



Model 6600 Computer

USER'S GUIDE



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► 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

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur 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.

Labels and Warnings

The following pages show the locations of labels that may be attached to this product. Certain important information from those labels is recreated here for your convenience. In addition, safety warnings are repeated in this section, whether they appear on individual labels or not.

Our product labels typically provide the following types of information:

- ▶ date of manufacture
- ▶ product model and serial number
- ▶ agency compliance standards such as FCC, TUV, CE
- ▶ agency-required safety warnings

Certain personnel safety warnings may be required by law. Hazardous emission or explosion/fire hazard warnings *must* appear on the product. All safety warnings are shown here or on the following pages.

Lithium Battery Notices



WARNING:

**The battery can explode if it is incorrectly replaced.
Replace only with the same or equivalent battery type.**



AVERTISSEMENT: La batterie au lithium peut exploser si elle est remplacée de manière incorrecte. Elle ne doit être remplacée que par une batterie identique ou similaire.



WARNING:

Lithium batteries can explode if they are overcharged or if they are placed incorrectly in a charging device.



AVERTISSEMENT: Les batteries au lithium peuvent exploser ou prendre feu si elles sont trop chargées à cause d'une mauvaise installation de la station d'accueil.

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Section 1

General Information



Introduction: About this Manual

This manual is divided into five sections plus appendixes. Sections 1, 2, 3, and 4 are for the end-user, while Section 5 is intended for the vehicle installation technician. The main sections are:

- Section 1 General Information
- Section 2 Options and Accessories
- Section 3 Operation
- Section 4 Maintenance
- Section 5 Vehicle Installation
- Appendixes

Summary of Sections

Section 1, General Information

Tells how this manual is organized, contains a summary of each section, and describes the computer.

Section 2, Options and Accessories

Tells how to connect, install, or set up options and accessories.

Section 3, Operation

This section tells how to put the unit into operation for the first time.

Section 4, Maintenance

This section contains routine care and maintenance instructions.

Section 5, Vehicle Installation

This section tells how to wire and install a vehicle mount.

Appendixes

These contain firmware and certain optional hardware information.

Computer Description

Portable Computers

Hand-Held Computers are used by mobile workers to quickly and accurately capture information, print reports, dispatch competitive analysis, and to support field maintenance and sales automation.

Technical advancements help make today's hand-held computers suitable for many other uses.

These units are battery operated, making them extremely portable and well-suited to route industries such as beverage, bakery, snack, and dairy distribution operations. Other uses are found in service industries, factory quality assurance programs, and transportation.

Typically, programs or data are loaded ("downloaded") into the Hand-Held computer from a PC or mainframe. Depending upon the options built into the computer, entries are made via screen contact, a keyboard or a scanner. The hand-held computer typically contains (or can access) a database with customer and product information. It does calculations based on product movement, sends information to a printer, and often sends data to a host computer at the end of the work day.

The Model 6600 Computer

The Model 6600 Hand-Held Computer is a versatile portable data collection device. It has a large, easily-read display, pen-based data entry, and the power and speed of a 486DX2 processor. With extensive memory options and MS-DOS compatibility, the Model 6600 Computer can be expanded to do many tasks beyond data collection.

Software Compatibility

Your computer comes with software for battery charging, and for communicating to peripheral devices. This computer also has a software interface for display control when using windows-type programs.

Since the computer is MS-DOS compatible, there are many general programs and publications available for use with the computer. Programmers may be interested in commercial pen-based application development tool kits such as:

- DOS-based applications
 - Power Pen Pal
 - Professional Pen Pal
 - PenRight! Pro with Borland or Microsoft C
- Microsoft Windows 3.1 and Windows for Workgroups
 - Windows with Pen Extensions
 - Microsoft Visual Basic for Windows
 - Borland C++
 - PenRight! for Windows

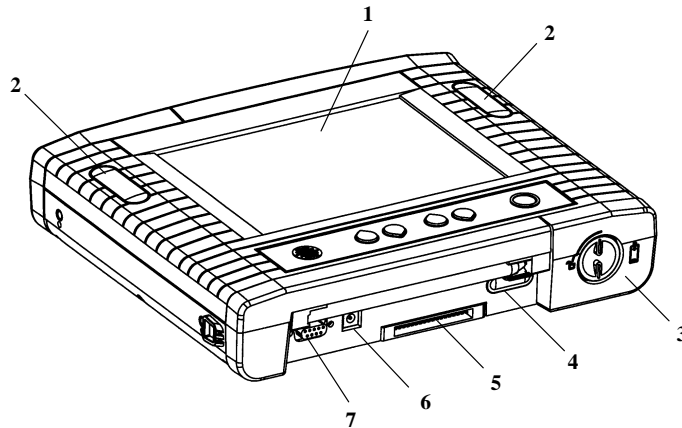
Computer Description

The following illustrations familiarize you with the external features of the Model 6600 Computer.

At the beginning of each work day you should inspect the unit and make sure that the following components are secure:

- ▶ Battery compartment door
- ▶ PC card compartment door
- ▶ Special pen
- ▶ Handstrap
- ▶ External connectors
- ▶ Optional accessory pod

Correct any problems discovered during this inspection before use.



1. Display
2. Scan activate switch
3. Battery compartment
4. Infrared window
5. Docking connector
6. AC power adapter connector
7. 9-pin D-sub serial connector

Figure 1-1
The Model 6600 Computer

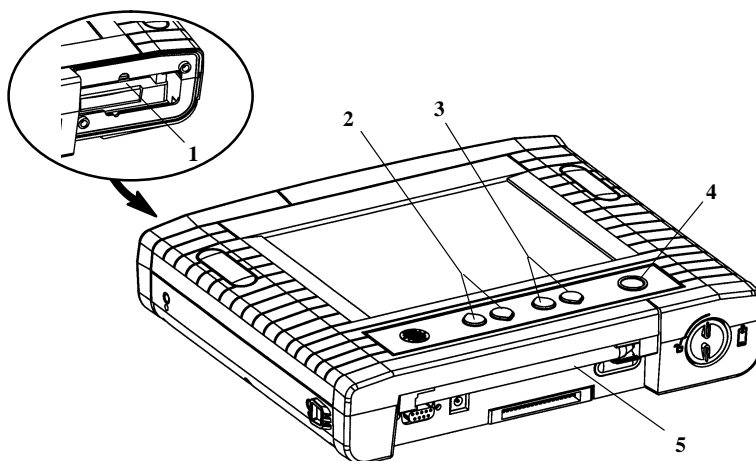
Display

The display shows computer or battery status messages, entries, the most recent scan, customer or product lists, calculations, and prompts that require a response from you.

You can use a scanner or the special pen provided with the computer to make manual entries. The special (passive) pen contains a unique electronic element which does not require batteries.

Display contrast is adjustable for best viewing, and then automatically compensates for ambient temperature variations. Ambient light detector circuitry automatically sets backlight brightness, which can then be manually adjusted to your needs.

A chemically strengthened glass protects the display from scratches and other damage that could make the display difficult to read.



1. Reset switch
2. Contrast controls
3. Backlight brightness controls
4. Suspend or Resume switch
5. Special (passive) pen

Figure 1-2
The Model 6600 Computer

Controls

The computer has only seven (7) external controls (buttons or switches), which are shown in Figures 1-1 and 1-2. These controls are:

- ▶ Scanner activation (2 buttons)
- ▶ Contrast control (2 buttons)
- ▶ Backlight brightness control (2 buttons), and
- ▶ Suspend or resume switch

Scanner Buttons

Two scanner buttons, one on either side of the display, allow you to trigger the optional built-in scanner with either your left or right hand. It is not necessary to push both buttons to activate the scanner.

Contrast Controls

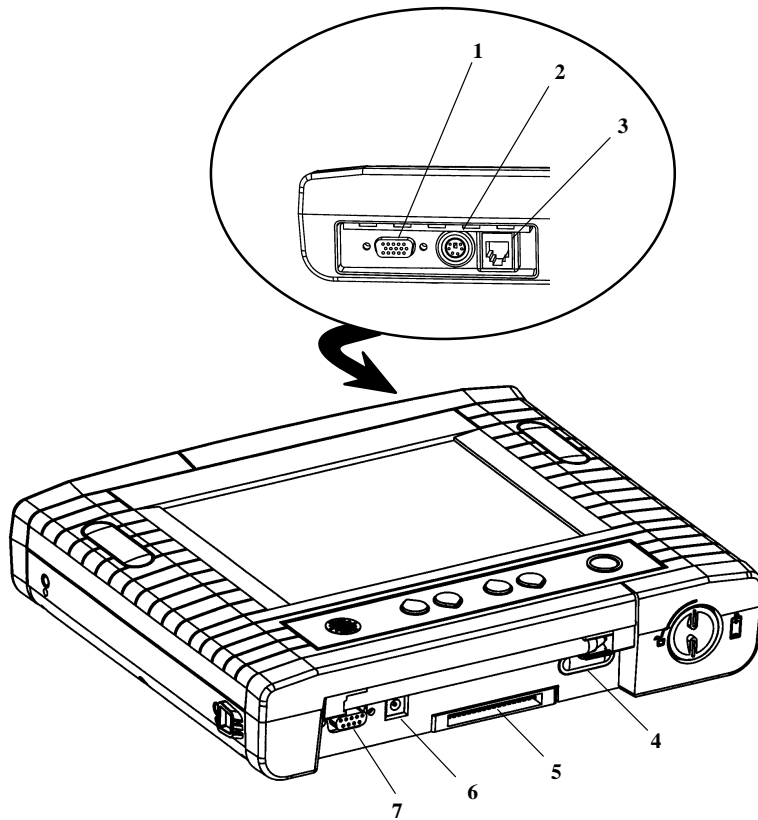
Two contrast controls (buttons) are located near the lower edge of the display. Both controls are teardrop shaped with the pointed end indicating the directional effect of the button: the button on the left has its pointed end toward the display. Press this button to *increase* (darken) display contrast. The pointed end of the remaining (right) button is aimed downward: press it to *decrease* (lighten) display contrast.

Backlight Brightness Controls

Two backlight brightness controls (buttons) are located near the lower edge of the display, to the right of the contrast controls. Both backlight controls are teardrop shaped with the pointed end indicating the directional effect of the button: the button on the left has its pointed end toward the display. Press this button to *increase* backlight brightness. The pointed end of the remaining (right) button is aimed downward: press it to *decrease* backlight brightness.

Suspend or Resume Switch

The Suspend or Resume switch allows you to suspend operations by manually placing the unit into an almost-off (standby) condition. This will conserve battery power during predictable periods of inactivity. Push the Suspend or Resume switch once to suspend operations; press it again to resume operations.



1. 15-pin D-sub (*lift flap to access VGA connector*)
2. 6-pin mini-DIN (*lift flap to access keyboard connector*)
3. RJ-11 (*lift flap to access phone jack*)
4. Infrared window
5. Docking connector
6. AC power adapter connector
7. 9-pin D-sub serial connector

*Figure 1-3
Connectors*

Connectors

There are seven external connectors at various locations (see figures 1-1 and 1-3 in this section) on the Model 6600 Computer. An RJ-11 jack connects to an optional internal modem (*jack is present, whether a modem is installed, or not*). In addition, an infrared serial port (IrDA standard) provides wireless two-way communication between the computer and peripheral equipment.

The following connectors can be used for communication between the computer and peripheral equipment:

- 6-pin miniature DIN (*external PS/2 compatible keyboard*)
- 9-pin D-subminiature (*serial port connection*)
- 15-pin D-subminiature (*external VGA monitor*)
- Docking connector (*docks, Ethernet 10BASE-T*)
- Pin-jack power adapter (*direct connection to AC adapter*)

Mini-DIN Connector

This 6-pin miniature DIN connector directly supports PS/2 or PC AT keyboards through an adapter cable. Keyboard signals are also available on the docking connector to permit the use of an external keyboard when the computer is docked.

Serial Port

This 9-pin D-subminiature connector supports RS-232 signals for two-way communication between peripheral devices. When the computer is docked, these same signals are carried on the docking connector and are accessed via either an RS-232 or RS-485 port on the dock.

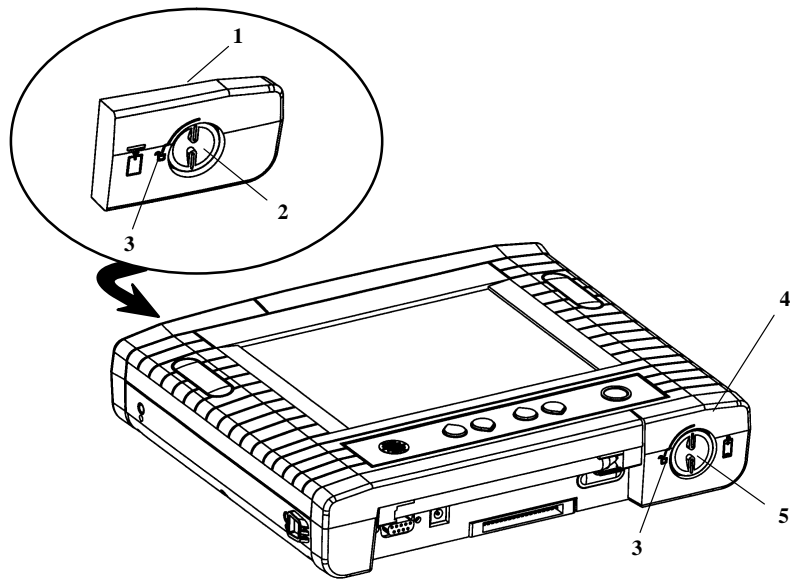
VGA Monitor Connector

This 15-pin D-subminiature connector allows the computer to connect to an external monitor. The maximum size external monitor supported is 800 x 600 with 16 colors or 640 x 480 with 256 colors. The built-in display is monochrome and does not display colors.

Docking Connector

This connector carries signals between the computer and a dock. In addition to the signals mentioned above, Ethernet 10BASE-T signals can be routed to the dock.

► **NOTE:** Turn the latch knobs (below) 1/4-turn counterclockwise to open doors.



- 1. PC card compartment door
- 2. Latch knob (PC card door)
- 3. Unlock icon
- 4. Battery compartment door
- 5. Latch knob (battery compartment door)

Figure 1-4
Compartment Doors

Specifications

Physical

Size	10.1" x 8.5" x 2.1" (LWH)
Weight	63 oz. (with battery and without options)

Environmental

Operating temp.	-4 to +122°F (-20 to +50 °C)
Storage temp.	-22 to +158°F (-30 to +70 °C)
Humidity	5 to 95% noncondensing

Electrical

Power Sources	lithium ion "Smart" pack factory-approved external power sources
Charging	battery packs charge internally or externally (stand-alone fast-charged in 2.5 hours, or less)
Communication	6-pin mini-DIN (<i>external PS/2 compatible keyboard</i>) 9-pin D-sub (<i>serial port connector</i>) 15-pin D-sub (<i>external VGA monitor</i>) RJ-11 jack (<i>with optional modem</i>) IrDA infrared serial port (<i>115 Kbaud, maximum</i>) Ethernet 10BASE-T (<i>available on docking station</i>)
Standards	FCC Class B, CSA, Cisper 22 Class B, IEC 950, UL
Processor	486DX2, 50MHz
Standard Memory	4MB DRAM (<i>std.</i>), with 8 MB or 16 MB options
Flash Memory	2MB executable (<i>std.</i>), with 4 MB, 6 MB, or 8 MB options
PC Card options	two v.2.0 PCMCIA type II slots, usable as single type III (<i>user accessible</i>) one v.2.0 PCMCIA type III slot (<i>factory/service accessible</i>)

Display

Type	LCD 64 gray scales, 60 % reflective, with contrast ratio of 8:1, minimum
Size	680 X 480 pixels transfective LCD, 0.23 mm dot pitch 7.2 inch diagonal
Backlight Features	CCFL with autosensing brightness control proximity sensing using special, passive pen chemically strengthened glass overlay

Options

Memory Upgrades

Each computer requires a certain minimum amount of memory to operate properly. This consists of a specified amount of Flash RAM (a form of programmable memory) and DRAM (dynamic, or continuously changeable, memory). Larger application programs may impose a need for additional memory and speed of operation is usually faster when more memory is available. For these reasons, the Model 6600 computer can be ordered with 2M, 4M, 6M, or 8M of flash memory and 4M, 8M or 16M of DRAM memory options as well. Other memory options and combinations may be offered in the future.

See the Operation section of this manual for instructions for changing Flash RAM and DRAM.

Integrated Scanners

The Model 6600 can be ordered with either a standard or long-range, 5 volt laser scanner built-in. This computer also supports tethered (external) CCD, wand, and laser scanners. See *Figure 3-2*.

Internal Modem

The Model 6600 computer can be ordered with a modem built into the unit, with the RJ-11 connector providing external connection to your telephone line. Units not ordered with an internal modem can have this option installed (by *authorized* Service Centers) in the future.

PC Card Devices

An internal drive can accommodate approved optional Type III PC card devices. Some Type III options can be installed at the factory or at *authorized* Service Centers.

See the Operation section of this manual for instructions on installing internal PC card devices.

Accessories

Direct-connect Vehicle Power Cables

Two different cables, shown below, allow you to power the computer directly from a vehicle electrical system. Both cables plug directly into the DC power jack on the bottom of the computer. Vehicles that do not have a lighter socket can use the cable that connects to the vehicle fuse block. Vehicles that do have a lighter socket can use the cable with the lighter socket adapter.

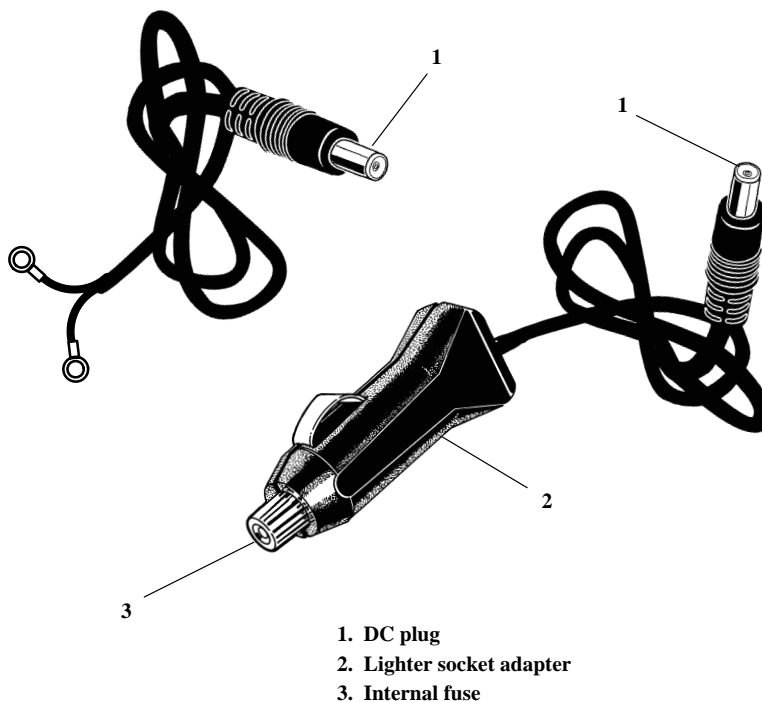


Figure 2-1
Direct-connect Vehicle Power Cables

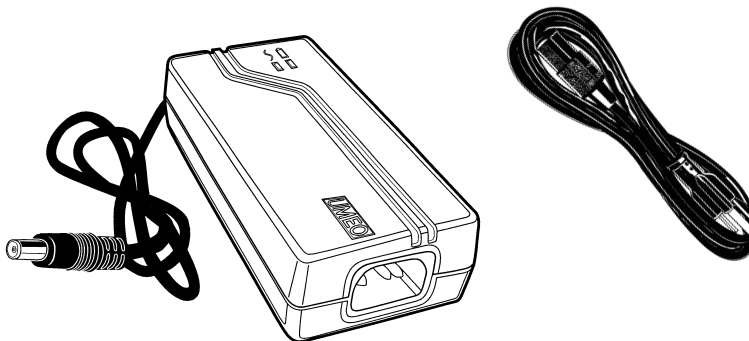


Figure 2-2
AC Power Adapter

AC Power Adapter

Adapters are available that allow the computer to be operated from standard electrical outlets using an appropriate U.S. or an international power cord to the adapter. The adapter cable plugs directly into the bottom of the computer and charges the main and backup batteries while simultaneously powering the computer.

External Battery Chargers

Chargers are available for either U.S. or international applications to recharge the main battery pack while it is out of the computer. This accessory is useful for charging spare battery packs.

Docks

Three basic dock accessories are available for the Model 6600 Computer. Custom versions of these basic docks may be created for special uses or to satisfy unique customer requirements.

Vehicle Dock

A vehicle dock provides secure storage in route vehicles while providing power to the computer directly from the vehicle electrical system. The vehicle dock is shown in the Installation section of this manual.

Single Dock

The single dock accessory is similar to the vehicle dock but is in a fixed location such as desktop or shelf. A standard electrical outlet provides power, via either a U.S. or an international power cord, directly to the single dock. The Model 6600 Computer then receives both charging and operating power when inserted in the single dock. The single dock can be connected to a network, and it can have various accessories (such as a keyboard or serial printer) connected to it.

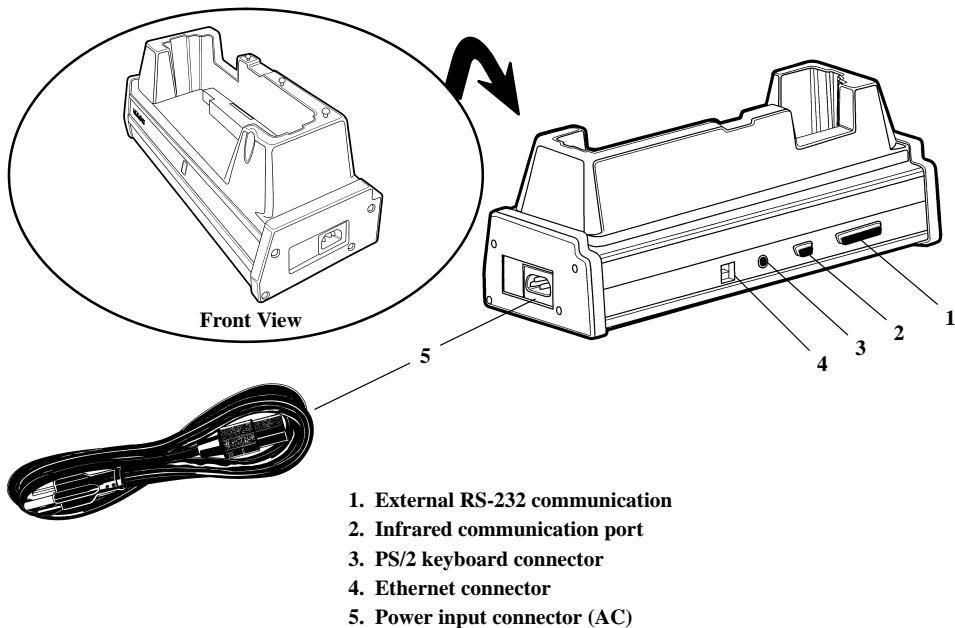


Figure 2-3
Single Dock

Multidock

The multidock accessory is normally mounted on a countertop or wall. A standard electrical outlet provides power, via either a U.S. or an international power cord, directly to the multidock. Each multidock is designed to hold up to four computers, providing charging power to each computer and a communication interface between the Model 6600 Computers and a host computer. This ensures that batteries are charged regularly and allows for unattended up and downloading of data. Several multidocks can be connected to a common host to accommodate a large number of computers in one location.

Printers

The Model 6600 Computer is compatible with standard printers by using cables or a dock interface. An *optional* IrDA (infrared) communication interface is available to permit wireless communication to specific printers that have the infrared interface.

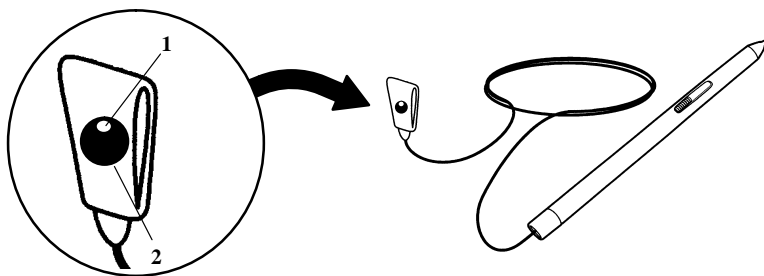
Accessory Cables

All power and communication cables required for dock installations are listed in the price guide to assist your sales representative or system engineer in selecting appropriate cables for your particular installation.

Cables are also available to connect the Model 6600 Computer to peripheral devices such as a printer, keyboard, or monitor.

Tethered Pen Accessory Kit

A tethered pen accessory is available for the Model 6600 Computer. The cord is permanently fastened to the pen and has a special snap on the far end of the tether. You can snap the tab to any unused male snap on the computer. The *edge opposite the dot* must be hooked *first* before pressing the snap firmly into place. When removing the snap, pull on the dot-end of the tab *first* to release the snap.



1. Dot
2. Snap

Figure 2-4
Tethered Pen Accessory Kit

Adjustable Handstrap

Although the adjustable handstrap is standard on the Model 6600 Computer, it is described in this section because it attaches to the unit with a special snap just as the tethered pen accessory shown above.

Relocating the Handstrap

The adjustable handstrap is fastened along one side of the computer with a snap on one end and a metal reinforcement and screw on the other end of the strap. You can unsnap the handstrap and lengthen it to reach other male snaps on the computer. You can also move the strap over to the other side of the computer by unsnapping one end and removing the retaining screw and the reinforcement from the other end of the strap. Relocate the strap to the other side of the computer and refasten it.

Keyed Snap (how to snap, and unsnap)

When fastening these snaps, hook the *edge opposite the dot first* before pressing the snap firmly into place. When removing the snap, pull on the dot side of the snap *first* to release it.

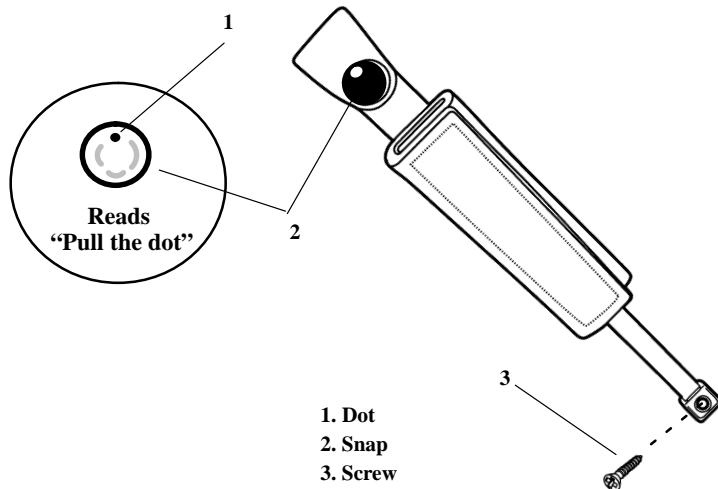


Figure 2-5
Adjustable Handstrap

Adjusting the Handstrap

Open the handstrap and lift the adjusting tab away from the strap. Pull on the metal piece to lengthen the handstrap; hold the metal piece and pull on the adjusting tab to shorten the handstrap. Secure by pressing the adjusting tab into the handstrap as shown below (figure b).

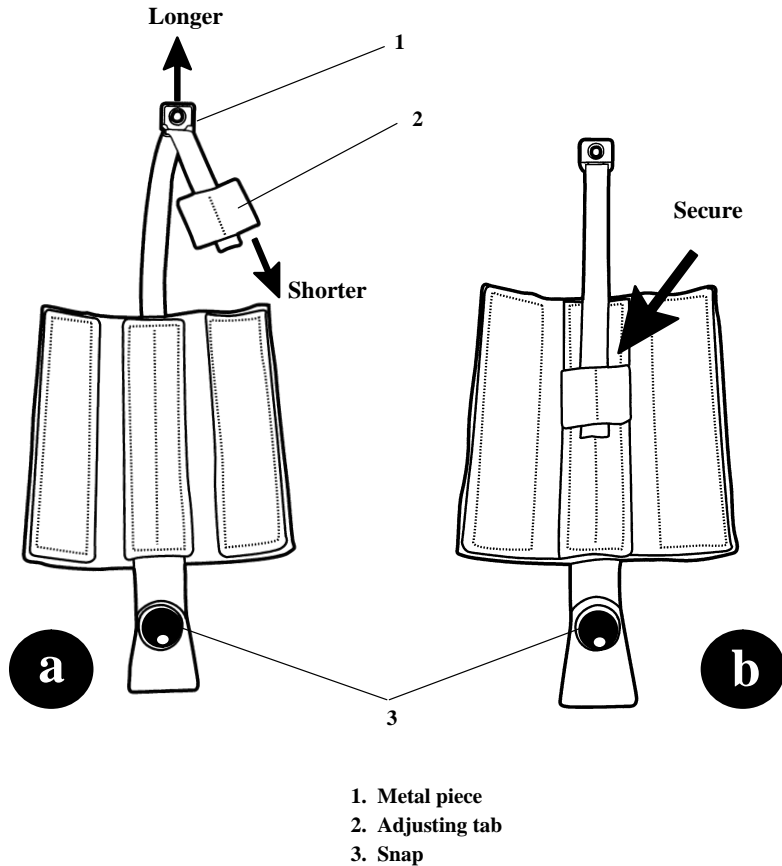
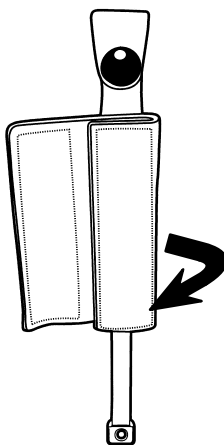


Figure 2-6
Adjusting the Handstrap

Closing the Handstrap

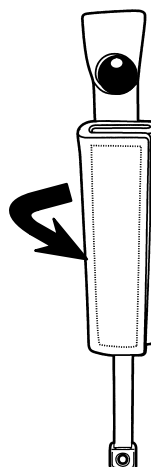
Look at the illustration below: fold the flap shown in figure c, below and press it against the handstrap interior. Fold the remaining flap (figure d) as shown and squeeze firmly to close the handstrap.

Fold first



c

Fold last



d

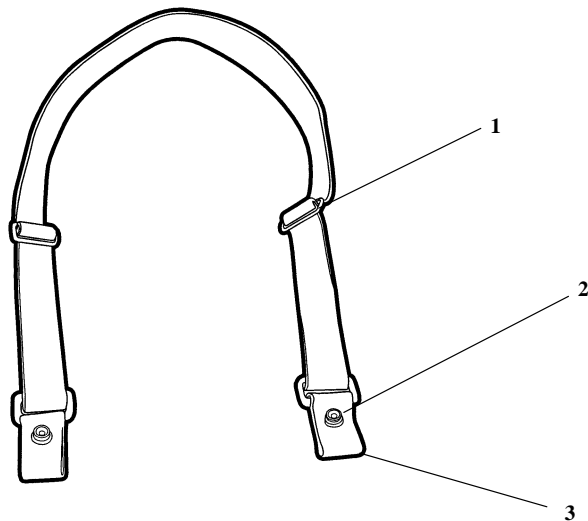
Figure 2-7
Closing the Handstrap

Neck or Shoulder Strap

This optional adjustable strap attaches to the computer to allow it to be suspended from your shoulder or neck. Special snaps are also used with this strap to guard against accidental release and possible damage to the computer.

Opening or Closing the Strap

The special snaps use a key to lock them in place. To fasten each snap, first hook the key (visible inside the female snap) onto a mating snap on the computer, then firmly press the snap into place. You can release these snaps by pulling up, or away, on the end of the strap.



1. Adjustment slides
2. Keyed snaps (*male side visible*)
3. End of strap (*pull here to release*)

Figure 2-8
Neck or Shoulder Strap

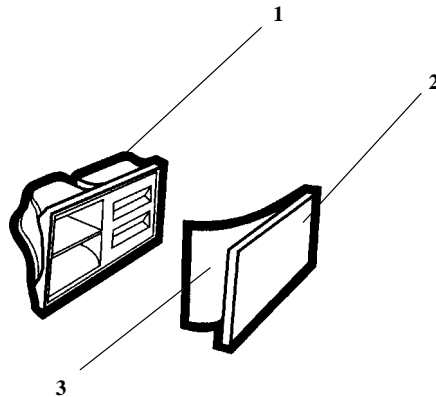
Pen Holder Accessory

You can position the optional pen holder to provide alternative pen storage and access. Choose a location on the computer that is convenient for you. Be sure to select an area that provides sufficient flat surface area for the pen holder clips.

Installing the Pen Holder Clips

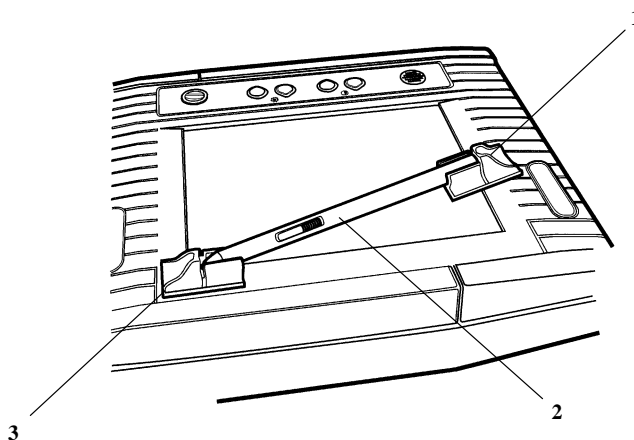
Choose a suitable mounting location and follow the steps below to install the pen holder clips.

1. Peel the quick-release paper from one side of an adhesive pad.
2. Attach the adhesive pad to the bottom of a pen holder clip.
3. Repeat this process for the other pen holder clip.



1. Pen holder clip
2. Adhesive pad
3. Quick-release paper

Figure 2-9
Adhesive Pad and Pen Holder Clip



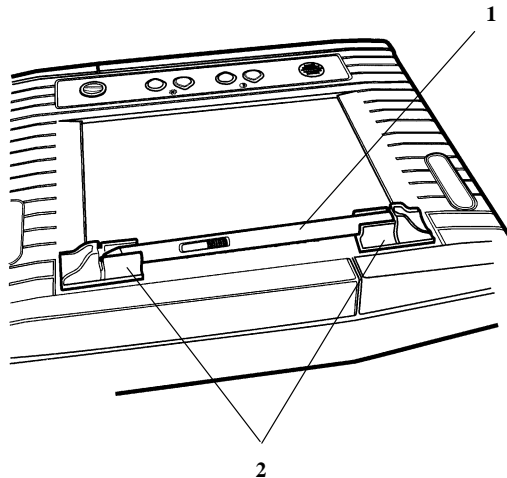
1. Pen holder clip (*not yet installed*)
2. Pen
3. Pen holder clip (*installed*)

Figure 2-10
Pen Holder Clips

4. Remove the quick-release paper from the adhesive pad on pen holder clip (3) and press the clip in place, as shown above.
5. Fasten the pen holder clip (1) to one end of the pen (2).
6. Remove the quick-release paper from the adhesive pad on pen holder clip (1).
7. Place the free end of the pen in pen holder clip (3).
8. Pivot the pen downward to correctly position and fasten pen holder clip (1) in place on the computer. *See Figure 2-11.*

Computer with Pen Holder

The illustration below shows a Model 6600 Computer with the pen holder accessory completely installed. The location shown below is only one of many possibilities. Do ensure that the pen holder clips are close enough to hold the pen firmly, and also try to get the bottoms of the pen holder clips positioned on a relatively flat surface.



- 1. Pen
- 2. Pen holder clips (*installed*)

Figure 2-11
Computer with Pen Holder Accessory

Section 3

Operation



General Information

The Model 6600 Hand-Held Computer is shipped with a basic input-output system (“BIOS” firmware), DOS, and Windows installed at the factory. This section includes instructions for installing an additional, optional internal PCMCIA (PC Card) device and for changing or upgrading DRAM and FLASH RAM. In any case, you must do the following *before using the computer for the first time*:

▼ **CAUTION:** *Fully charge the main battery before using the computer away from an external power source.*

- Install any optional PCMCIA devices.
- Install the main battery (*unit will “beep” on startup*).
- Reinstall the battery compartment door.
- Connect computer to a charging source (*or, make sure the battery was previously charged*).
- Connect any peripheral devices (e.g., printer) that will be used right away.

▼ **CAUTION:** *To prevent scratches or damage to the display, do NOT use a ballpoint pen or a sharp object to make entries directly on the display. Use ONLY the stylus provided to make display-direct entries.*

PC Cards

General Information

There are two PCMCIA (“PC Card”) slots located behind the PC Card door at the upper end of the computer. Each card slot can accept one type II card, or the lower slot can accept a type III card (*this blocks the upper card slot*).

► **NOTE:** *SRAM memory cards may require their own internal battery. The PC Card battery may have to be installed in such cards prior to use.*

► **NOTE:** *See the card manufacturer’s literature for battery installation instructions and the recommended replacement intervals.*

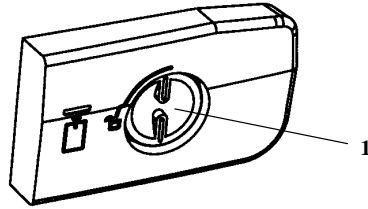
Installing Cards

The *upper* card slot (closest to the display) is designated “drive **B:**” while the *lower* slot is designated “drive **A:**.”

Open the PC Card compartment door by turning the latch knob 1/4-turn counterclockwise. Use a coin or flatblade screwdriver, if necessary to open and remove the door. Then, slide the card, connector-end first, into the slot. If you encounter resistance, remove the card, flip it over and try again. Re-install the door and turn the latch knob 1/4-turn clockwise.

Removing Cards

Each slot has a card ejector device which you can reach by removing the PC Card compartment door. The ejectors are located on the side of the PC Card slot assembly. Press in on the ejector button to release and partially eject the associated card. You can then grasp the card with your fingers for final removal.



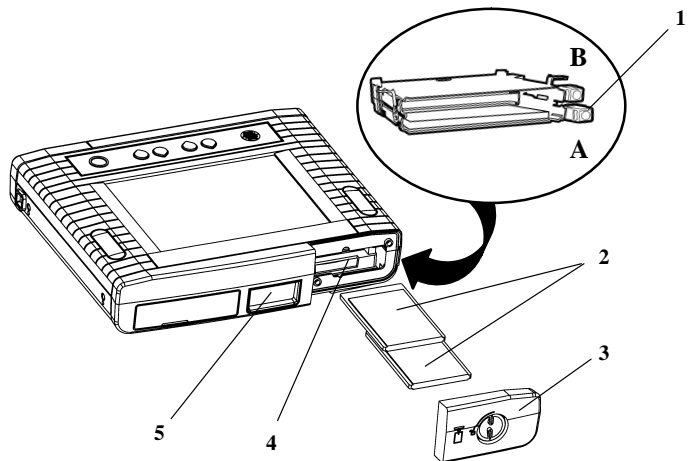
1. Latch knob (shown locked)

Figure 3-1
PC Card Compartment Door

DANGER

Laser radiation present. Do not stare into the beam or view directly with optical instruments. Avoid direct exposure to the laser beam.

Ne regardez pas la fenêtre du scanner lorsque vous effectuez une scannérisation. Ne pointez jamais le rayon laser vers les yeux de quelqu'un.



1. Card ejector (lower slot)
2. PCMCIA cards (type II)
3. Compartment door
4. PC Card slots
5. Scanner window

Figure 3-2
PC Card Slots

Memory and PC Card Options

General Information

Access panels on the bottom of the Model 6600 Computer allow you to upgrade memory or install an internal PC Card drive without having to completely disassemble the computer. These procedures require that you have the proper equipment (listed below), that you observe all precautions and that you adhere strictly to the procedures below. Failure to do so can result in damage to the unit and may void your warranty or maintenance contracts.

Required Tools and Equipment

ESD Safety

The Model 6600 Computer contains electrostatic discharge sensitive (ESD) components, which can be damaged by static voltages present in most environments. Because of this, you *must* use a static-safe work station whenever an access panel is removed to service internal components or subassemblies. The battery compartment door and the PC card compartment door *are not* considered “access” panels and this requirement does not apply to them.

The static-safe work station should consist (at minimum) of the following:

- An approved, grounded, conductive work surface
- A personal grounding device (such as a wrist strap grounded through a 1-Megohm resistor)
- A suitable grounding wire and clip to be attached to a metal shield inside the computer
- A wire and clip to ground any tools used in the following procedures (*tools used only when in contact with the operator’s hand provide sufficient ground for equipment that is otherwise electrically isolated*)

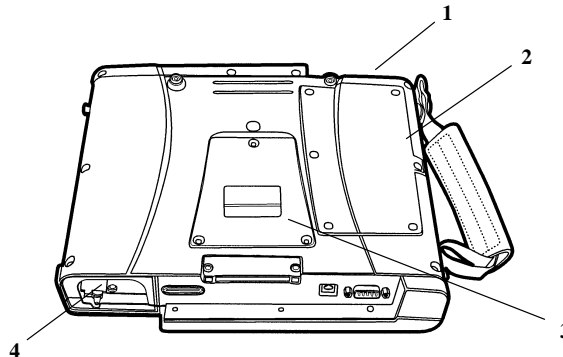
Hand Tools

You will need a #1 Phillips screwdriver to open access panels and to remove screws that secure subassemblies inside the computer. A machinist’s scribe will be needed to remove memory boards.

Precautions

You *must* follow the precautions below to ensure that the computer remains undamaged throughout this maintenance procedure:

1. Disconnect the computer from any external power sources.
2. “Suspend” computer operation (*press the Suspend button*).
3. Place the computer on the grounded work surface *before removing the access panel*.
4. Open the PC Card compartment: attach a grounding clip to the metal shroud around the card slots.
5. Make sure that you are properly grounded *before removing the access panel*.



1. Attach grounding clip to metal shroud
2. Access panel, internal PC Card compartment
3. Access panel, memory compartment
4. Remove main battery pack

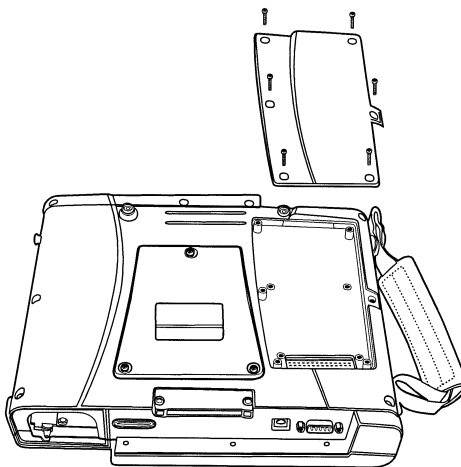
Figure 3-3
Prepare Computer for Upgrades

Install Internal PC Card Device

Follow the steps below, in the order given, to install an internal PC Card drive and device. Note the distinction between “access panel” and PC Card compartment door: you can open doors with a coin or flatblade screwdriver. Access panels require a Phillips screwdriver to open. Read and observe all precautions listed previously before proceeding.

Disassembly

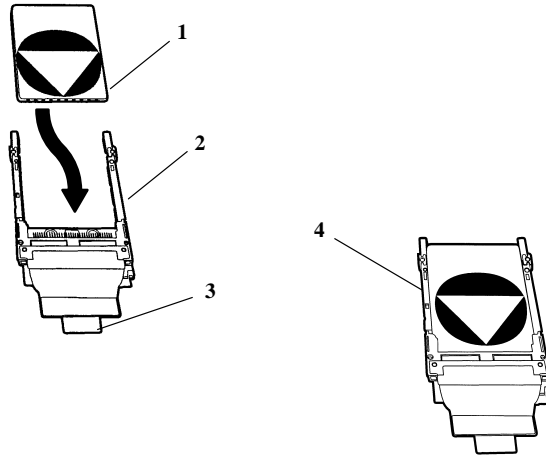
1. Place the computer on a grounded work surface.
2. Attach the personal grounding device to yourself. *This must be done using an approved device such as a conductive wrist strap wired through a 1 Megohm resistor to ground.*
3. Remove the PC Card compartment door and ground the shroud around the card slots.
4. Use a Phillips screwdriver to remove the internal PC Card access panel (six screws).



*Figure 3-4
Remove Access Panel*

Prepare Drive for Installation

Insert the PC Card device in the drive slot *before* installing it in the computer. This cannot be done with the drive installed.



1. PC Card or device
2. PC Card drive
3. Connector
4. PC Card drive with card or device installed

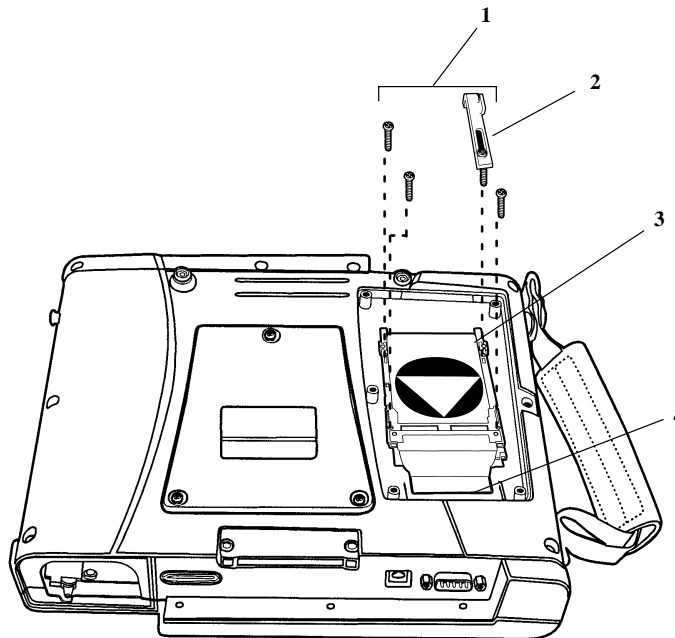
Figure 3-5
Install PC Card Device in Drive

Installation and Reassembly

In the following steps you will secure the PC card drive in the computer, make electrical connections, and reassemble the computer. It may be necessary to bend the ribbon cable at the connector so that the connector will line up readily with the connector inside the computer.

1. Place the drive (with PC Card device installed) in the computer, as shown in Figure 3-6.
2. Gently press the ribbon cable into the mating connector.

3. Use four small screws to secure the PC Card drive. Be sure to install the adjustable card retainer as shown.
4. Reinstall the access panel (*six screws*).
5. Remove the grounding clip attached to the shroud around the standard PC Card drive.
6. Replace the door on the PC Card compartment.
7. Reinstall the main battery.
8. Replace the battery compartment door and return the unit to normal service.



1. Screws
2. Adjustable card retainer
3. PC drive with PC Card or device installed
4. Connector (use gentle, even pressure)

Figure 3-6
Install PC Card Drive

Memory Installation Procedures

Follow the steps below, in the order given, to remove the DRAM and the Flash RAM cards. Read and observe all precautions listed previously before proceeding.

Disassembly

1. Place the computer on a grounded work surface.
2. Attach grounding device to yourself. *This must be done using an approved device such as a conductive wrist strap wire through a 1 Megohm resistor to ground.*
3. Remove the PC Card compartment door and ground the shroud around the card slots.

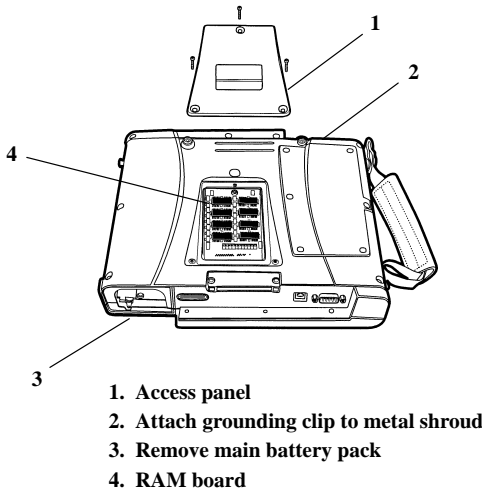


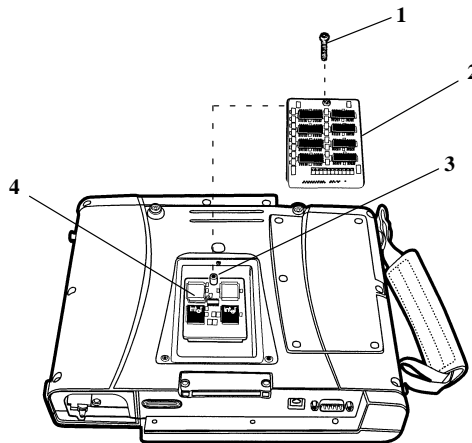
Figure 3-7
 RAM and FLASH Access

▼ CAUTION:

Do NOT allow screws, metal fragments, or other metal hardware to fall into the computer once the access panel has been removed

4. Use a Phillips screwdriver to remove the three screws that secure the memory board access panel. Set the screws and the panel out of the way.

5. Remove the single screw that secures the memory boards to the main board. Drop a round toothpick (or similar object) into the hole to keep the metal standoff (spacer) in place.
6. Use the bent end of a machinist's scribe to pry up under the corners of the board near the connector. Grasp the foam pad and lift straight up to remove the DRAM board.
7. When changing the FLASH board, remove the metal standoff (spacer) that separates the DRAM board from the FLASH board.
8. Use the bent end of a machinist's scribe to pry up under the corners of the board near the connector. Lift the FLASH RAM board straight up. It is located beneath the DRAM board. *Do not attempt to remove the standoff (spacer) beneath the FLASH board. It is permanently fastened to the main board.*

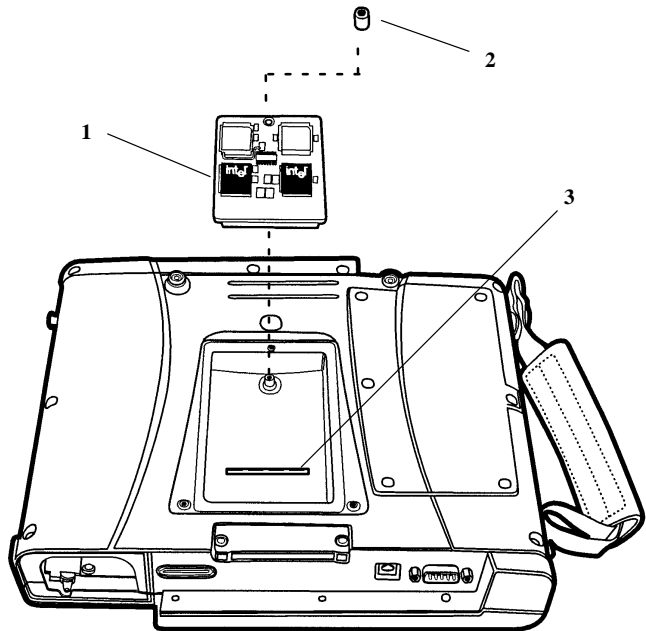


1. Screw
2. RAM board
3. Standoff
4. FLASH board

Figure 3-8
Remove DRAM Board

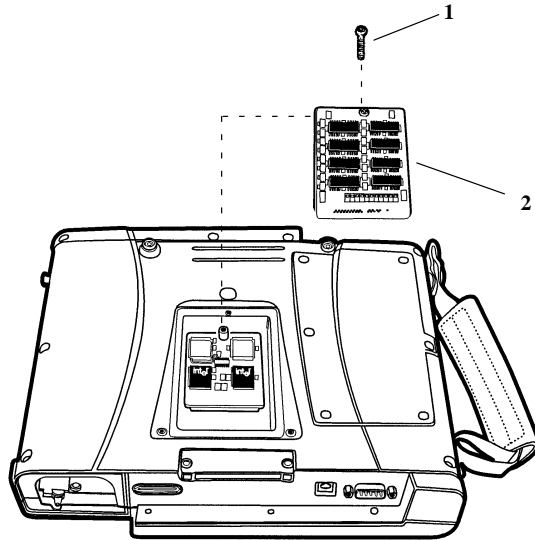
Installation and Reassembly

1. Hint: Place a round toothpick in the board mounting screw hole. This serves as a pivot point to help align both boards during installation and will also keep the metal standoff in place.
2. If changing FLASH, install the new FLASH RAM board by aligning it to the connector on the main board. Press firmly until the FLASH RAM board is snug against the mating connector and the fixed stand-off.
3. Place the metal standoff over the toothpick in the hole in the FLASH board.



1. FLASH board
2. Standoff
3. Connector (for FLASH board)

Figure 3-9
Install FLASH Board



1. Screw
2. DRAM board

Figure 3-10
Reinstall DRAM Board

1. Align the DRAM board to the mating connector on the main board. Press firmly until the board is seated in the connector and the other end is snug against the standoff.
2. Discard the toothpick and reinstall the long screw to secure the memory boards in place.
3. Reinstall the access panel (*three screws*).
4. Remove the grounding clip attached to the shroud around the standard PC card drive.
5. Replace the door on the PC Card compartment.
6. Reinstall the main battery.
7. Replace the battery compartment door and return the computer to normal service.

Batteries

**WARNING:**

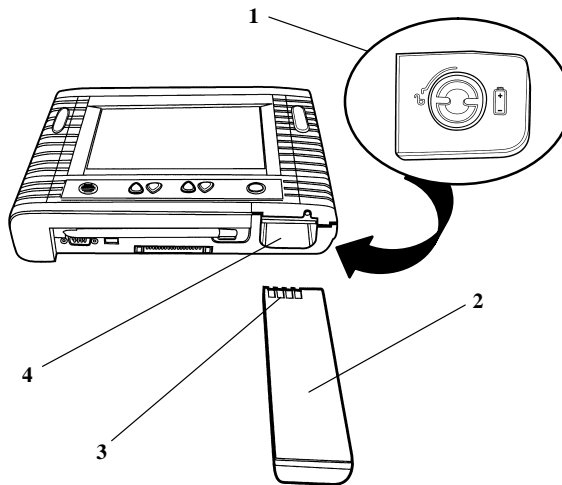
**Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent battery type.**



ADVERTISEMENT: La batterie au lithium peut exploser si elle est remplacée de manière incorrecte. Elle ne doit être remplacée que par une batterie identique ou similaire.

Main Battery Installation

Open the battery compartment door by turning the latch knob 1/4-turn counterclockwise. Use a coin or flatblade screwdriver to open and remove the door. Face the battery pack contacts into the computer, with the flat and curved portions aligned with the battery compartment opening, slide the battery pack into the compartment. Reinstall the door and turn the latch knob 1/4-turn clockwise to secure it.



1. Battery compartment door (*shown unlatched*)
2. Battery pack
3. Battery contacts
4. Battery compartment

Figure 3-11
Install Main Battery

Charging

A depleted (*not* “dead”) battery pack normally recharges in 2.5 hours, or less. If you intend to use the computer by itself and not connected to a peripheral device, *charge the battery before you begin operation.*

If you operate the computer while connected to a charging and power source, the battery pack recharges as you work. The diagrams below show various methods for charging and for operating the computer.

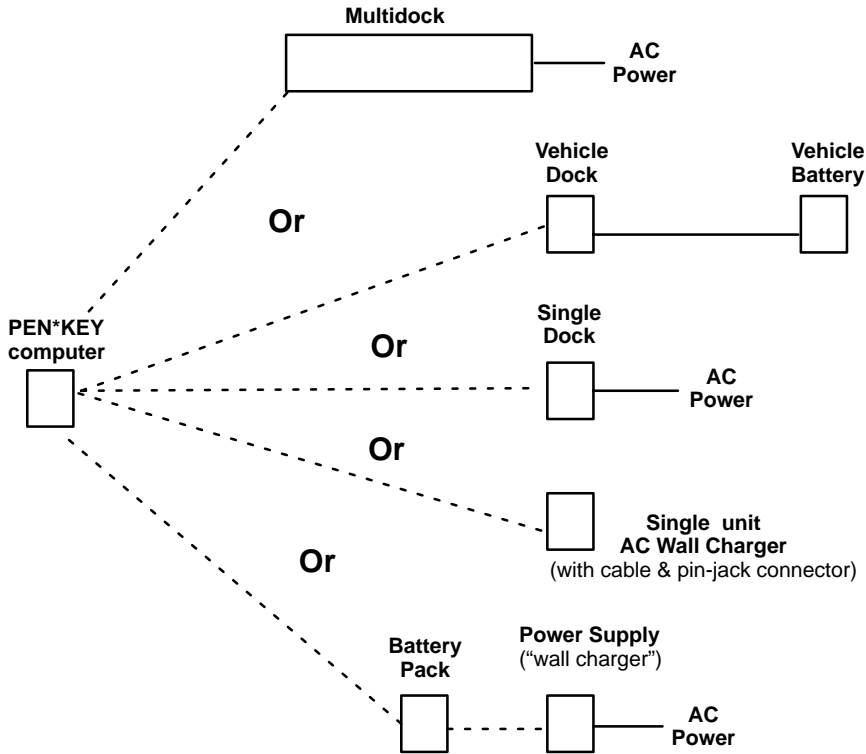


Figure 3-12
Charging Configurations

Computer Start Up

When you start up the computer for the first time, or any time after all power has been removed, you are “cold starting” the computer. The start up routine tests the internal components of the computer, resets all volatile memory to a known state, and determines what peripherals are connected. The Model 6600 Computer *does not* require a special start up diskette. The required start up program is permanently programmed into your computer at the factory. For those technical personnel using a Master-mode boot card, *either* PC card drive can be used.

When the computer does start up, a DOS screen prompts you to choose the mode of operation. If no choice is made after a programmed waiting period, the computer defaults to Windows.

► **NOTE:** *The battery compartment door must be in place or the unit will not operate.*

► **NOTE:** *The following instructions are based on the main battery pack being adequately charged. If it is not, the computer must be connected to a charging source.*

Start Up Procedures

Follow the steps below to perform a cold start:

1. Remove both compartment doors.
2. Insert any optional PC Card devices you will be using.
3. Install the main battery pack, contact-end first.
4. The computer will “beep” once to indicate a normal start up.
(the computer beeps twice to acknowledge a Master-mode start up).
5. Reinstall the battery compartment door and lock it.
6. Ensure that the computer responds to any installed PC Card options, then reinstall the PC card compartment door and lock it.

▼ **CAUTION:** *Never use a ballpoint pen to make entries on the display.*

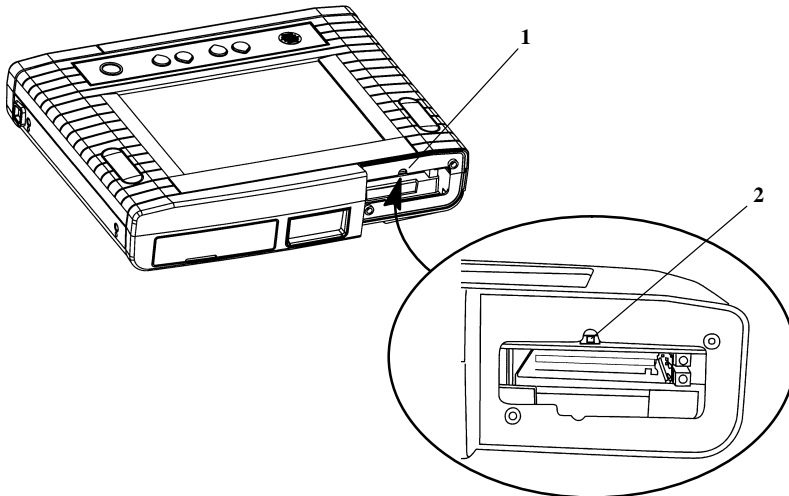
▼ **CAUTION:** *Never use a sharp object to make entries on the display.*

7. Make entries using the special stylus, a scanner, or an optional keyboard.

Reset Switch

Virtually all computers occasionally fail to respond to user input, which is why many offer a convenient “reset” switch. Lockups occur when too many operations are going on at once, or when there is a conflict between hardware and software timing or instructions. The reset switch is located behind the PC card compartment door. It is recessed behind the notch in the compartment.

If your computer locks up, remove the PC Card compartment door and use a ballpoint pen or paper clip to actuate the reset switch. Press gently on the switch and within a few seconds the computer will reset. Be sure to reinstall the PC Card compartment door.



1. Notch (inside the PC Card compartment)
2. Reset switch

Figure 3-13
Reset Switch

Input/Output

Input

Since the Model 6600 is a hand-held computer, the most common input device is likely to be the passive pen. Bar code information can be captured by using the optional integrated scanner or a tethered scanner. A PS/2-compatible keyboard can be connected to the 6-pin mini-DIN connector behind the flap at the upper end of the computer.

Using the Pen

Simply tap or touch the display with the special pen to awaken the computer or to make selections: the pen normally behaves like a mouse with the *left* button depressed. Squeeze the button on the barrel of the pen to make it behave like a mouse with the *right* button depressed.

Using the Integrated Scanner

The integrated scanner is activated whenever you press one of the long buttons on either side of the display. The scanner *will timeout* if a scan is unsuccessful: a good scan is signalled by a “beep” from the computer. When scanning, be sure the aiming dot or beam is centered, vertically and horizontally, on the bar code you are scanning.

Output

The 15-pin D-subminiature connector behind the flap at the upper end of the computer is intended for an external VGA monitor.

Two-Way Communication

An RJ-11 connector, located behind the flap and next to the keyboard mini-DIN connector, allows you to connect the computer to phone lines if an optional internal modem was ordered.

An infrared port located near the battery compartment door of the lower end of the computer permits two-way wireless communication between the computer and IrDA-compatible peripheral devices.

At the lower end of the computer near the left corner is a 9-pin D-subminiature connector for serial communication with peripheral devices.

Section 4

Maintenance



Introduction

This section contains maintenance procedures for the Model 6600 Hand-Held Computer. Although these computers are designed to withstand normal use in your environment, occasional maintenance is required to ensure trouble-free operation. The procedures in this section will help you keep your computer in good working order.

Maintenance procedures include instructions on maintaining and charging the main battery pack, replacing the handstrap and pen tip. Instructions are also included for cleaning the computer case, display, and scanner lens.

Maintenance Procedures

Batteries

The Model 6600 Hand-Held Computer contains a rechargeable lithium ion main battery pack and a nickel metal-hydride rechargeable backup battery. The main battery pack contains a microprocessor and other electronics to monitor usage and capacity. This “smart” battery pack reports the battery status to your computer and controls the rate of charge when the battery pack (or computer it is in) is connected to a charging source.

Main Battery Pack

Special Handling and Care

Lithium ion batteries differ from other types of batteries you may be familiar with and require special handling to ensure maximum life and overall

performance. Lithium ion batteries should be stored in a *discharged* condition to ensure maximum battery capacity and cycle life in the future. If these batteries are stored in a fully charged condition, the internal chemical activity resulting from self-discharge can be far more damaging than it is with many other battery types.

Long-Term Storage

For long-term storage, lithium ion battery packs for the Model 6600 Computer should be discharged down to the “suspend state” – the point at which current flow out of the battery pack stops. At the time of this publication, the suspend state voltage is set at approximately 4.7 V dc for this particular battery pack. Battery packs that were prepared for long-term storage *must be charged prior to initial use*.

Do NOT store lithium ion batteries in high temperature environments.

Short-Term Storage, Shipping

For short-term storage, lithium ion battery packs for the Model 6600 Computer should be (1) discharged, (2) fully charged, (3) then discharged down to 6.8 V dc.

Battery Pack Information

The lithium ion battery pack keeps track of its lifetime history of charge and discharge cycles, present voltage, and its capacity. The initial reference point for the battery pack is set at the factory. Thereafter, the battery pack regularly reports its status and history to the computer. Low battery warnings and approximate battery capacity information can be displayed to determine when charging is required.

**WARNING:**

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent battery type.



ADVERTISEMENT: La batterie au lithium peut exploser si elle est remplacée de manière incorrecte. Elle ne doit être remplacée que par une batterie identique ou similaire.

Battery Capacity

The display tells you when the batteries need recharging. The main battery pack contains monitoring electronics and light-emitting diodes (LEDs) to show the amount of charge in the battery. Press on the two battery contacts to determine the remaining battery charge. When all four LEDs light, the charge exceeds 75 percent. Three lighted LEDs means the charge exceeds 50 percent, while two lighted LEDs means the charge is 25 percent or greater. One lighted LED means the battery charge is 25 percent or less.

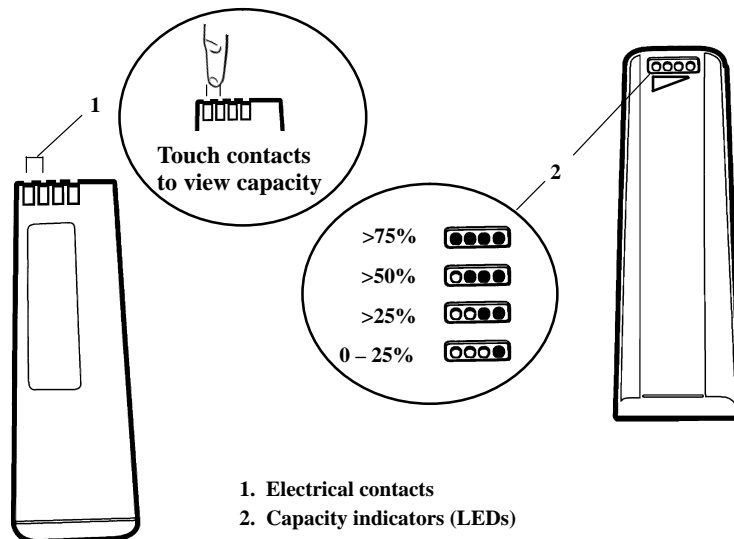


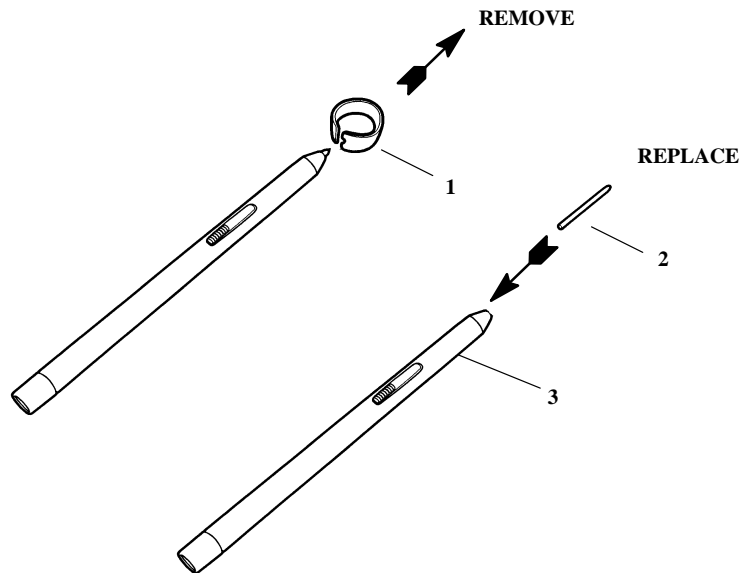
Figure 4-1
Battery Pack Capacity Check

Backup Battery

When the backup battery no longer accepts a charge, the battery must be replaced. This replacement should only be performed by a *factory-approved* service center or a certified service provider.

Pen Tip Replacement

The pen tip will wear down over time and require replacement. Use a tool such as the one shown below to grip the worn-out pen tip. Pull firmly on the old tip to remove it from the pen barrel. You can insert a new pen tip with your fingers, making sure that the tip is fully seated against the stop inside the pen.



1. Tweezer-like tool
2. Pen tip (new)
3. Pen barrel

Figure 4-2
Pen Tip Replacement

Cleaning Instructions

- ▼ **CAUTION:** *Do not use abrasives or solvents (or any product containing these substances) to clean any part of the unit. Permanent damage to the display cover or the computer will occur if such substances are used.*
- ▼ **CAUTION:** *Never use ketonic solvents (acetone or ketone) or aromatic solvents (toluene or xylene) to clean any part of the computer. Doing this can damage it.*
- ▼ **CAUTION:** *Do not pour cleaners directly on the display or the computer case.*

Case and Display

Never apply any liquid cleaner directly on the display or the computer case. Instead, dampen a soft, lint-free cloth with the cleaner and gently wipe exterior surfaces with this cloth.

MICRO-CLEAN II, manufactured by Foresight International, Inc., Omaha, Nebraska 68127-0205 (telephone: 1-800-637-1344), is the only cleaner specifically recommended for this purpose. Use of other cleaners can result in damage to the case or the display.

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.

Factory Service

If the unit is faulty, you can ship it to a *factory-approved* repair center. Their address and telephone number can be found on the Product Service Information Card which is packed with every product.

When products must be shipped for repair:

- Package in the original shipping carton if possible.
- Fill out a Product Service **Information Card** and include this card with the product.

If the original shipping container is not available, appropriate packaging materials can be substituted. **If in doubt, contact your regional Customer Support Specialist or phone 1-800-755-5505 for instructions.**

Product Service Information Card

This card is packaged with every product as part of the Mobile Systems Division Warranty Card. Detach the Product Service Information Card when needed. Be sure to include a brief description of the problem(s) when you return the product for repair.

Section 5

Vehicle Installation



Vehicle Dock Installation

The vehicle dock and associated electrical wiring should be installed under the supervision of properly trained and qualified personnel. Follow these installation instructions closely to ensure safe, reliable performance of the Model 6600 Hand-Held Computer and any peripheral devices (such as a printer) that may also be installed in the vehicle.

The vehicle electrical system must be in excellent condition. This means the charging circuit must work properly and that vehicle-generated electrical “noise” must be minimized and within specifications.

The charging circuit must neither undercharge nor overcharge the vehicle battery. Either fault condition in the vehicle electrical system can cause a no-charge condition in the computer battery, and printer battery too, if one is installed in the vehicle. In general, the vehicle battery voltage should read approximately 13.0 V dc with the engine *off*, and should rise slightly with the motor running.

Excess electrical noise can be severe enough to defeat the electrical filtering that is built into printers and computers made by Norand Corporation. Defective ignition wiring, damaged insulation, or a faulty vehicle electrical component can cause electrical noise. When this happens, computer and printers can behave unpredictably.

The gray battery cable (NPN: 206-953-009 or 216-964-009) must be connected in strict accordance with the instructions in this manual.

Tools Required

- Wire Crimping and stripping tool.
- Electric drill, drill bits (3/16" and 9/16").
- Common hand tools.

Installation Procedures

1. Electrical installation (battery cable).
2. Mechanical installation (computer, peripherals).
3. Final assembly and cable connection.

Parts and Accessory List, kits: 203-344-001/002

Kit #	Description	NPN	Qty
-001	dc power cable (6 ft.)	206-951-001	1
-002	"Y" power cable	216-817-001	1
-001	battery cable	206-953-009	1
-002	battery cable (with filter)	216-964-009	1
-001/-002	fuse link	216-657-001	1
-001/-002	bolt, 3/8" X 1-1/2"	800-099-001	2
-001/-002	washer, 3/8"	803-099-001	4
-001/-002	nut, 3/8"	802-099-001	4
-001/-002	adjustable clamp	808-011-001	8
-001/-002	self-tap screw #6 X 5/8"	800-008-001	8
-001/-002	3/8" terminal ring	809-165-001	1
-001/-002	self-tap screw #8 X 5/8"	800-012-000	1
-001/-002	#8 flat washer	803-084-000	1
-001/-002	snap-in bushing	807-065-003	1
-001/-002	remote terminal cable (6')	216-588-001	ref.*

**Reference items not included in kit. Order separately.*

Introduction to Vehicle Installation

The vehicle installation kit allows you to wire the vehicle dock in a delivery vehicle. Optional cables are available to mount the dock *and* a printer nearby in the same vehicle. When the installation is complete, you will have a secure place to store the computer between stops. In addition, the vehicle electrical system provides power to recharge the computer and to operate a printer (if one is installed).

During this installation, the power cable is wired directly to the vehicle battery. This direct connection reduces the chance of installation problems. It also takes advantage of the natural filtering and regulating characteristics of the vehicle battery.

Since each situation or equipment type may pose unique requirements, mounting hardware selection and mechanical installation shall be the responsibility of the installer. Use nuts, bolts, and lockwashers for installing the mount (adjustable swivel or fixed) for the dock: the mount is predrilled with 3/16-inch holes.

► **NOTE:**

A mounting bracket and bracket installation hardware is not provided in this kit.

This kit contains nuts, bolts, washers, a terminal ring, and a fuse link for connecting the battery cable *directly* to the vehicle battery. It also contains adjustable wire clamps to secure the cable in place.

Your tasks are to:

- Route and install the battery cable.
- Mechanically install the mount (provided by others).
- Connect short cable(s).

Decide where you will mount the vehicle dock, then proceed with the following instructions.

Power Cable Routing

Cable Length

Remember that a shorter dc power cable connects the vehicle dock to the battery cable. This extends the overall cable length and must be considered as you begin the installation.

When Installing a Printer

If you are installing a printer at the same time, a special “Y” (power) cable *and* a remote computer cable are required. These cables allow you to locate the printer and the vehicle dock up to six feet apart. The battery cable for printers contains a built-in filter assembly.

Cable installation

Follow the guidelines (below) and other instructions closely when installing the battery cable.

Guidelines

- ▶ Completely install the battery cable *before* connecting the dock.
- ▶ Route the battery cable *from* the general area where the unit(s) will be mounted. Work *toward* the vehicle battery.
- ▶ Use a snap-in bushing (requires 9/16” hole) if the battery cable passes through the firewall or other sheet-metal.
- ▶ Make sure that cable routing does not interfere with other equipment or vehicle controls.
- ▶ Make sure that cable routing does not invite damage to the cable.
- ▶ Secure the battery cable at least every 18 inches throughout the cable run: use adjustable clamps (provided) or wire-tie to existing vehicle cable runs.

Battery Cable Connections

Battery Cable Completion

You must cut the cable to length, cut off a portion of the outer cable jacket and strip the individual wire ends of the cable. (Note: you may end up shortening, and restripping, the red wire when attaching the fuse link). Then, you must install a preassembled in-line fuse link in series with the red wire and install a terminal ring on the black wire. Finally, you must mechanically complete the connections to the vehicle battery.

Cut and Strip the Battery Cable

1. Cut the gray battery cable near the battery.
2. Strip the cable jacket back 12–14 inches.
3. Strip 1/4" of insulation from the black wire.

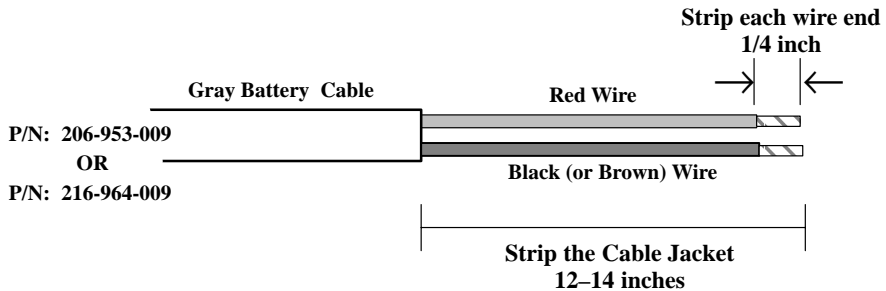


Figure 5-1
Strip the Battery Cable

Prepare the Cable Ends

1. Strip the black wire.
2. Crimp the 3/8" terminal ring (1) onto the black wire.
3. Locate the fuse link (2): it attaches to the red wire.
4. Shorten the red wire if desired.
5. Then, strip 1/4" of insulation from the red wire.
6. Securely crimp the fuse link splice (3) onto the red wire.

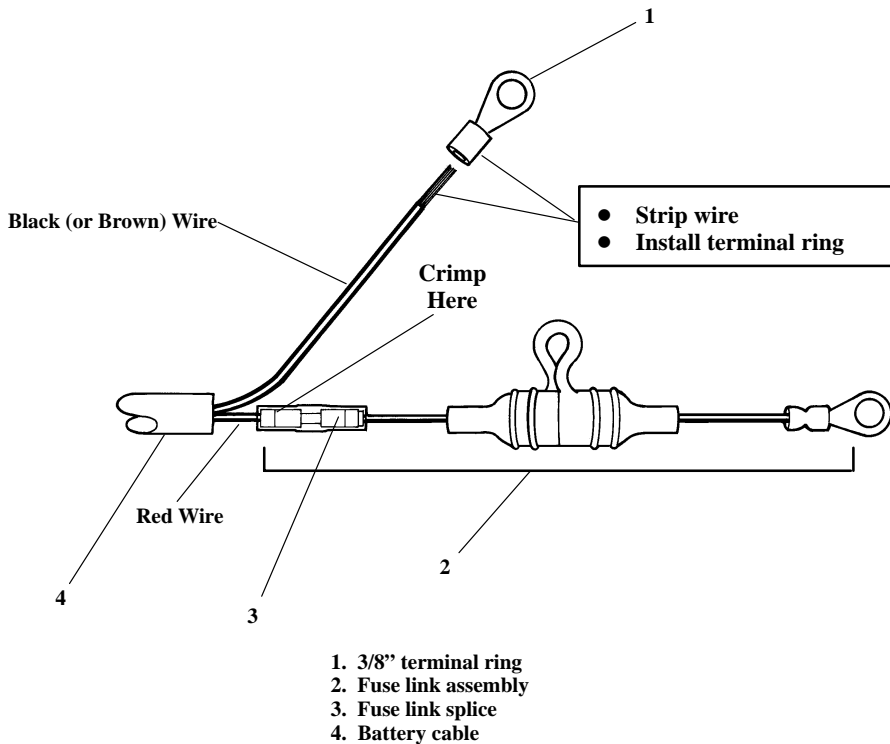
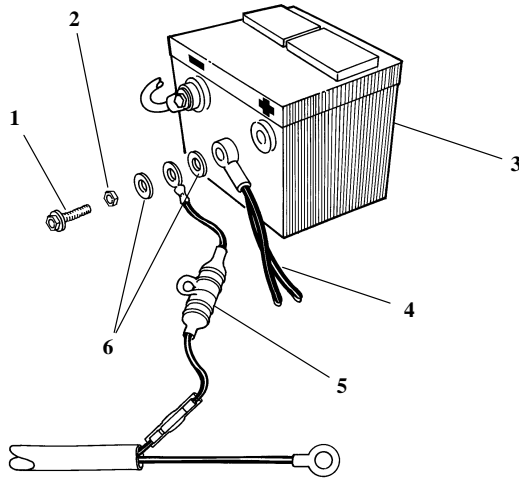


Figure 5-2
Prepare Cable Ends

Connection to Side-mounted Terminals

1. Remove both battery terminal screws from the vehicle battery.
2. Screw a 3/8" nut (2) as far as it will go onto a 3/8" X 1-1/2" bolt (1) furnished in kit.
3. Slip a 3/8" washer (6) onto the bolt.
4. Slide the *positive* (red wire with fuse link (5)) terminal ring from the battery cable onto the positive (+) battery terminal bolt.
5. Slip a second 3/8" washer (6) onto the bolt.
6. Slide the vehicle *positive* battery cable (4) onto the bolt.
7. Thread the bolt assembly (steps 1–6, above) into the positive battery terminal. Tighten the bolt securely.
8. Tighten the nut (2) installed in step #2 to secure washers (6) and cables firmly in place.

Repeat steps #2 thru #8 for the negative wire (black or brown) from the battery cable, hooking up the negative cables to the negative (-) battery terminal.



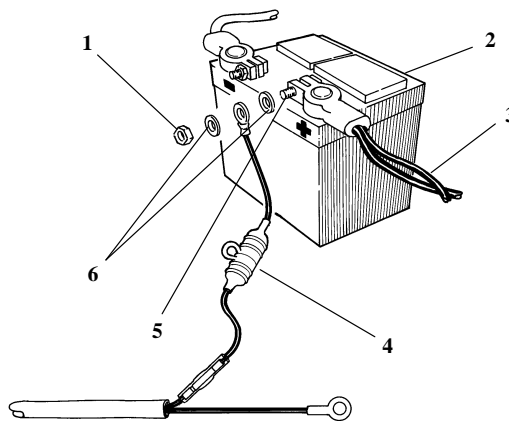
1. Bolt
2. Nut
3. Vehicle battery
4. Vehicle battery cable
5. Fuse link
6. Washers

Figure 5-3
Side-Mount Battery Terminals

Connection to Top-mounted Terminals

1. Remove the bolts from the vehicle battery terminals.
2. Replace the bolts removed in step #1 with 3/8" X 1-1/2" bolts (5) and nuts (1) furnished in the installation kit. Tighten nuts securely.
3. Slip a 3/8" washer (6) onto the extended end of each bolt.
4. Slide the *positive* (fuse link with red wire (4)) terminal ring from the battery cable onto the positive (+) battery bolt (5).
5. Slip a second 3/8" washer (6) onto that bolt (5).
6. Thread a second 3/8" nut (1) onto that bolt (5). Tighten the nut.

Repeat steps #3 thru #6 for the negative wire (black or brown) from the Norand battery cable, connecting the wire to the negative (-) battery computer.



1. 3/8" nut
2. Vehicle battery
3. Vehicle battery cable
4. Fuse link
5. 3/8" X 1-1/2" bolt
6. 3/8" washers

Figure 5-4
Top-Mount Battery Terminals

Secure the Power Cable

Secure the battery cable every 18 inches with adjustable cable clamps. Work from the battery, toward the mounting area for the dock. Remove the paper backing from a clamp and stick the clamp in place while drilling a pilot hole with a #26 drill bit. Use #6 sheet-metal screws to permanently hold clamps in place.

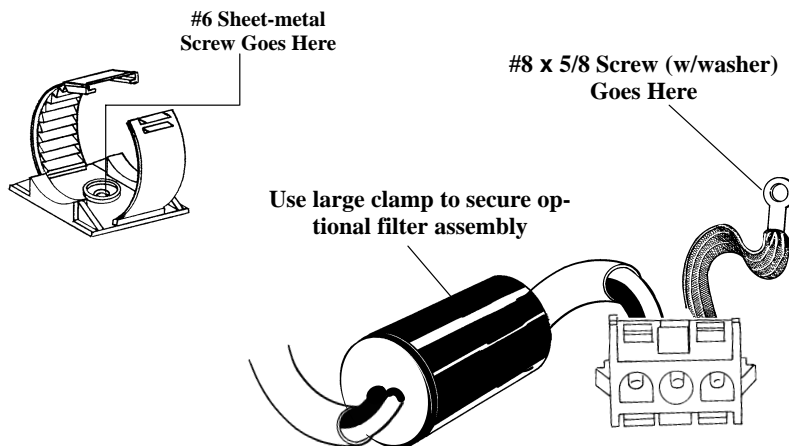


Figure 5-5
Secure Cable

Fasten Ground Cable

The power cable connector has a ground strap (or wire) that must be fastened to vehicle sheet-metal to ensure proper cable shielding. Follow the steps below to fasten this ground strap:

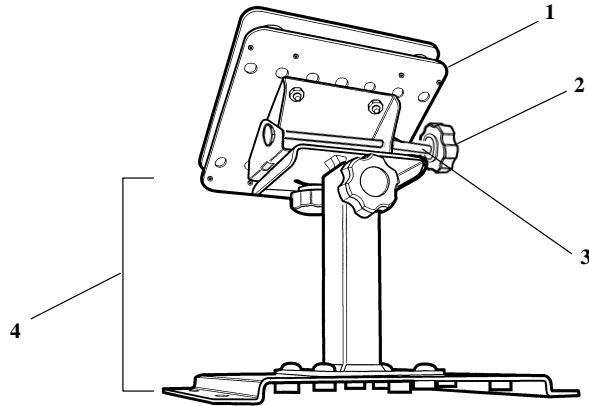
1. Drill a small hole where you intend to fasten the ground strap.
2. Use a punch to dimple and enlarge the hole.
(Do not make hole too big for the screw.)
3. Scrape a small circle of paint from around the hole.
4. Use a #8 X 5/8" screw and flat washer to secure the strap.

Mechanical Installation

When installing the vehicle dock, be sure to allow clearance for the combined computer, dock and vehicle dock mounting assembly before proceeding. The Model 6600 Computer protrudes above the dock, requiring vertical clearance. Additional vertical clearance must be provided to allow for inserting or removing the computer from the dock.

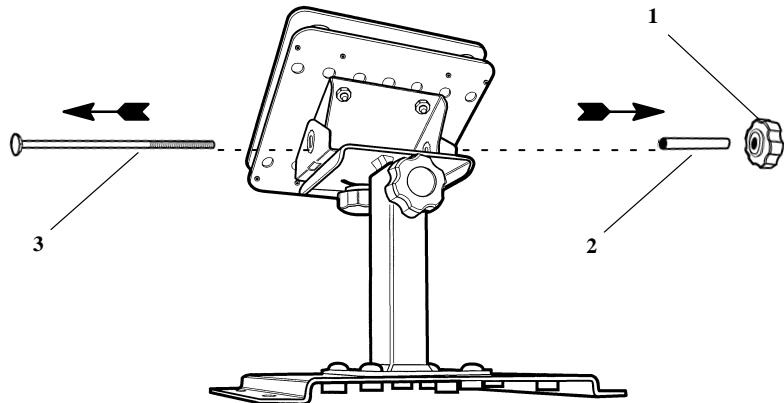
In the procedures that follow, you will:

- Attach the mounting base to the bottom of the vehicle dock.
- Permanently install the mounting pedestal in the vehicle.
- Attach the mounting base/vehicle dock assembly to the mounting bracket and pedestal assembly.
- Adjust the mounted vehicle dock.
- Make final electrical connections to the dock



1. Mounting base
2. Large knob
3. Spacer
4. Mounting bracket and pedestal assembly

Figure 5-6
Vehicle Mount



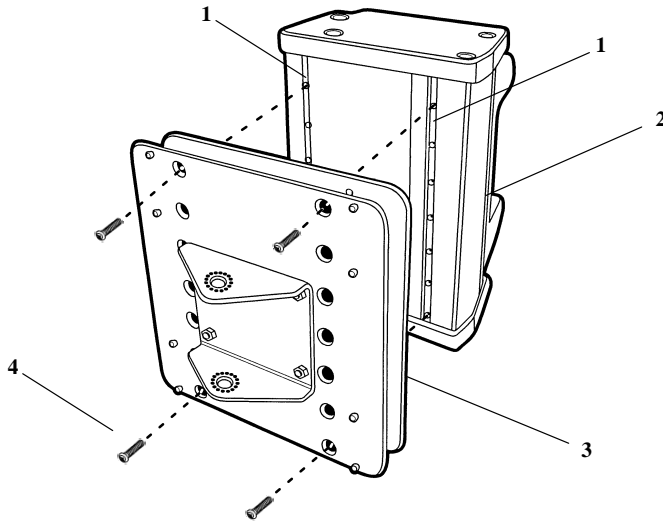
1. Large knob
2. Spacer
3. Carriage bolt

Figure 5-7
Remove Mounting Base

Attach Mounting Base to Vehicle Dock

Perform the following steps, in the order given, to attach the mounting base to the vehicle dock:

1. Unscrew the large knob, as shown.
2. Slide the long upper carriage bolt out of the assembly (do not misplace the spacer).
3. Remove the dock mounting base from the mounting assembly.
4. Attach the dock mounting base to the bottom of the dock with four screws into the dock nutplate, as shown (*see Figure 5-8*).
5. Postpone reattaching the mounting base and dock assembly until *after* the mounting pedestal is fastened in the vehicle.



1. Nutplate(s)
2. Dock (bottom view)
3. Mounting base
4. Screw(s)

*Figure 5-8
Attach Base to Dock*

Install Mounting Assembly

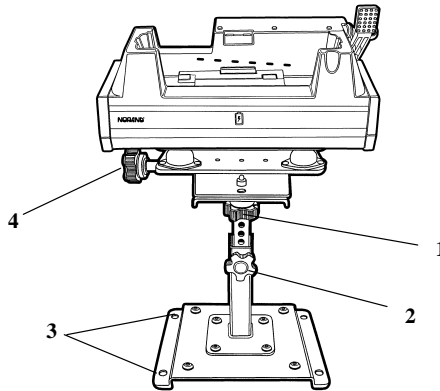
Use the bottom of the mounting bracket and pedestal assembly as a template to mark the hole locations where you are installing the vehicle dock. Be sure to allow clearance for the dock with a computer inserted in it, and for computer insertion and removal.

Drill appropriate sized holes in the vehicle sheet metal and secure the mounting bracket and post assembly with nuts, bolts, and lockwashers. *This hardware is not furnished in the installation kit and must be purchased locally.*

Attach Dock to Mounting Bracket

You can now reattach the mounting plate and dock to the mounting bracket and post assembly. If clearances are tight at the rear of the dock, make electrical connections first.

1. Align the dock mounting plate holes to the corresponding holes on the mounting post.
2. Install the long carriage bolt from the right side (when looking at the front of the dock) and slide it through all four holes.
3. Place the spacer on the protruding end of the long carriage bolt. (*left side as you face the front of the dock*)
4. Screw the large knob onto the long carriage bolt.
5. Tilt the dock to suit your needs.
6. Securely tighten the large knob to secure the dock in place.
7. You can loosen all knobs to adjust the dock.
8. Tighten all knobs securely to maintain the desired adjustments.



1. Swivel adjust
2. Height adjust
3. Mounting holes
4. Tilt adjust

*Figure 5-9
Vehicle Dock*

Final Connections

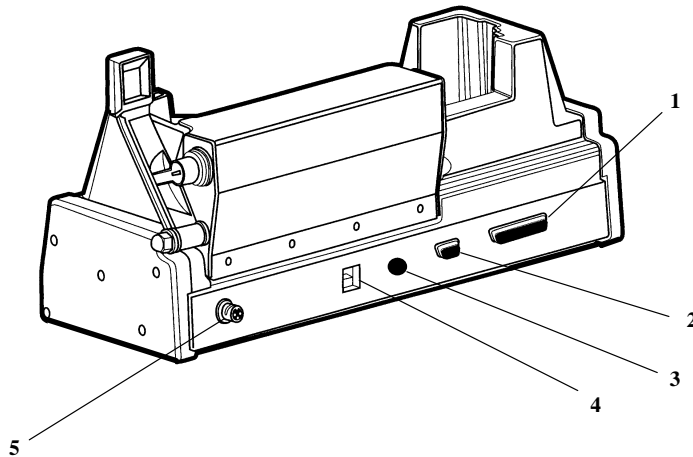
Vehicle Dock Alone

If you are installing the vehicle dock by itself, you must connect one end of the dc power cable (P/N: 206-951-001) to the vehicle dock: the other end plugs into the previously installed battery cable.

Vehicle Dock and Printer

If you are installing a printer in the vehicle, you must install a “Y” cable to supply power to both the vehicle dock and to the printer. Plug one end of this cable into the printer, the other into the vehicle dock. The rectangular connector plugs into the battery cable.

You must also connect a Remote Computer Cable between the vehicle dock and the printer: this cable allows the computer to communicate with the printer.



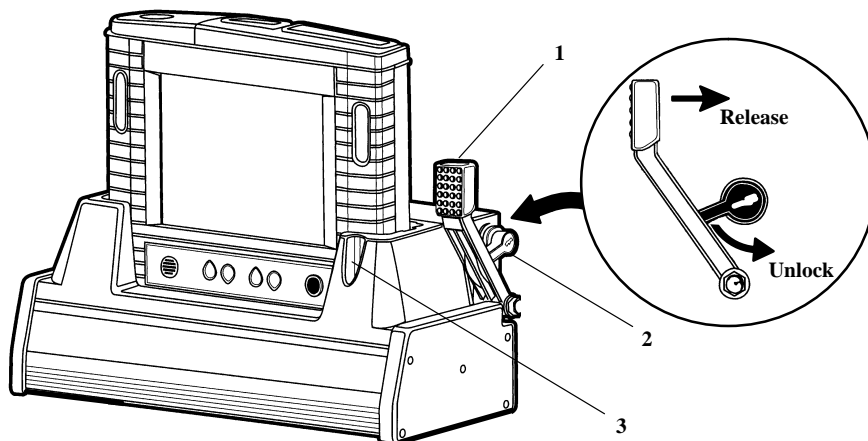
1. External RS-232/485 communication (COM1)
2. IR communication port (COM2)
3. PS/2 keyboard
4. Ethernet connector (RJ-45)
5. Power (12 V dc)

Figure 5-10
Dock Connectors

Using the Vehicle Dock

The vehicle dock and its mechanical features are shown below. Especially note the release lever (1) and the locking mechanism (2). Once the computer is firmly seated in the vehicle dock, you must press the release lever toward the back of the dock to remove the computer. If the locking mechanism is in place (as shown), it must be unlocked and rotated downward before the release lever can be moved.

You can store the special pen in the holder (3) on the vehicle dock to make the pen available when the computer is docked.



1. Release lever
2. Locking mechanism
3. Pen holder

Figure 5-11
Vehicle Dock Mechanical Features

Appendix A

NORAND[®] Utilities Program



Introduction

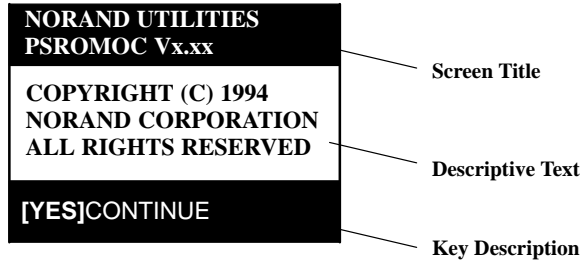
The NORAND Utilities Program provides the basic functions required to prepare the Model 6600 Hand-Held Computer for use. When you enter the Norand Utilities Program, an active keyboard is displayed. Use the special pen to make selections and entries on this keyboard.

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, the program will bypass this option.

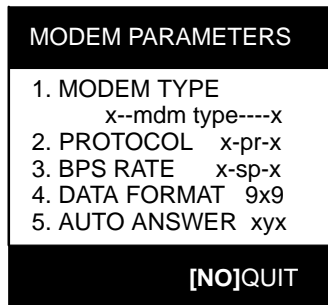
Program Conventions

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 as follows.

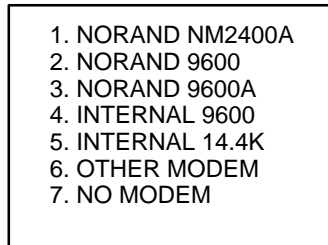
Entry Point



Pop-Up A



Drop Down A1



The keys you are instructed to use are shown 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 lowercase 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 supply 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 or width in this manual.

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 is displayed in reverse video.

The bottom lines of the main screen contain fields defining “action” keys that are enabled. This information is 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 are 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 above or below the menu option that invokes them, where possible. Pop-up menus *not invoked* via a menu option are located near 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 mean 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.

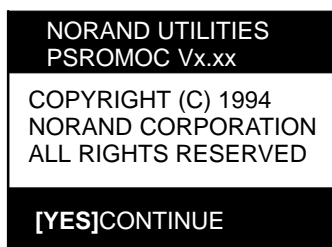
[NO] QUIT cancels an operation, returning control to the prior logical step, thereby skipping the current operation.

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

[F4] **HOW ARE FUNCTIONS SELECTED W/O A KEYBOARD?**

Screen Diagrams

Main Menu Entry Point



Press [YES] to continue.

Language Selection Menu

The NORAND Utilities program checks files to determine available language options. English is the first option, followed by up to nine additional choices. If no resource files on language exist, this menu will not display.

NORAND UTILITIES LANGUAGE SELECTION	
1.	ENGLISH
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
0.	
[NO] QUIT	

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

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.

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	
XXXXXXXXXXXXXXXXXX	
[.] 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.
Note: [Gold 4] = [F4]
- [.] (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, [↑/↓] highlight option and [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
XXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXX
XXXX
[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:
      ZZZZZZZZZZX
UNIT ID:      ZZZZX
x  ----  status  ----  x
x-   filename   -x
BYTES:      ZZZZZ9
ERRORS:     ZZZ9

[NO]STOP COMM
    
```

Pop-Up A

```

ARE YOU SURE YOU
WANT TO STOP
COMMUNICATIONS NOW

[YES] STOP
[NO]RESUME
    
```

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.

[YES] CONTINUE replaces [F4] STOP COMM at completion of communications session.

[NO] Pop-Up A
 [YES] Go to Program Load

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.	
4. FORMAT RAM CARD	
5.	
[NO]QUIT	

Option [4] appears only if FORMAT.COM found in path.

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

[NO] Go to Main Menu

Pop-Up A

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

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 D1

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

Pop-Up D1

- [#]** Pop-Up 2
- [NO]** Return to Advanced Utilities Menu

Appendix B

Connector Pinout Information



Connector Pin Definitions

The following tables define the signals or levels present on the connector pins. Each connector is described in a separate table and a pin numbering illustration is included with each table.

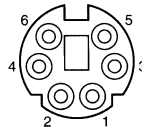


Table B-1
Keyboard mini-DIN Connector

Pin Number		Signal or Level
1		Keyboard Data
2		No Connection
3		Ground
4		+5 Volts
5		Keyboard Clock
6		No Connection
Shield		Ground

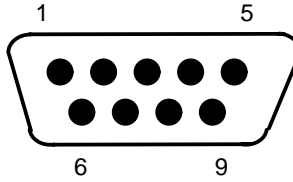


Table B-2
9-pin D-subminiature Serial Connector

Pin Number	Signal or Level
1	DCD
2	RXD
3	TXD
4	DTR
5	Ground
6	DSR
7	RTS
8	CTS
9	RI

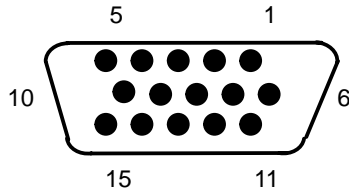


Table B-3
15-pin D-subminiature External VGA Connector

Pin Number	Signal or Level
1	CRED
2	CGREEN
3	CBLUE
4	No Connection
5	Ground
6	Ground
7	Ground
8	Ground
9	No Connection
10	Ground
11	No Connection
12	No Connection
13	CHSYNC
14	CVSYNC
15	No Connection

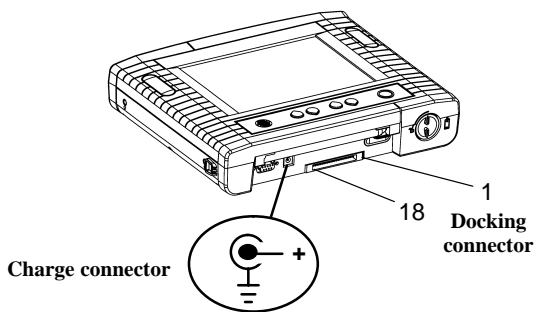


Table B-4
18-pin Docking Connector

Pin Number	Signal or Level
1	TBTIPOS
2	TBTONEG
3	TBTINEG
4	TBTOPOS
5	KBCLK
6	KBDAT
7	RS232DTR
8	DIAGBOOT
9	RS232CTS
10	RS232DSR
11	RS232RXD
12	RS232RTS
13	RS232DCD
14	RS232TXD
15	9DAT
16	GROUND
17	BCLK
18	DOCKIN