Intermec
Technologies Corporation

Model 6640
USER'S GUIDE

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Section 1

General Information

Introduction: About this Manual

This manual is divided into five sections. 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

Summary of Sections

Section 1, General Information

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

Section 2, Options and Accessories

Depicts and describes options and accessories.

Section 3, Operation

Tells how to put the unit into operation for the first time.

Section 4, Maintenance

This section contains care and maintenance instructions.

Section 5, Vehicle Installation

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

Related Publications

- 6640 Quick Start Instructions, P/N 962-054-014
- 6640 Upgrades Installation, P/N 962-054-016
- 6640 Technical Reference, P/N 978-054-001
- 6640 Dock Installation Instructions, P/N 962-040-003
- http://www.intermec.com/manuals/manuals.htm

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. Today's hand-held computers are suitable for many other uses as well.

These units are battery operated, making them extremely portable and well-suited for utility, public safety, transportation, and field service operations.

Typically, programs and 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 an external scanner. This computer can access a database with customer and product information, perform calculations based on product movement, send information to a printer, or send data to a host computer in real time or at the end of the work day.

The 6640 Computer

The 6640 Hand-Held Computer is a versatile portable data collection PC. It has a large, easily-read display, pen-based data entry, and the power and speed provided by an Intel Pentium 266 MHz MMX processor. With extensive memory options and a Windows operating system, the 6640 is a powerful, full-function PC with all of the ruggedness and portablility we design into every product.

Software Compatibility

The 6640 data collection PC has software for battery charging and for communicating to peripheral devices. The computer also has a software interface for display control when using windows-type programs.

Since the 6640 uses the Microsoft Windows98 operating systems, there are many general programs and publications available for use with the computer.

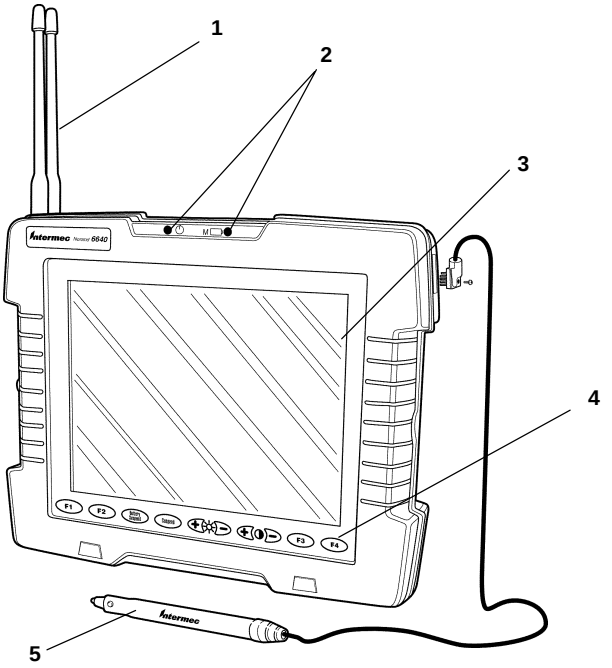
Computer Description

The following illustrations and text will familiarize you with the external features of the 6640 computer.

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

- Battery compartment door
- Drive bay door
- Tethered pen
- Handstrap
- External connections

Correct any problems discovered during this inspection before using the computer.



1. **Radio antenna(s)**
2. **Power status LEDs**
3. **Display/touch panel**
4. **Control panel** *(programmable function keys)*
5. **Tethered pen**

Figure 1-1
6640 Computer Front

Radio Antenna(s)

Your computer can accommodate up to two radio antennas, located at the upper left corner of the unit. A Global Position System (GPS) antenna can be mounted elsewhere on the computer.

Power Status LEDs

These bicolor (red/green) indicators tell you if the unit is operating from battery power or external power, and when the batteries are being recharged if the computer is turned on. Section 3 contains a table that shows the meaning of various combinations of these status LEDs.

Display

The display/touch panel shows data and computer messages, your entries, customer or product lists, calculations, and various prompts that require a response from you. An integrated capacitive touch-screen panel on the display allows you to make entries with your finger or with the special tethered pen.

Control Panel

The touch-screen control panel, at the bottom of the display area, is an integral part of the display . You will see four programmable function keys, plus keys for the following actions:

- Battery suspend *(battery replacement mode)*
- Suspend *(suspend operation mode)*
- Brightness
- Contrast

Pen *(input device)*

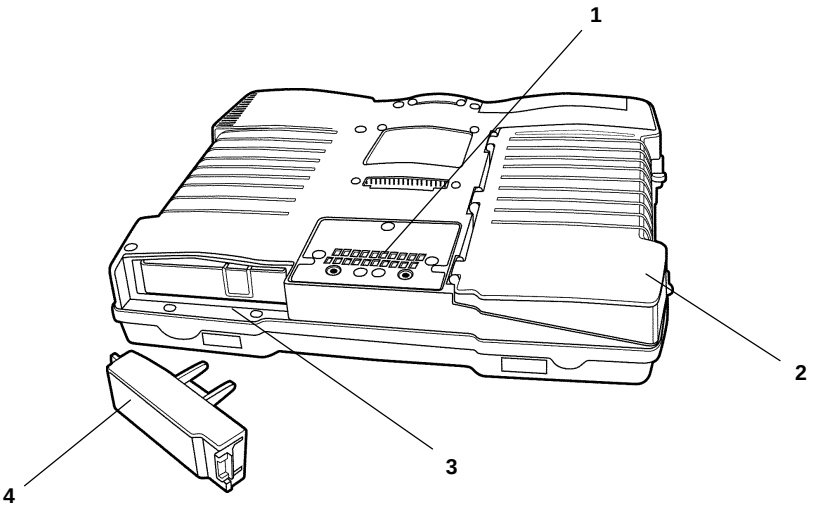
Use the special tethered pen provided with the computer to make manual entries. The pen must be plugged into the computer for normal operation. This pen normally performs the function of the *left mouse button.* The right mouse function can be accessed by pressing the button on the barrel of the pen, by tapping the Intermec logo "I" in the System Tray on the task bar or by pressing the F4 key.

Pen input takes precedence over finger input when both are detected at the same time.

Battery Compartment

The easy-access battery compartment contains a rechargeable lithium ion battery pack. This is a "smart" battery pack because it has internal electronics that monitor and can report the condition of the battery pack.

A rechargeable internal lithium ion backup battery (*not* user replaceable) will maintain critical data and computer memory for up to 5 minutes (when the unit is in battery suspend mode) to allow replacing the main battery pack.



1. Docking connector
2. Drive bay cover
3. Battery compartment
4. Battery compartment door

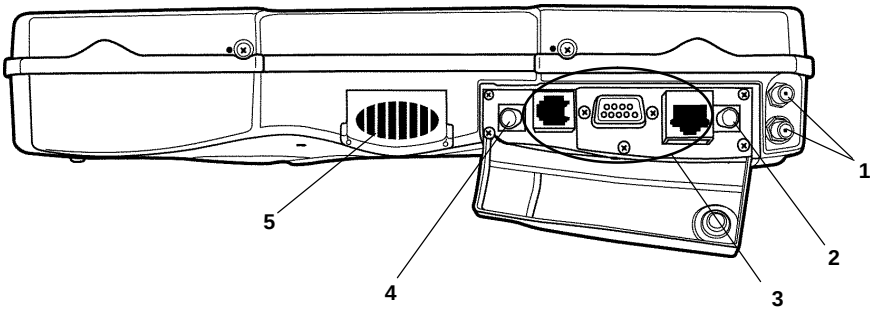
Figure 1-2
6640 Back

I/O Connectors

Most external connectors on the 6640 Computer are located behind a rubber flap that surrounds the visible portion of the input-output (I/O) panel. Three standard I/O panels with various connector combinations are currently available. Other I/O panels can be designed to meet future customer needs.

The I/O panel is field-replaceable *(by a qualified technician)* if you want to upgrade to add connectors that were not included when your computer was originally configured. See Section 2 for available I/O panel options.

All I/O panel options have a push-type momentary contact suspend/resume switch *and* a push-push on/off switch.



1. Radio antenna connectors
2. Suspend/Resume switch
3. Input/Output connectors
4. Power On/Off switch
5. Cooling fan

Figure 1-3
Top End

Ethernet *(Figure 1-3)*

Ethernet signals are always available on the docking connector; an optional RJ45 connector on the computer allows direct connection to a Local Area Network.

Serial Port *(Figure 1-3)*

This 9-pin D-subminiature connector supports RS-232 signals for two-way communication between peripheral devices and is capable of supporting a 5-volt bar code scanner. When the computer is docked, these same signals are carried on the docking connector and are accessed via the RS-232 port on the dock.

RJ11 Connector *(Figure 1-3)*

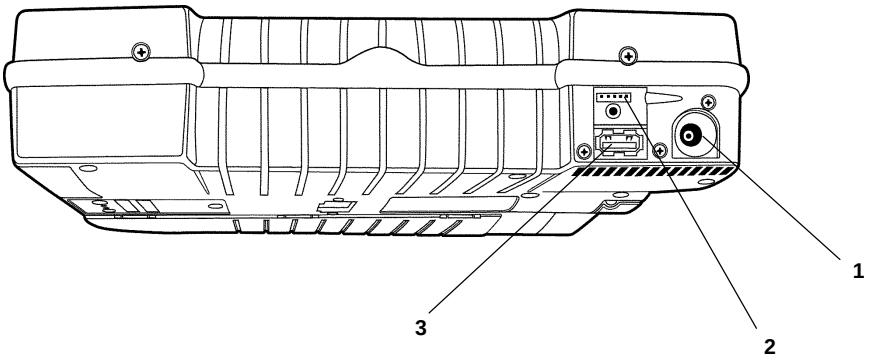
This connector allows connecting an optional internal modem to your phone lines.

Other Connectors

I/O panels are currently available *(see Section 2 for illustrations and descriptions of curently available connector combinations)* to accommodate other common peripherals such as a keyboard, parallel devices, and audio devices.

Connectors for the pen, for dc input power, and for the universal serial bus (USB) port are shown in *Figure 1-4*, which shows the righthand side of the computer.

▶ **NOTE:** *Input power for the 6640 Computer **MUST** be 19 volts dc. Standard 12-volt adapters or vehicle cables WILL NOT WORK with the 6640.*



1. DC Input connector
2. Pen connector
3. USB connector

Figure 1-4
Other Connectors
(right side shown)

DC Power Input Jack

This jack allows you to power and recharge the computer from either an external 19 volt ac–dc power supply or a special booster/adapter cable to a vehicle cigarette lighter socket or auxiliary power source.

Pen Connector

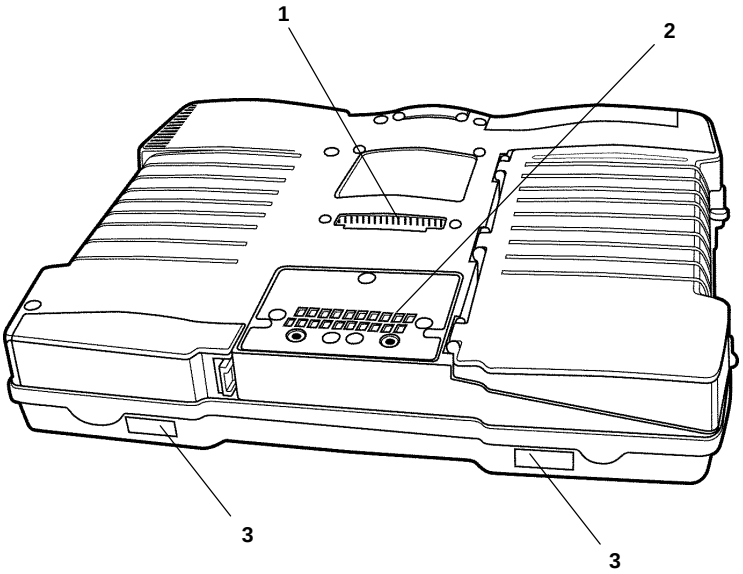
This is a 5-pin female stake header connector that completes the circuit path to allow the capacitive tethered pen to function reliably. This small connector is slightly concealed and is located directly above the universal serial bus (USB) connector on the right side of the computer.

USB Connector

This is a 4-pin connector designed to meet universal serial bus (USB) standards.

Docking Features

Several features help ensure a reliable electrical interface between the 6640 computer and docking devices. The latch recess allows the dock to pull the computer downward, seating the alignment recesses onto wedges on the docking device. The docking connector mates with a spring-loaded connector on the dock. This design provides reliable electrical connections between the computer and the docking station. Communication signals and power for operating and recharging the computer pass through this connector.

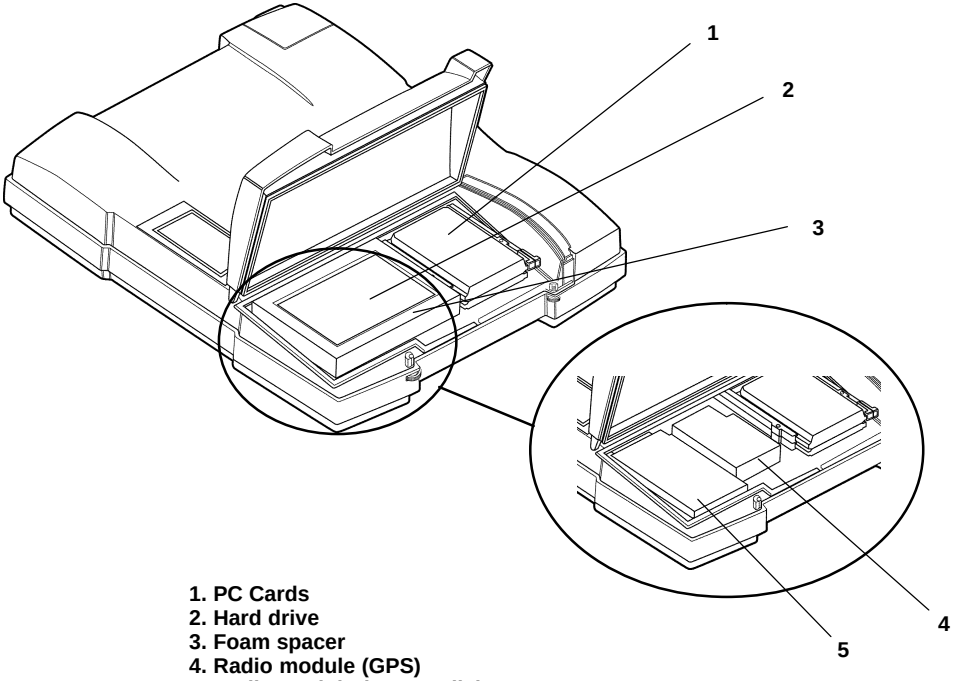


1. Latch recess
2. Docking connector
3. Alignment recesses

Figure 1-5
Docking Features

Drive Bay

The drive bay can accommodate a hard drive (spinning media or SanDisk type), a GPS radio, a WAN radio module, plus two PC cards (one type II, one type III).



1. PC Cards
2. Hard drive
3. Foam spacer
4. Radio module (GPS)
5. Radio module (WAN radio)

NOTE: *Hard drive stacks on top of the two radio modules.*

Figure 1-6
Drive Bay

Specifications

Physical

Size	9.5” x 8.5” x 2.1” (L, W, H)
Weight	6 lbs, depending on installed options

Environmental

Operating temp.	–4 to +122°F (–20 to +50 °C)
Storage temp.	–4 to +140°F (–20 to +60 °C)
Humidity	5 to 95% noncondensing

Electrical

Power Sources	lithium ion “Smart” pack
	approved external power sources
Charging	battery packs charge internally or externally
Communication	6-pin mini-DIN *(optional, for PS/2 compatible kbd)*
	9-pin D-sub *(optional, RS-232 serial port connector, COM2)*
	RJ-45 jack *(optional, Ethernet std. – 10BASE T only)*
	USB connector *(standard)*
	docking connector *(standard)*
	DC power connector *(standard)*
Standards	CSA, TUV, UL, plus IEC 801-3 and 801-4
Processor	Intel Pentium MMX, 266 MHz
Optional Memory	64 bit SDRAM 3.3V SODIMM; 64, 128 MB *(32 MB std.)*
Flash Memory	2MB (standard: 512k BIOS, 1.5M recovery partition)
PC Card options	two PCMCIA slots: one type II, one type III

Display

Type	10.4” transflective color, or 9.8” monochrome
Touch panel	wired, capacitive type *(no battery required)*
Backlight Features	CCFL with brightness control

Section 2

Options and Accessories

General Information

Options for the 6640 Computer include memory upgrades, an internal modem, a 2.5-inch hard drive, radio devices, displays, and various input/output (I/O) panels. Accessories are items that make your computer more convenient to use or that extend its functionality.

Options

- Memory upgrades
- Internal modem
- PC Card devices
- 2.5-inch hard drive
- Radio devices
- Displays
- I/O panel choices

Accessories

- Cigarette lighter adapter
- AC power adapter
- Battery pack charger
- Carry case and shoulder strap

Options

Memory Upgrades

The 6640 Computer comes with a 32 MB 3.3 volt SODIMM (Small Outline Dual Inline Memory Module) as standard memory. The standard RAM can be replaced with either of the current (64 or 128 MB) memory upgrades, or with larger memory upgrades as they become available. These upgrades should be performed by trained technical personnel who have the experience and the necessary tools.

Internal Modem

The 6640 Computer can be ordered with a modem built into the unit. An RJ-11 connector on the I/O panel then provides external connection to your telephone line. Computers not ordered with an internal modem can have this option installed (by authorized Service Centers) in the future.

PC Card Devices

Two drive slots are available to accomodate most PCMCIA (PC Card) devices.

Hard Drive

The optional 2.5-inch hard drive (spinning media or SANdisk) is located in the drive bay compartment. The hard drive is available with either 3.2 or 6.4 GB of storage space, and the SANdisk offers a range of 80 to 256 MB.

Radios

Several different factory-installed radio options are currently available, with additional radio options under evaluation.

Displays

Ask your Intermec sales representative for details.

RF Antenna Switch

An electronic switch can automatically redirect signals when the computer is docked. The computer-mounted (local) antenna is disabled when the dock antenna (remote) becomes active. The RF switch function can be set in the system BIOS for LOCAL, REMOTE, or AUTO. This allows a manual override if a remote antenna is not available.

Input/Output Panels

The three current I/O panel options are shown in the following illustrations. *Other I/O panel options can be designed to meet future customer needs.*

All I/O panels have both a Suspend/Resume switch and an On/Off switch.

Switches and connectors are described, and current I/O panel illustrations are shown, on the following pages.

On/Off Switch

▶ **NOTE:** *ALWAYS perform a proper system (or Windows) shut-down before shutting the computer OFF.*

This switch is located on the I/O board at the upper left end of the computer. *Always* disable power when connecting or disconnecting cables and accessories.

RJ11 Connector

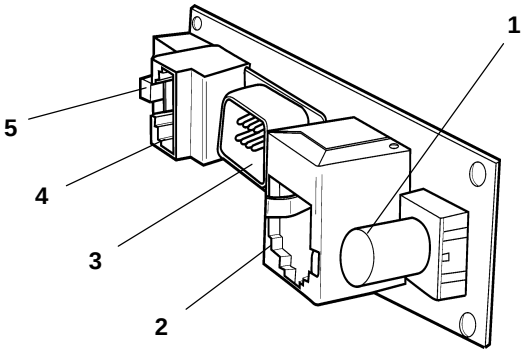
Allows connecting an internal modem to phone lines.

Serial Port (COM2)

The serial port (COM2) is a 9-pin *male* connector for connecting RS-232 serial devices. The COM2 port can provide 5 volts dc to support a decoding type tethered scanner.

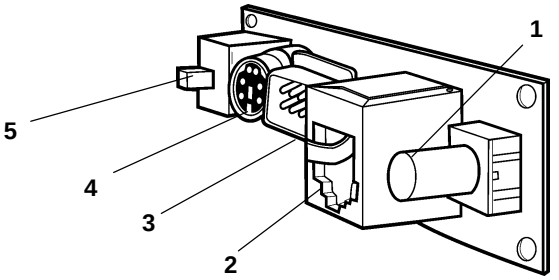
RJ45 Network Connection

All Intermec 6640 Computers have Ethernet capability. The RJ45 connector on the I/O panel allows direct connection to an Ethernet local area network (LAN). In the absence of an RJ45 connector on the computer, LAN communication is still possible when the computer is docked and the dock is connected to a local area network.



1. Suspend/Resume switch
2. RJ45 connector *(Ethernet)*
3. 9-pin serial port
4. RJ11 connector *(modem)*
5. On/Off switch

Figure 2-1
I/O Panel Option 1



1. **Suspend/Resume switch**
2. **RJ45 connector** *(Ethernet)*
3. **9-pin serial connector**
4. **Keyboard connector** *(PS/2)*
5. **On/Off switch**

Figure 2-2
I/O Panel Option 2

Keyboard connector

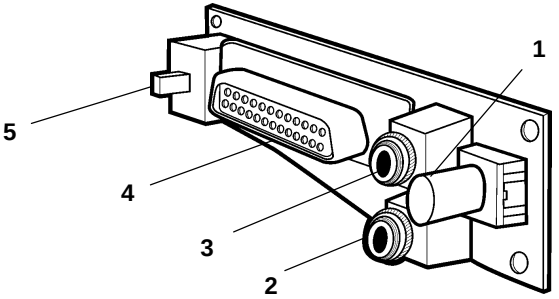
A 6-pin mini-DIN connector can accommodate an external PS/2 standard keyboard.

Headphone

This 3.5 mm connector accepts an external headphone.

Microphone

This 3.5 mm connector accepts an external microphone and provides the necessary bias voltage to operate it.



1. Suspend/Resume switch
2. Audio input *(microphone)* **connector**
3. Audio output connector *(stereo earphone)*
4. LPT1 parallel port
5. On/Off switch

Figure 2-3
I/O Panel Option 3

LPT1 Parallel Port (Printer)

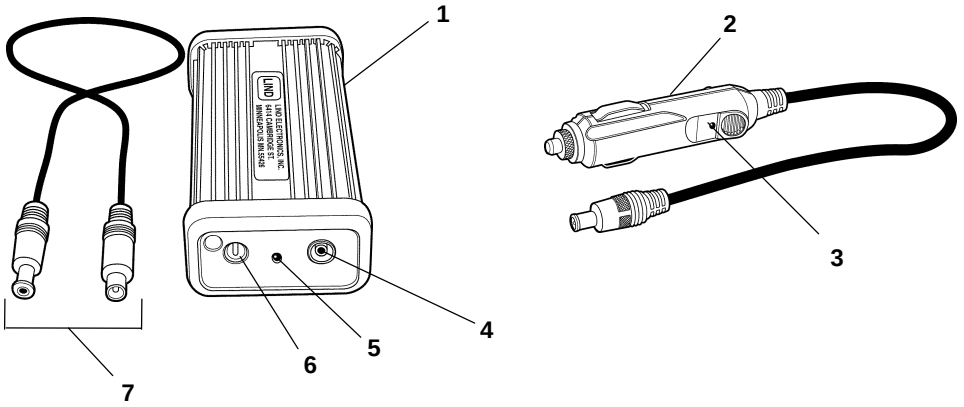
This is an enhanced parallel port with a 25-pin (DB-25) *female*, D-subminiature connector for parallel devices.

Accessories

Cigarette Lighter Adapter

The cigarette lighter adapter cable is a convenient way to power the 6640 Computer from a vehicle electrical system. The DC power plug goes directly into the power jack on the upper right side of the computer.

▶ **NOTE:** *The 6640 computer requires a 19 V dc (nominal) power source. Standard 12 volt power sources will NOT power this computer. The adapter assembly shown below includes a voltage booster.*



1. **Voltage booster**
2. **Adapter cable**
3. **Input power indicator** *(green LED)*
4. **Output power jack**
5. **Output power indicator** *(green LED)*
6. **Input power jack**
7. **Cable** *(booster to computer)*

Figure 2-4
Cigarette Lighter Adapter

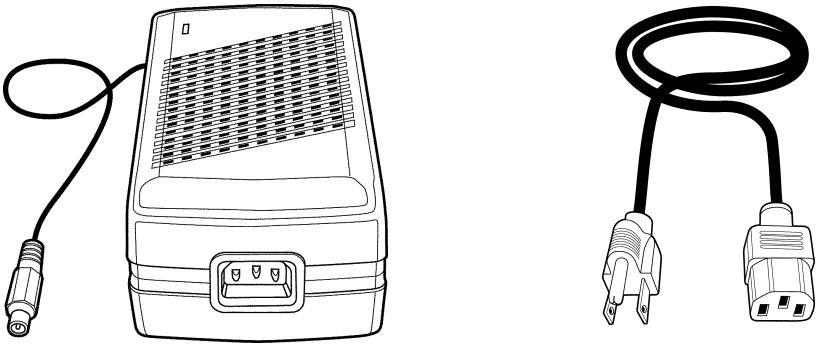


Figure 2-5
AC Power Adapter

AC Power Adapter

▶ **NOTE:** *The 6640 computer requires a unique power source. Standard 12-volt power sources will NOT power this computer. The vehicle dock has a built-in voltage booster that converts 12 volts input to the required voltage for the computer.*

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 into the power jack on the upper right side of the computer. It charges the main and backup batteries while simultaneously powering the computer.

External Battery Chargers

Pack chargers are available for either U.S. or international applications to recharge the main battery pack while it is out of the computer.

Docks

Vehicle Dock

A vehicle dock provides secure storage in route vehicles while providing battery charging and operating power to the computer directly from the vehicle electrical system.

Single Dock

The single *(in premise)* dock is similar to the vehicle dock but is in a fixed location such as desktop or shelf. An AC Power Adapter (figure 2-5) is required to power the in-premise dock. The 6640 Computer then receives both charging and operating power when inserted in the dock. This dock can be connected to a network, and it can have various accessories or peripheral devices connected to it.

Features

Docks for the 6640 Computer provide reliable electrical connections between the dock and the computer. In addition, a secure mechanical latching system prevents the computer from being released during communications transactions.

Docks also provide charging power to the computer and may have one or more cables attached for communication between peripheral devices or a network (wired or wireless).

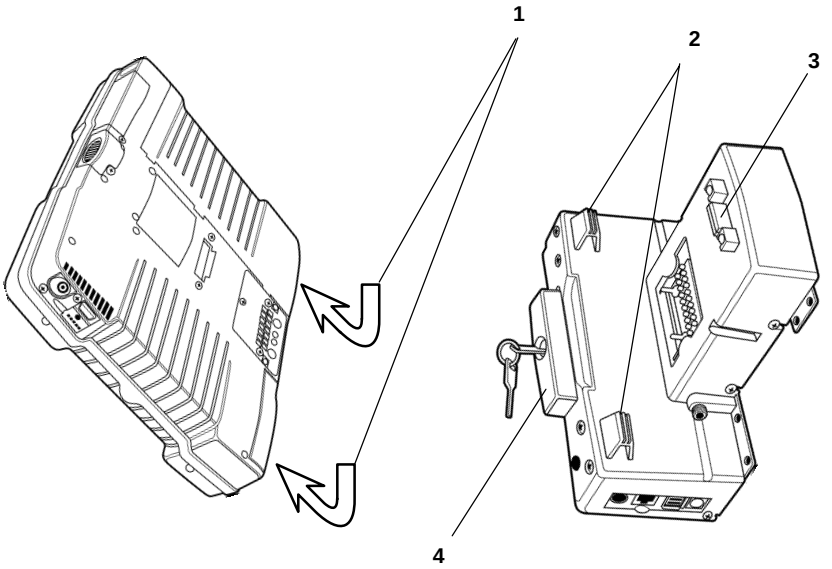
The single and vehicle docks are designed to ensure positive electrical connections between the computer and the dock. An especially durable and reliable latching system guards against intermittent or failed connections when the computer has been properly docked.

The instructions that follow tell how to properly dock and release the computer.

Note these four items in the illustrations below: (1) *alignment recesses*, (2) *alignment wedges*, (3) *latch*, (4) *push-bar*. Follow these instructions to successfuly dock your 6640 Computer:

DOCKING

1. Place alignment recesses (*computer)* onto the alignment wedges *(top of dock)*.
2. Tilt computer upright against the latch.
3. Press top of computer firmly until it clicks into place.
4. Press the push-bar IN and DOWN until it latches.
5. You may use the keylock to discourage tampering.



1. Alignment recesses (bottom of compueter)
2. Alignment wedges
3. Latch
4. Push-bar

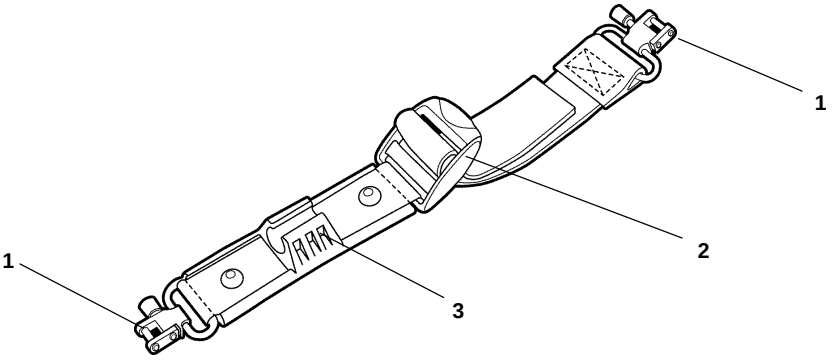
Figure 2-6
Docking Detail

DOCK RELEASE:

1. Lift UP on the push-bar.
2. Pull top of computer away from the latch.
3. Lift the computer UP, off the alignment wedges.

Adjustable Handstrap

The adjustable handstrap is standard on the 6640 Computer. It attaches to the unit with a link fastener on each end of the handstrap. A carry-case and shoulder strap are available as options, and use the same fasteners and the same adjustment buckle arrangement.



1. Link fastener
2. Adjustment buckle
3. Pen holder

Figure 2-7
Adjustable Handstrap

Link fastener

The illustration below shows how to open the link fastener on the handstrap. To open the fastener, do the following:

1. Turn the knob counterclockwise.
2. Press IN on the knob.
3. Rotate knob to open the link.

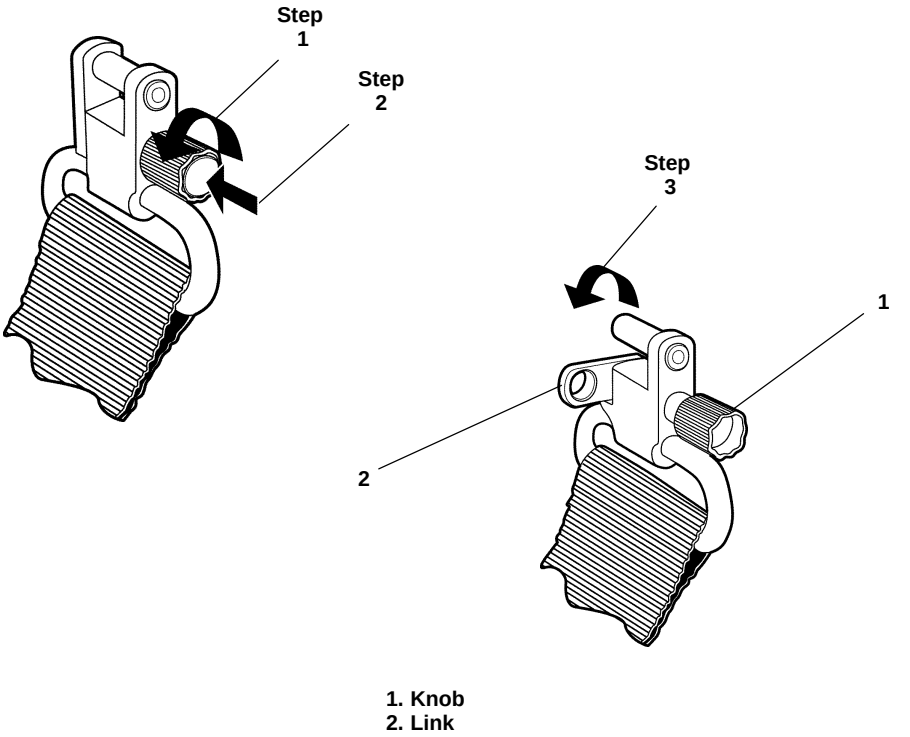


Figure 2-8
Link Fastener

Normal handstrap routing and assembly is shown below. See the following page for an alternative.

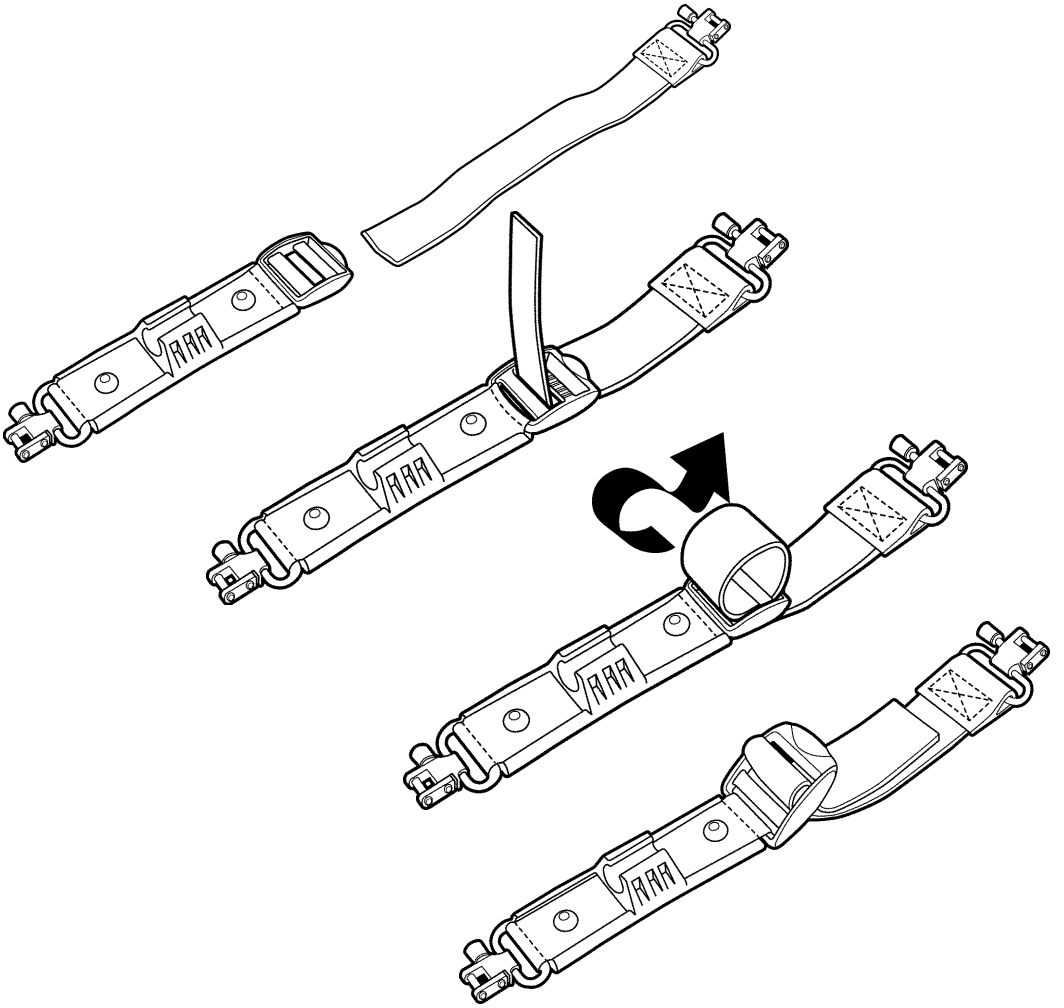


Figure 2-9
Handstrap Assembly and Adjustment

An alternate handstrap routing is shown below. Use this method if the strap works loose in your environment.

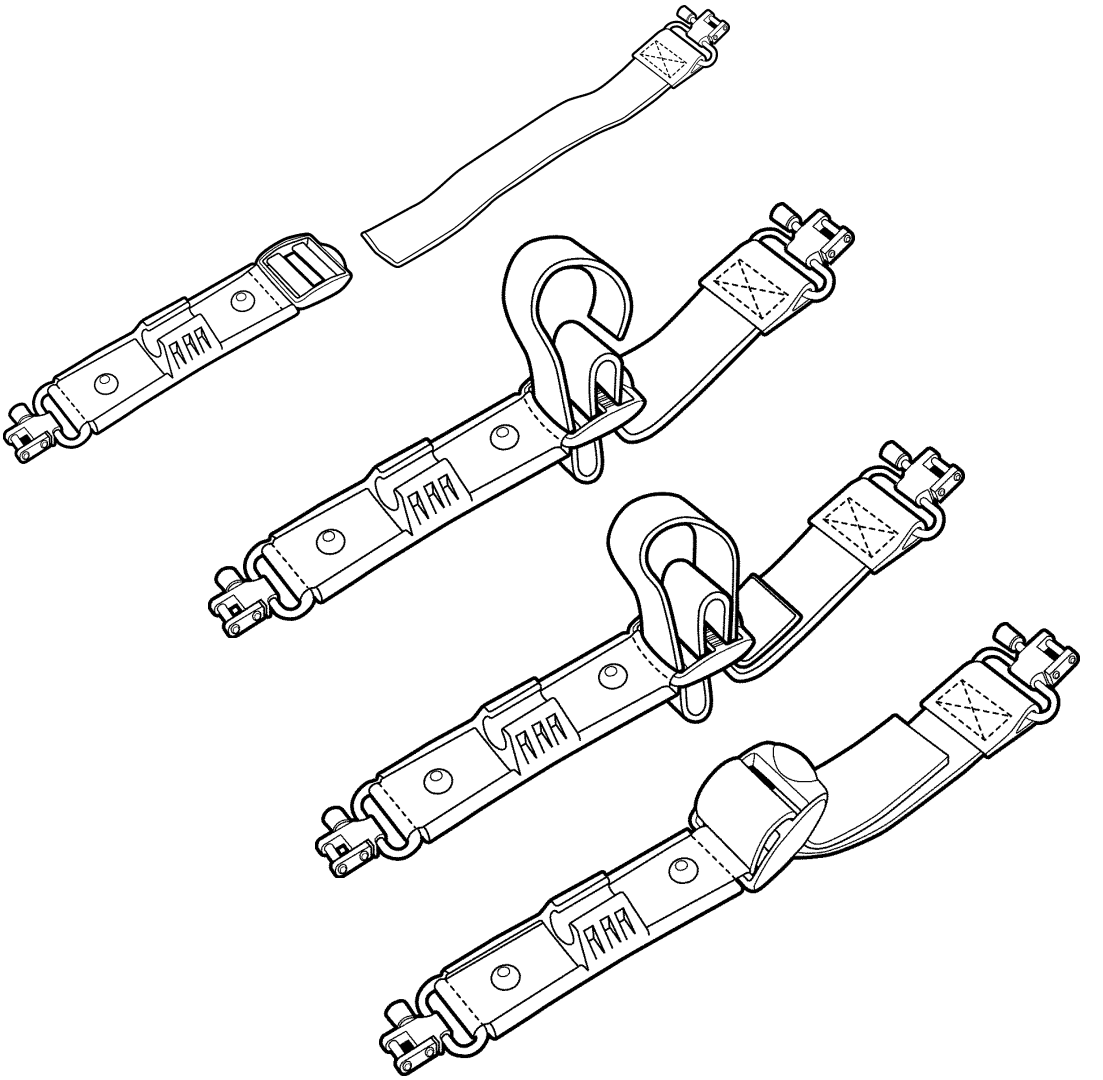


Figure 2-10
Alternate Handstrap Assembly

Handstrap Retainers

You can relocate the handstrap to the opposite side of the computer. An exploded view is shown below. The handstrap retainers are threaded and simply replace the screws on the side where you want the handstrap.

If you remove screws on one side to relocate the handstrap retainers, be sure to reinstall them in the vacant holes.

Hint:
Grasp the computer case with your hand and firmly squeeze the two halves together in the area near the hole to start either a screw or a handstrap retainer.

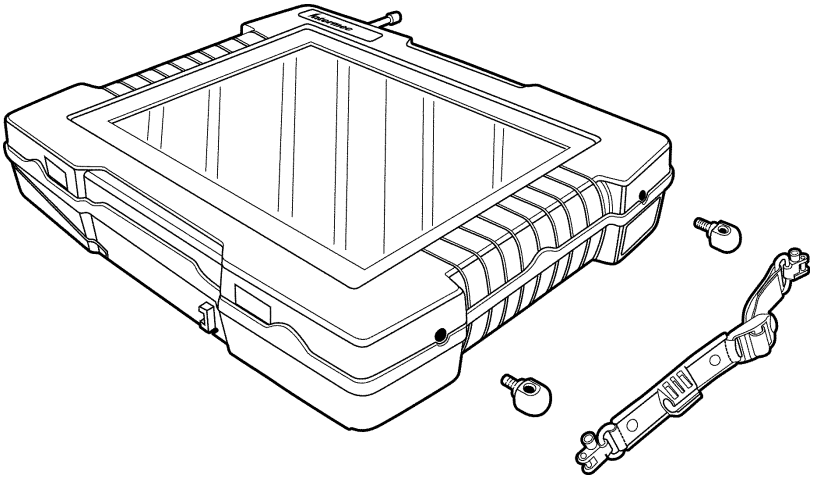
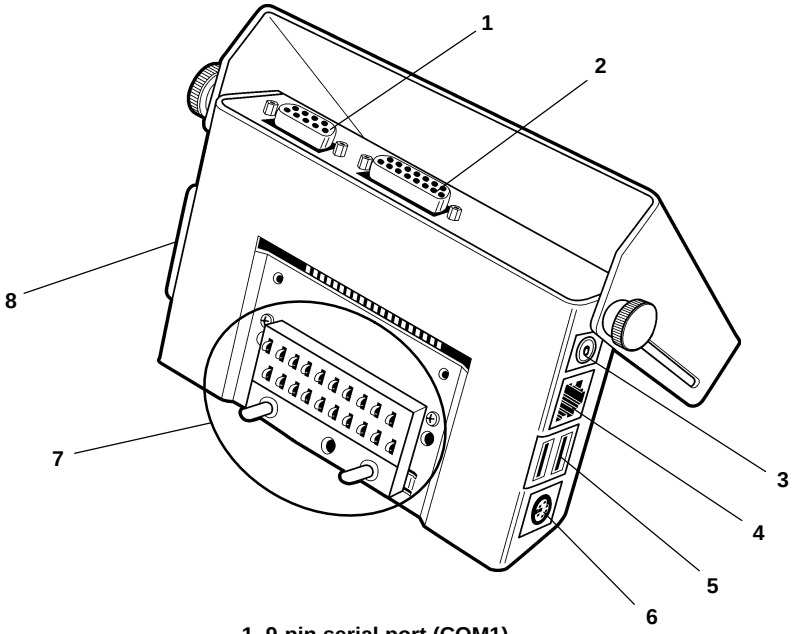


Figure 2-11
Attaching the Handstrap

Port Replicator

The port replicator shown below provides common external connectors to extend the versatility of your 6640 computer. Unfold the port replicator, attach cables to it, tighten thumbscrews, and press the port replicator dock connector interface guide pins into the docking connector on the back of the computer.



1. 9-pin serial port (COM1)
2. 15-pin d-sub connector (AUX)
3. DC power input
4. RJ45 Ethernet connection
5. Dual USB ports
6. 6-pin mini-DIN (PS/2 *keyboard*)
7. Docking connector interface
8. 25-pin d-sub connector (LPT1)

Figure 2-12
Port Replicator

Section 3

Operation

General Information

The 6640 Hand-Held Computer is shipped with a basic input-output system ("BIOS" firmware) and Windows 98 operating system installed at the factory. This section tells you what must be done to start the computer for the first time. 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 PC Card devices.
- Connect peripherals (e.g., printer, keyboard, etc).
- Install the main battery.
- Reinstall the battery compartment door.
- Connect the computer to a charging source *(or, make sure the battery was previously charged).*

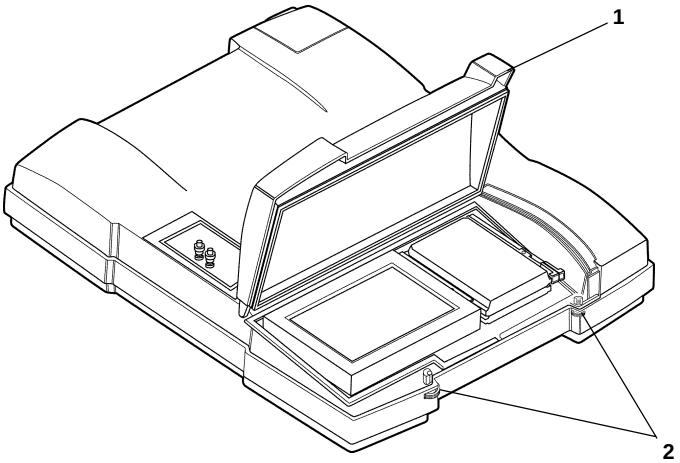
▼**CAUTION:** **To prevent damage to the display, do NOT use a ballpoint pen or a sharp object to make entries directly on the display.**

▼**CAUTION:** **Use ONLY your finger or the stylus provided to make entries.**

Drive Bay

General Information

The large drive bay can accomodate a hard drive (spinning media or a card type), a radio module, and up to two PC cards (one type II and one type III). Although the drive bay is easily accessible, only factory-authorized technicians should install or replace hard drives and radio modules. PC cards can be installed without tools or special skills.



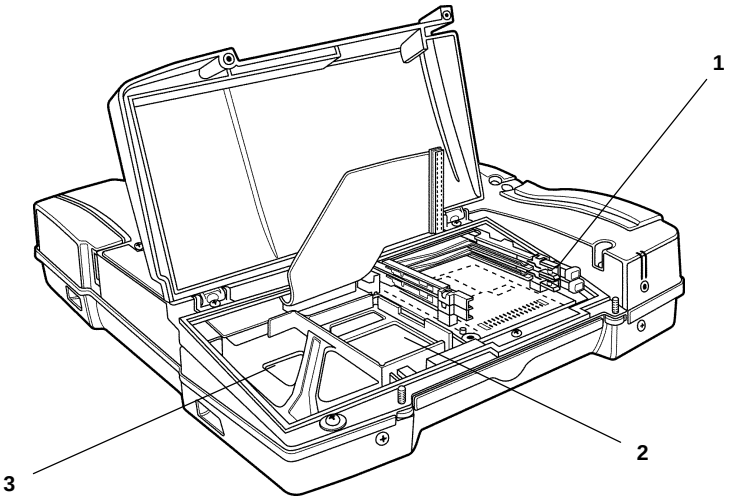
1. Drive bay door
2. Thumbwheel latch screws

Figure 3-1
Opening the Drive Bay

WARNING: ***Computer must be placed face-down as shown. Do not move or disturb either the radio module or the hard drive. Failure to observe these warnings can result in computer failure or damage to internal cables, or both.***

Accessing the Drive Bay

Place the computer face-down on a flat work surface that will not damage the display. Open the drive bay door by turning the thumbwheel latch screws to loosen the door. Raise the door as shown.



1. PC card drives *(user installable)*
2. GPS Radio module location *(requires technician)*
3. LAN/WAN and hard drive *(requires technician)*

Figure 3-2
Drive/Module Locations

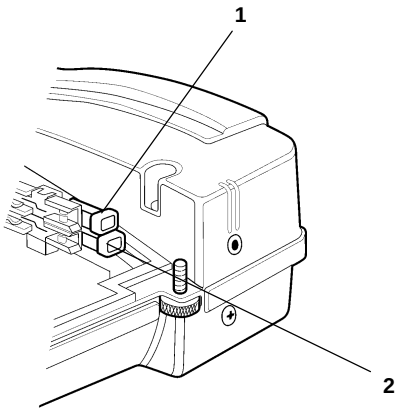
▶ **NOTE:** *The computer must be OFF before removing or installing PC cards. FLASH cards can be damaged if removed during write activity.*

Drive/Module Locations

Figure 3-2 shows the drive bay with the door open and all locations vacant. Examine the PC card drives (item 1, above): either drive can accomodate a type III PC card, however a type III card in the lower drive blocks the upper drive. There is ample clearance for a type II card in the lower drive and a type III drive in the upper one. Users can remove or install a PC card devices as necessary.

Each slot has a card ejector located on the side of the PC Card slot assembly. Place the computer in the OFF condition, then press the ejector to release and partially eject the associated card. Grasp it with your fingers for removal.

▼**CAUTION:** **Close and Lock compartment doors before using computer.**



1. Card ejector *(not extended – card not installed)*
2. Card ejector *(extended – card installed correctly)*

Figure 3-3
PC Card Slots

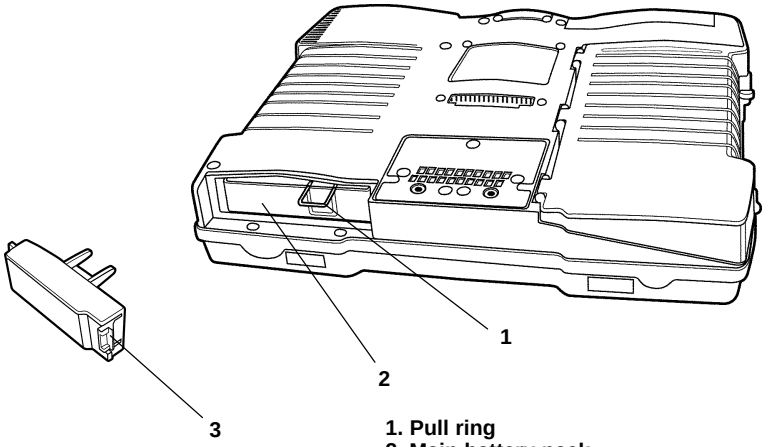
Battery Information

▼**CAUTION:** **Replace only with the same or equivalent battery type.**

Battery Installation

1. Open the battery compartment door by pressing the latch tab and pulling outward on it.
2. Align the battery pack to the opening with connectors facing into the computer and the pull ring oriented as shown in Figure 3-4.
3. Slide the battery pack into the computer.
4. Press firmly INWARD and slightly down on the battery pack to secure it in place.
5. Reinstall the battery compartment door.

▼**CAUTION:** **Close and secure compartment doors before using computer.**



1. Pull ring
2. Main battery pack
3. Latch tab, battery compartment door

Figure 3-4
Remove Main Battery

Battery Removal

1. Open the battery compartment door by pressing the latch tab and pulling outward on it.
2. Lift the pull ring UP to extend it.
3. Pull UPWARD on the pull ring.
4. Pull OUTWARD to remove the battery pack.

Battery Pack Fuel Guage

Press the test key *(item 1, below)* to determine the approximate charge remaining in your battery pack.

1. Test key
2. Fuel gauge indicators

Figure 3-5
Main Battery Pack

Charging

A depleted (*not* "dead") battery pack normally recharges completely in 4 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 charging and operating configurations. Table 3-1 shows the meaning of the front panel power status indicators.

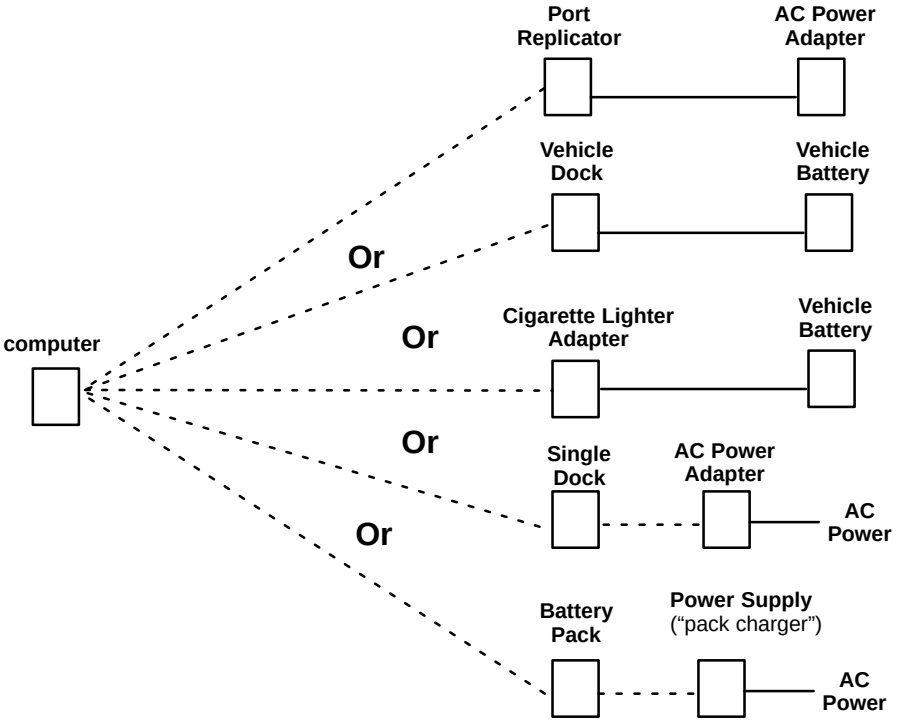


Figure 3-6
Charging Configurations

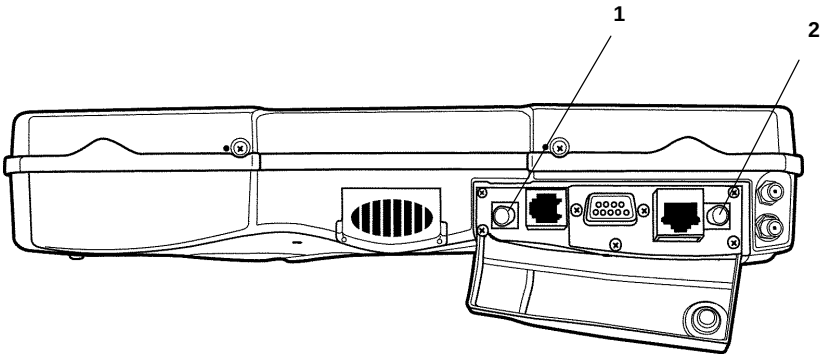
Table 3-1
Status Indicators

Indicator (LED)	Condition	Meaning
Main Battery *(right LED)*	OFF	unit in Suspend mode or system is OFF
	GREEN	main battery charged; running or on charge power
	blinking GREEN	main battery charging; system is on external power
	RED	running on main battery, capacity exceeds 20 percent
	blinking RED	running on main battery, capacity under 20 percent
External Power *(left LED)*	OFF	system is OFF
	GREEN	running on external power
	blinking GREEN	unit in suspend; with external power applied
	RED	ON, running on battery
	blinking RED	unit in Suspend mode, no external power applied

▶ **NOTE:** *Power Status Indicators are only lighted if the computer is ON. Battery charging DOES take place if the computer is connected to a charging source and the computer is turnned OFF.*

Power Control

The 6640 Computer has a true On/Off switch *and* a Suspend/Resume switch; both are located behind the rubber flap on the upper left corner of the computer. There are also two "suspend" keypads on the display control panel.



1. Power On/Off switch
2. Suspend/Resume switch

Figure 3-7
Switches

On/Off Switch

▶ **NOTE:** *Always perform a standard Windows "shut down" before powering the computer OFF.*

Use the On/Off switch to disable the unit when not in use or to perform a "cold start" (resets the computer). This is a push-push type switch that disables all power to the computer when in the off position.

When the computer is powered up using the On/Off switch, it goes through a self-test and other normal startup routines before it is ready for use.

Suspend/Resume Functions

▶ **NOTE:** *To activate the Suspend/Resume function you must press and hold the switch for at least one full second.*

You can use the control panel Suspend keypads *(found on the display)* or the Suspend/Resume switch located behind the rubber flap on the upper left corner of the computer to temporarily halt computer operation. Using Suspend allows you to resume work at a later time while avoiding the time consuming startup process.

You **must** press (one full second) the Suspend/Resume *switch* to restore operation after the unit has been placed in Suspend Mode. The computer will **not** resume operation by pressing either of the Suspend keypads on the display.

Battery Suspend

The Battery Suspend keypad is intended specifically for those times when you want to replace the main battery pack. This is a unique suspend state in which the computer is forced to rely on the backup battery. Follow these guidelines whenever you replace the main battery pack:

- Press the Battery Suspend keypad to begin.
- Remove and replace the battery pack within 5 minutes.
- Press and hold (for at least one full second) the Resume switch (located behind the flap on the upper left corner of the 6640) to begin operation.

Input/Output

▶ **NOTE:** *Custom I/O panels can be designed to meet special needs.*

Input

The most common input device is likely to be the passive pen. Simply tap or touch the display to awaken the computer or to make selections: the touch input normally behaves like a mouse with the *left* button depressed. Press the button on the barrel of the pen, tap the Intermec "I" logo located in the System Tray on the Windows tool bar, or press the F4 key, for each time you want the pen to perform right mouse button actions.

Two-Way Communication

Telephone Connection

An RJ-11 connector may be located behind the flap on the upper end of the computer. Use it to connect the computer to phone lines if an optional internal modem was ordered.

Ethernet Connection

All 6640 Computers have Ethernet capability. If the computer does not have an RJ45 connector, those signals also pass through the docking connector, and the LAN (RJ45) connector is located on the dock rather than the computer.

Serial Communication

A 9-pin D-subminiature connector (COM2), located behind the flap on the upper end of the computer is used for serial communication with peripheral devices.

Other Connectors

The universal serial bus (USB) connection is standard, and various common input/output (I/O) options are available.

Docking Connector

This connector, located on the rear of the computer, mates with a connector in docking devices. Most signals are carried on these connectors, including USB, PS/2, Ethernet, serial and parallel communication signals, and control voltages. This allows the dock to act as a hardwire interface between the computer and a variety of peripheral devices. A battery charging voltage is also supplied to the computer via the docking connector.

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 program is permanently loaded into your computer at the factory. It tests the internal components of the computer, resets all volatile memory to a known state, and determines what peripherals are connected.

▶ **NOTE:** *Close and secure compartment doors before using computer.*

▶ **NOTE:** *The main battery pack MUST BE adequately charged. If it is not, the computer must be connected to a charging source.*

Start Up Procedures

Connect all peripheral devices and make sure all options are installed, then follow the steps below to perform a cold start:

1. Press the On/Off switch to start the computer.

▶ **NOTE:** *Run SETUP if this is the initial Cold Boot.*

2. The computer will "beep" once for a normal start up.
3. 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.**

4. Setup requires a keyboard, after which you can make entries using your finger or the special stylus, or an optional keyboard.

Restarting the Computer

▶**NOTE:** *Always perform a standard Windows shut down before powering the computer OFF.*

If your computer locks up or an application program becomes corrupted, it may be necessary to reset the computer before work can continue. In most cases you should attempt a "warm" restart of the computer (if possible) *before* resorting to a total restart.

Warm Restart

If an external keyboard is connected to the 6640 Computer, you can easily perform a "warm" restart by pressing the **Ctrl** + **Alt** + **Del** keys. Data stored in RAM is usually preserved when you perform a warm restart.

Most keyboards that appear on the display will allow you to use this method to perform a warm restart.

▶**NOTE:** *Data stored in DRAM will be lost if you press the On/Off switch.*

Cold Restart

▶ **NOTE:** *Always perform a standard Windows shut down before powering the computer OFF.*

The 6640 Computer *does not* have a separate reset switch, however the On/Off switch allows you to perform a "cold" restart (the same as a "total reset") if necessary.

Operation

Windows 98 is the standard operating system for the 6640 Computer, for which there are many reference manuals available at most computer stores. Off-the-shelf application programs are usually accompanied by a manual or include on-line help and instructions. Custom applications require that the developer provide you with operating instructions.

Pen

The cable from the pen must be plugged into the mating connector on the side of the computer near the upper left corner. Pen function is normally that of *left mouse button*.

You can press the button on the barrel of the pen, touch the Intermec logo "I" in the Tool Tray on the task bar, or press the F4 key when you want the pen to perform *right mous*e functions.

Section 4

Maintenance

Introduction

This section contains maintenance procedures for the 6640 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 working order.

Maintenance procedures include instructions on maintaining and charging the main battery pack, plus instructions for cleaning the computer.

Maintenance Procedures

Batteries

The 6640 Hand-Held Computer contains a rechargeable lithium ion main battery pack and a smaller rechargeable lithium ion backup battery. The main battery pack contains a gas gauge and protection circuitry to monitor usage and capacity. This “smart” battery pack communicates the battery status to your computer and monitors the rate of

charge when the battery pack (or computer it is in) is connected to a charging source.

Main Battery Pack

Storage and Shipping

▶ **NOTE:** *Do NOT store lithium ion batteries in high temperature environments.*

▶ **NOTE:** *When the computer will not be used for an extended period of time remove the main battery pack.*

The lithium ion battery pack used in the 6640 Computer should be *charged to 50% capacity* or greater for storage or for shipment. This helps ensure maximum battery pack life and overall performance.

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 communicates its status and history to the computer.

Low battery warnings and battery capacity ("gas gauge") information display to tell you when charging is required.

Gas Gauge Recalibration

▶ **NOTE:** *Shorting or over-discharging the battery pack will result in loss of calibration of the internal gas gauge.*

The battery pack gas gauge requires one or more "calibration" (charge/discharge/charge) cycles to recalibrate the battery pack. This is a time-consuming process that can be done with the battery pack inside the 6640 Computer using a special application program. A conditioning cycle can also be performed by using specific factory-approved external pack chargers.

In either case, the process takes considerable time and can generally be avoided by (1) taking care *not* to short out the battery pack, and (2) by not allowing the battery pack to become over-discharged.

Battery Capacity

The display tells you when the batteries are low and need recharging. The main battery pack also contains monitoring electronics and four light-emitting diodes (LEDs) to show the amount of charge in the battery. Press on the test switch, as shown below, to determine the remaining battery charge.

A depleted main battery pack requires approximately 4 hours to recharge under normal conditions.

1. CHECK (test) switch
2. Capacity indicators (LEDs)

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 provider.

Display

When surface wear eventually makes the display difficult or impossible to read, the computer should be sent into an authorized service center to have the touch panel replaced. *This repair does not require replacing the entire display.*

Battery Connectors

If battery 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.

Air Duct

Keep the fan intake and air duct free of dirt, grime, and obstructions. The heatsink area and air duct must be kept clean for ease in docking and undocking the computer.

Docks

▶ **NOTE:** *Cleaning and lubrication is recommended on a weekly basis.*

The dock must also be kept clean in the areas where it contacts or aligns the computer. In addition, a small amount of high pressure red lithium grease, P/N 903–083–xxx must be applied to the underside of the latch surface on the dock latch after every cleaning.

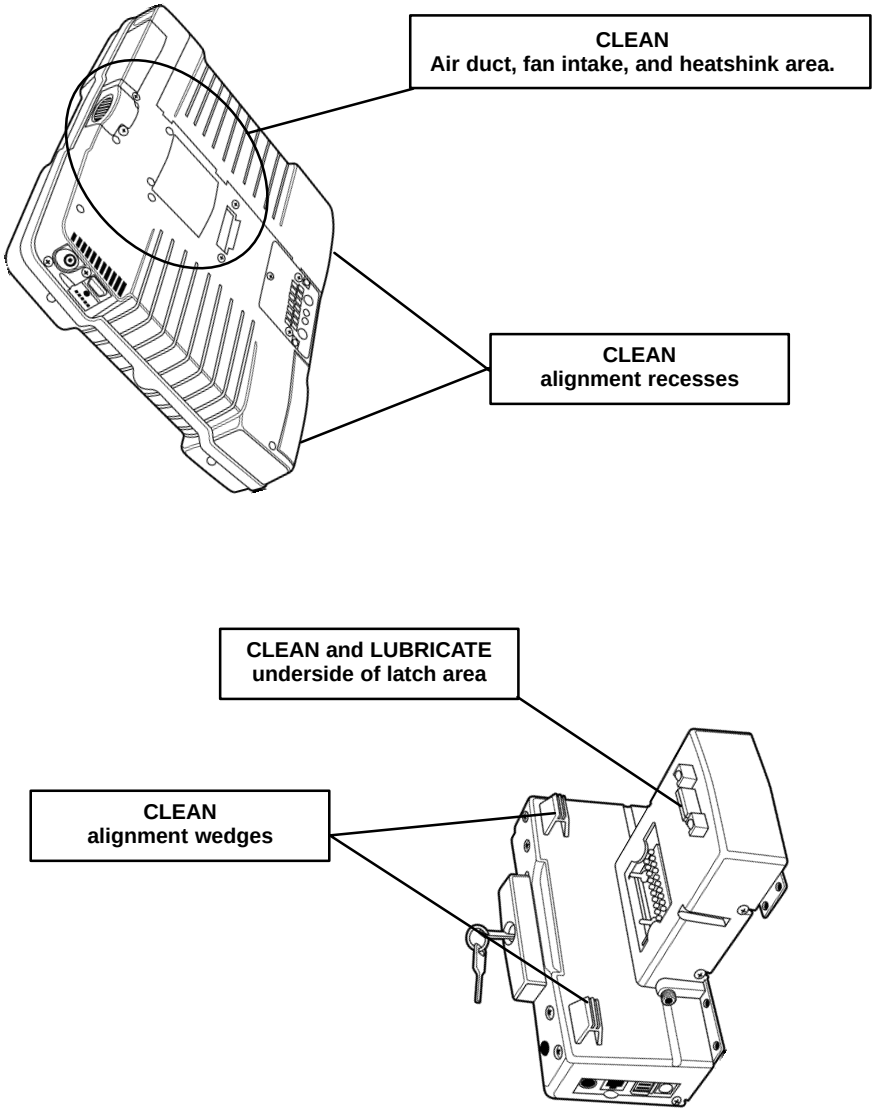


Figure 4-2
Cleaning Details

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.**

▶**NOTE:** *Keep the display area clean and free of dust, dirt, grime or smudges. Failure to do so can result in unreliable touch entries.*

▶**NOTE:** *The rear and bottom of the computer must be kept clean to ensure ease in docking and undocking the computer.*

A recommended cleaner for the exterior of your 6640 computer is *MICRO-CLEAN II Cleaner*, made by Foresight International, Inc., 4887 F Street, Omaha, Nebraska 68127-0205 (phone: 1-800-637-1344).

Any commonly available, nonabrasive quality glass cleaner can be used to clean the computer case and display area.

Never apply any liquid cleaner directly on the display or the computer case. Instead, dampen a soft, lint-free cloth with the cleaner and wipe exterior surfaces with this cloth. Keep the display clean to ensure good viewing and touch-screen response.

Factory Service

If the unit is faulty, you can phone your designated Service Center for repair advice, instructions, or to obtain factory-quality repair service. Their telephone number and address can be found on the warranty card.

Many failures may be repairable on-site, which is why it is important that you phone first. When products must be shipped for repair:

- Package in the original shipping carton if possible.
- Fill out a Product Service Information Card (a part of the warranty card). Send this card with the product.
- For warranty or technical assistance, telephone 1-800-755-5505.

Customer Response Center

The Customer Response Center (technical support) telephone number is 1-800-755–5055 (U.S.A. or Canada) or 1-425-356-1799. The facsimile number is 1-425-356-1688. Email is *support@intermec.com*.

If you email or fax a problem or question include the following information in your message: your name, your company name and address, phone number and email to respond to, and problem description or question (the more specific, the better). If the equipment was purchased through a Value-Added Reseller (VAR) include that information.

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 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 12.0 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. Defective ignition wiring, damaged insulation, or a faulty vehicle electrical component can cause electrical noise. When this happens, computers and printers can behave unpredictably.

The gray battery cable (P/N: 216-964-009) must be connected in accordance with these instructions.

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.

Table 5-1
Parts List– Kit PNs: 203-344-003/004/-005

Kit #	Description	NPN	Qty
-003	cable, angle connector	226-327-001	1
-004	cable, straight connector	206-951-001	1
-005	Y–cable	266-817-001	1
all	battery cable, 22 ft.	216-964-009	1
all	fuse link	216-657-001	1
all	bolt, 3/8" x 1-1/2"	800-099-001	2
all	washer, 3/8"	803-099-001	4
all	nut, 3/8"	802-099-001	4
all	adjustable clamp	808-011-001	8
all	self-tap screw #6 x 5/8"	800-008-001	8
all	3/8" terminal ring	809-165-001	1
all	self-tap screw #8 x 5/8"	800-012-000	1
all	#8 flat washer	803–084-000	1
all	snap-in bushing	807-065-003	1

Introduction to Vehicle Installation

The vehicle installation kit allows you to wire the vehicle dock in a motor 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. We recommend using nuts, bolts, *and* lockwashers for installing the dock mount.

This kit *does contain* 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.

If you are installing a printer at the same time, a special "Y" (power) cable (P/N 216-817-001) is required. These cables allow you to locate the printer and the vehicle dock up to six feet apart.

Cable installation

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

Guidelines

- Completely install cables *before* connecting the dock.
- Route cables *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.

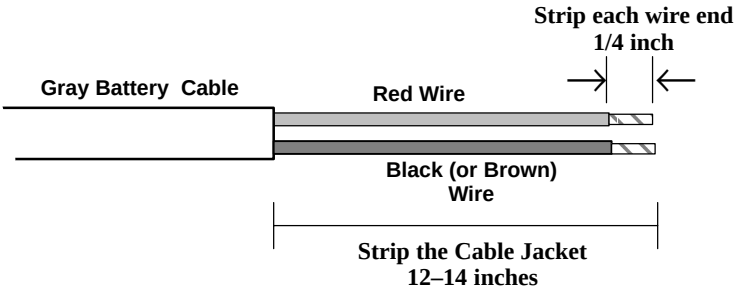
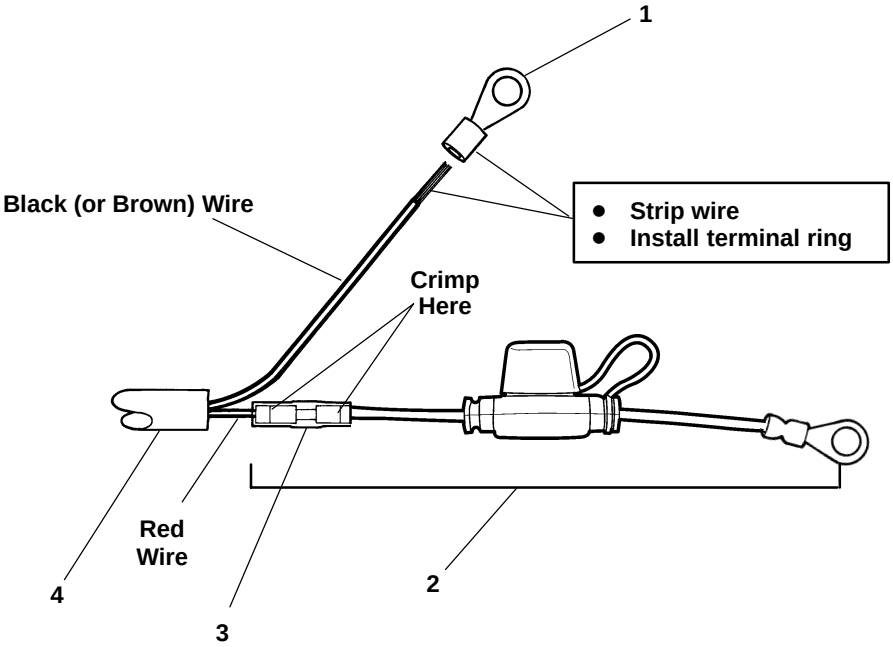


Figure 5-1
Strip the Battery Cable

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.



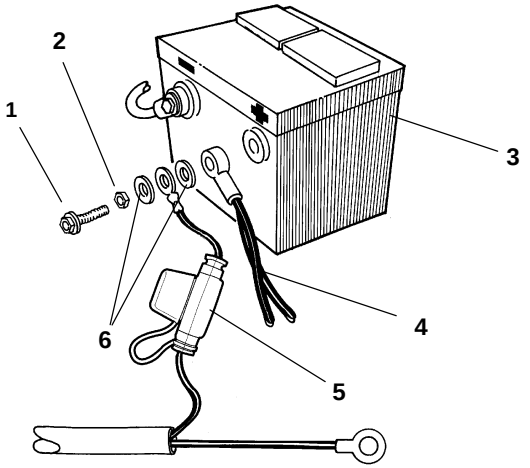
1. 3/8" terminal ring
2. Fuse link assembly
3. Fuse link splice
4. Battery cable

Figure 5-2
Prepare Cable Ends

Connection to Side-mounted Terminals

1. Remove both 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 onto the positive (**+**) battery terminal bolt.
5. Slip a second 3/8" washer **(6)** onto the bolt.
6. Slide the vehicle *positive* battery cable 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 against the washers and cables.

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.



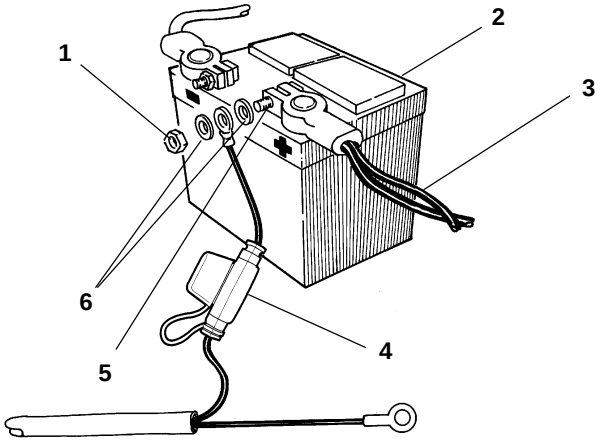
1. Bolt
2. Nut
3. Vehicle battery
4. Vehicle battery cable
5. Fuse link
6. Washers

Figure 5-3
Side-Mount Battery Terminals

Connection to Top-mounted Terminals

1. Remove the bolts from the vehicle battery terminals.
2. Replace those bolts with 3/8" x 1-1/2" bolts **(5)** and nuts **(1)** from the installation kit. Tighten the nuts.
3. Slip a 3/8" washer **(6)** onto the end of each bolt.
4. Slide the *positive* (fuse link with red wire **(4)**) terminal ring 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 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.

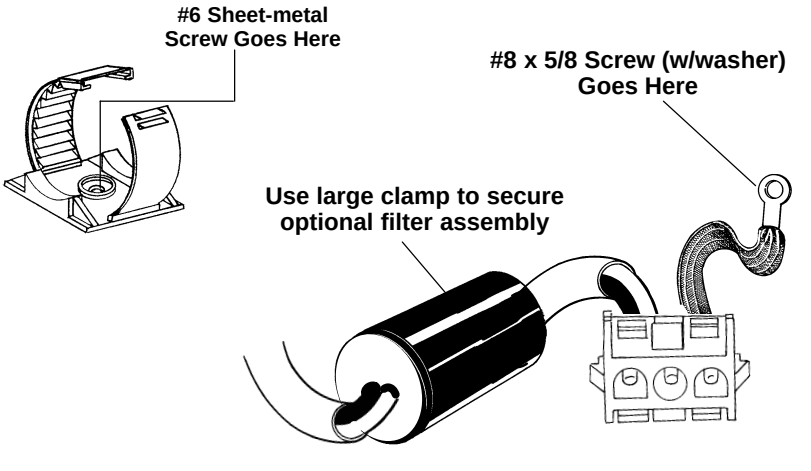


Figure 5-5
Secure Cable

Fasten Ground Cable

Fasten the ground wire or strap to vehicle sheet-metal to ensure proper cable shielding:

1. Drill a small hole.
2. Use a punch to dimple and enlarge the hole.
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 ground wire or strap.

Mechanical Installation

Install Mounting

Install the mounting hardware to allow room for all cable connections, and to allow sufficient clearance to dock and undock the computer.

See the "6640 Dock Installation Instructions" manual, PN 962-040-003, for detailed dock information, dimensions, mounting assembly options and docking instructions.

Final Connections

Vehicle Dock Alone

Connect one end (round connector) of the short dc power cable to the vehicle dock and tighten the collar on the connector. Plug the other end (rectangular connector) 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.

Secure all connector locking features, dress cables, and use strain reliefs to minimize stress on connectors. Dock connections and their functions are described below.