefits, 1-2

A

Additional Display Benefits, 1-9

Advanced Power Management System, 7-1
 graphic mode icons, 7-3
 text mode icons, 7-3

APM, 7-1

graphic mode icons, 7-3
 text mode icons, 7-3

B

Backlight, 1-9

Backup Battery, 1-10, 2-8
 installing, 2-8
 life, 2-11
 replaceable alkaline, 1-10
 replacing, 3-3

Batteries, 1-9

backup, 1-9, 1-10
 alkaline, 1-10
 installing, 2-8
 life, 2-11

main, 1-9

alkaline, 1-9
 care, 3-1
 cycles, 1-10
 installing, 2-5
 low battery indication, 3-1
 nickel metal hydride (NiMh), 1-9
 nickel-cadmium (NiCd), 1-9

BATWARN, 7-1

graphic mode icons, 7-3
 pop-up messages, 7-1
 text mode icons, 7-3

Boot Drive Statement, 2-2

See also boot drive utility

Boot Drive Utility, 6-5

See also boot drive statement**C**

Charging Main Battery, 2-8, 3-2
 in hand-held computer, 3-2

Cleaning

case, 3-9
 contact surfaces, 3-9
 display, 3-9
 hand-held computer, 3-9
 keyboard, 3-9

Cleaning Contact Surfaces, 3-10

Cleaning Keyboard, 3-9

Compatibility, 1-2

4000 series products, 1-2

Connectors, 5-1

12-pin surface contact field, 5-2
 15-pin female D-sub, 5-1
 4-pin RJ-11 connector, 5-3

D

Dead Backup Battery, 2-11, 3-2
See also backup battery life

Diagnostic EEPROM, 1-13, 4-3

See also troubleshooting

Display Options

touch screen, 1-9
 without touch screen, 1-9

Downloading Programs, 2-12

Drive A Slot, 2-4

Drive B Slot, 2-4

E

Ejector Buttons, 2-4

G

Graphic Mode Icons, 7-3

H

Hand Strap Replacement, 3-6

Hand-Held Computer Cleaning, 3-9

I

Installing Memory Cards, 2-2

Installing PCMCIA Memory Cards,
2-2

K

Keyboard Features

- 30-key keypad, 1-6
- 56-key keypad, 1-6

Keypad Options

- 30-key keypad, 1-6
- 56-key keypad, 1-6

L

Loading Programs, 2-2

Low Battery Power Messages, 1-10

M

Main Battery Compartment Door,
2-5

Main Battery Pack Installation, 2-5

Main Program Menus, 6-3

- drop down lists, 6-3
- pop-up menus, 6-3

Memory Card

- installing, 2-2
- removing, 2-4
- types
 - type 1, 1-11
 - type 2, 1-11

Memory Types

- CMOS RAM, 1-10
- flash ROM, 1-10
- main, 1-10

P

Part Number Description, 1-13

PCMCIA Memory Card

- installing, 2-2
- removing, 2-4

PCMCIA Memory Cards, 1-10

- types
 - type 1, 1-11
 - type 2, 1-11

Power Conditions, 7-1

- pop-up messages, 7-1

Product Feature Descriptions, 1-3

R

Removing Memory Cards, 2-4

Removing PCMCIA Memory Cards,
2-4

Repair Service, 4-3

Replaceable Alkaline Backup, 1-10

Replacing Hand Strap, 3-6

Reset Switch, 1-13

Reset Switch Location, 2-13

S

Specifications, 1-15

T

Text Mode Icons, 7-3

Touch Screen Display, 1-9

Troubleshooting, 4-2

See also diagnostic EEPROM

Troubleshooting Chart, 4-2

Type 2 Card Slot, drive b, 2-2

U

Utilities Programs, 6-1

- advanced utilities menu, 6-11
- communication status, 6-10
- format RAM cards, 6-12
- keyboard standards, 6-4
- main screens, 6-3
- modem parameters, 6-9
- program conventions, 6-1
- program load/main menu, 6-7
- screen diagrams, 6-6