



600 Series Docks

**INSTALLATION
INSTRUCTIONS**

PN: 962-040-002
Revision B
January 2000

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Section 1

General Information

Section 1 covers general information for the single and multidocks.

Section 2 covers the installation instructions for the single and multidocks. This section includes guidelines and considerations for mounting shelves and mounting brackets.

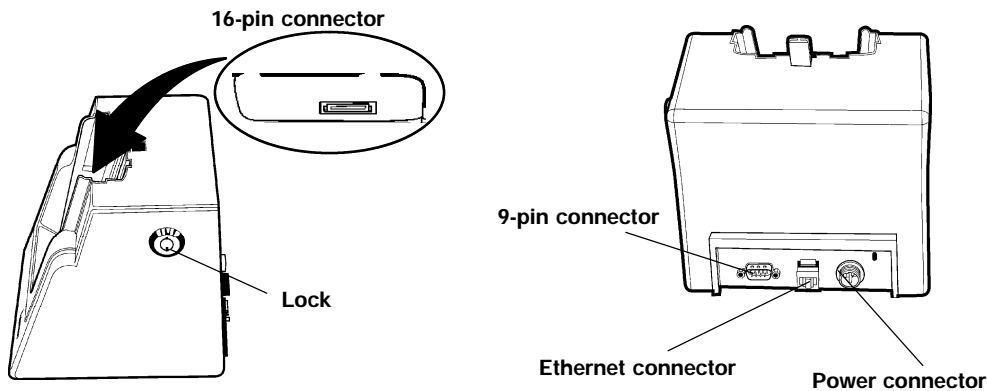
Section 3 covers the installation instructions for installing a vehicle dock into the vehicle mount device. This section includes guidelines and considerations for the installation and connecting to a vehicle battery.

Dock Descriptions

Single Dock

The single dock is intended for a fixed location. A single dock contains:

- A power connector.
- The ability for the mobile computer to receive both charging and operating power.
- The capability to connect your computer to a network.
- A latch, lock and key to seat your hand-held computer into place allowing for security and good connector contact for charging and data communication.
- The capability to connect a printer.

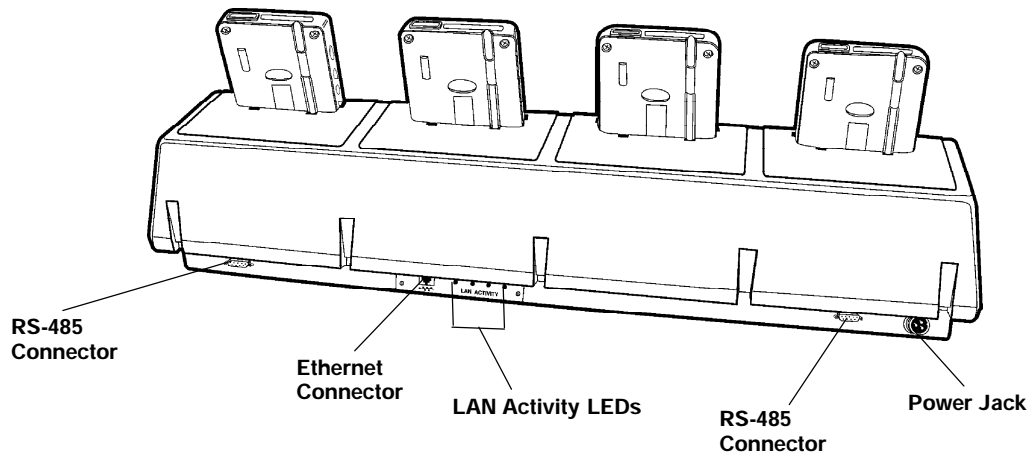


*Figure 1-1
Single Dock*

Multidock

The multidock is normally mounted on a countertop or wall. Features of the multidock include:

- Holds four Industrial Mobile Computers
- The ability for the units to receive both charging and operating power.
- The capability to connect your computers to a LAN and Ethernet network.



*Figure 1-2
Multidock*

Specifications

For building your shelving, keep in mind the dimensions of the dock. Shelving needs to include room above the dock for inserting the hand-held computer and behind the dock for connecting the cables.

Single Dock

- Weight: .97 kg (2.6 lbs)
- Dimensions:
 - Side to Side: 17.78 cm (7 in)
 - Front to Back:
 - Without cables 17.78 cm (7 in)
 - With cables 23.50 cm (9 1/4 in)
 - Top to Bottom:
 - Dock only 17.78 cm (7 in)
 - Dock with computer extended 33.02 cm (13 in)
- Minimum vertical spacing between shelves: 35.56 cm (14 in)

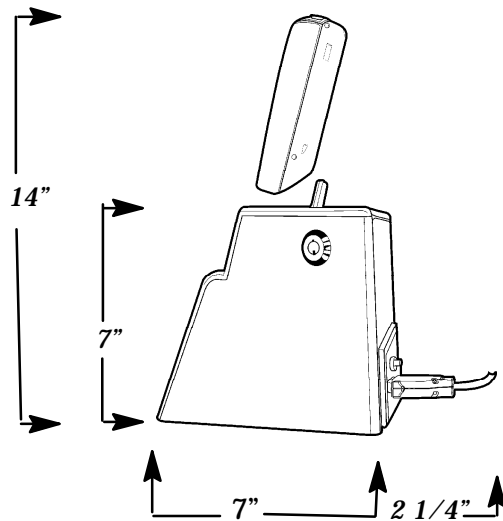


Figure 1-3
Single Dock With Cable Connector

Multidock

- Weight: 1.36 kg (3.65 lbs)
- Dimensions:
 - Side to Side: 65.41 cm (25 3/4 in)
 - Front to Back:
 - Without cables 15.24 cm (6 in)
 - With cables 20.96 cm (8 1/4 in)
 - Top to Bottom:
 - Dock only 13.34 cm (5 1/4 in)
 - Dock with computer extended 30.48 cm (12 in)
- Minimum vertical spacing between shelves: 33.02 cm (13 in)

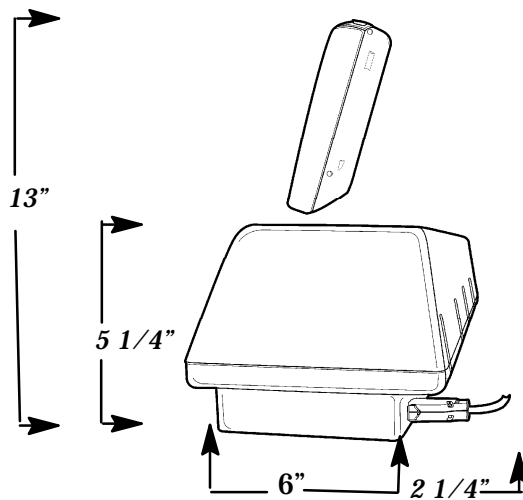


Figure 1-4
Multidock With Cable Connector

Connector Pin-Outs

16-Pin Interface Connector

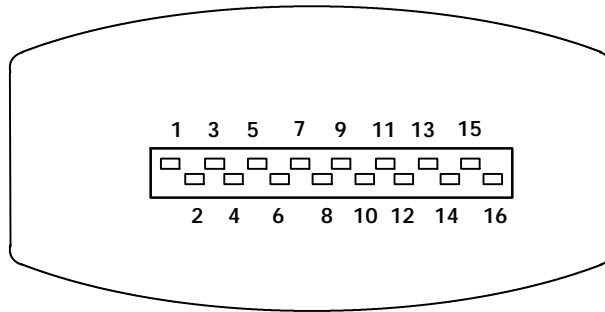


Figure 1-5
Interface Connector

Table 1-1
16-Pin Connector Pin-Outs

Pin	Signal Name	Function on Dock	I/O from Dock
1	TXD+	Transmit Positive Data Signal	Input
2	TXD-	Transmit Negative Data Signal	Input
3	RXD+	Receive Positive Data Signal	Output
4	RXD-	Receive Negative Data Signal	Output
5	AUXPWR	Auxiliary Power	Output
6	GND	Ground	
7	GND	Ground	
8	RX	Receive	

Table 1-1 (continued)
16-Pin Connector Pin-Outs

Pin	Signal Name	Function on Dock	I/O from Dock
9	CTS	Clear To Send	
10	DSR	Data Send Ready	
11	RI	Ring Indicator	
12	DCD	Data Carrier Detect	
13	DTR	Data Transmit Ready	
14	RTS	Request To Send	
15	TX	Transmit	
16	DOCKPWR	Dock Power	

Single Dock 9-Pin Male Serial Port

The single dock RS-232 port, available on a DB9 male connector. Com Port is COM 1 and has full modem control handshaking.

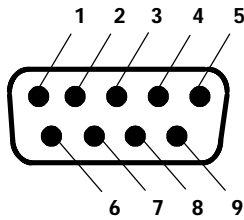


Figure 1-6
Single Dock 9-Pin Male Connector

Table 1-2
Single Dock 9-Pin Serial Port Connector Pin-Outs

Pin	Signal Name	Function	Standard Function on PC	I/O on Dock
1	NC	No Connect	Data Carrier Detect (DCD)	Input
2	RXD	Receive Data	Receive Data	Input
3	TXD	Transmit Data	Transmit Data	Output
4	DTR	Forced High	Data Terminal Ready	Output
5	GND	Ground	Ground	
6	DSR	To Set Baud Rate	Data Send Ready	Input
7	RTS	Forced High	Request To Send	Output
8	CTS	To Set Baud Rate	Clear To Send	Input
9	NC	No Connect	Ring Indicator	Input

Multidock 9-Pin Female RS-485 Connector

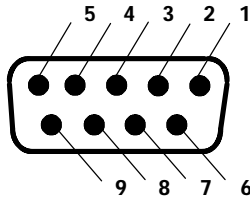


Figure 1-7
Multidock 9-Pin Female RS-485 Connector

Table 1-3
Multidock 9-Pin Connector Pin-Outs

Pin	Signal Name	Function	I/O to Dock
1	NC	No Connect	
2	485+	485 Positive Data Signal	I/O

Table 1-3 (continued)
Multidock 9-Pin Connector Pin-Outs

Pin	Signal Name	Function	I/O to Dock
3	485-	485 Negative Data Signal	I/O
4	NC	No Connect	
5	NC	No Connect	
6	NC	No Connect	
7	GND	Ground	
8	GND	Ground	
9	NC	No Connect	

Dock 3-Pin Male Power Connector

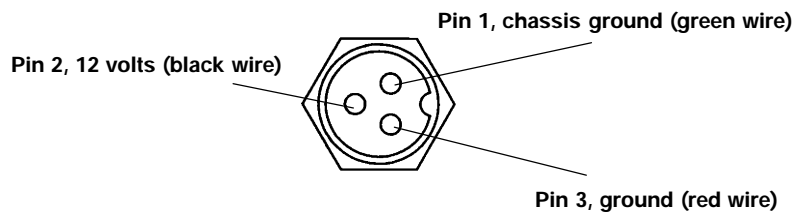


Figure 1-8
Dock 3-Pin Male Power Connector

Section 2

Single and Multidock Installation

Installation Guidelines

Single and multidock units are intended to be installed and used in environments that remain at about room temperature as opposed to high and low extremes.

Places to *avoid* when planning your installation include:

- Outdoor loading dock, or staging area
- Walk-in coolers or other refrigerated storage areas
- Overheated areas such as incubation rooms
- High-humidity environments
- Confined, unventilated space such as a storage closet
- Wherever chemical dust, fumes, or corrosives materials are present

Wall mounting your dock involves a suitable structure to hold the weight of one or several docking units. Wall mounting kits are available that contain the brackets and hardware necessary for this purpose. This instruction booklet contains the instructions for mounting single and multidocks.

Electrical Requirements

The single and multidocks come with a universal power supply and cord and therefore must be located within six feet from an outlet. The outlets must be grounded (three-prong) and with sufficient capacity to carry the load for the number of docks and other electrical devices per circuit breaker or fuse.

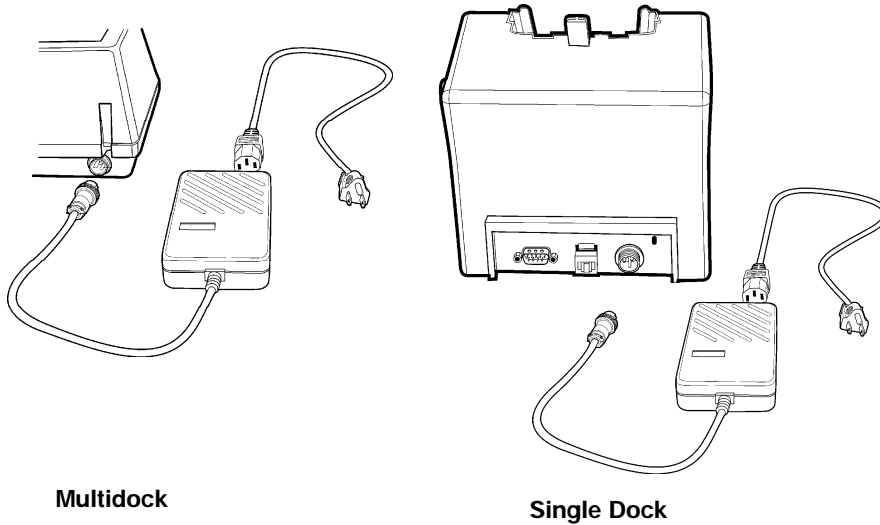


Figure 2-1
Power Supply Jacks

If you are uploading and downloading data with the host computer you will need to have data jacks close by. You will also need communication cables for connecting the docks to the jacks. The connectors are identified in this booklet but cables are not provided in the installation kit. Your salesperson will help you with ordering the necessary cables.

Dock Installation

The single dock is small and fairly lightweight, you can attach the dock to the brackets first, and then install the complete assembly to the wall. Or, you can install the mounting brackets on the wall before attaching the single dock. Installing the mounting brackets first is the preferred method and therefore the instructions for that follow.

Mounting Structure

You can install the docks on most structures made of wood, concrete, or cinder block. Use anchors that will support the weight and are designed for the type of wall you will be using.

Some anchor selection guidelines are for:

- Concrete structures use metal expansion anchors. Plastic anchors or dowels will not hold.
- Cinder block walls use 1/4 inch or larger toggle bolts into the hollow portions of the blocks. Expansion anchors or dowels pull loose over time.

Single Dock Mounting Bracket Installation

1. Position one mounting bracket at the desired height.
2. Use 1/4 inch or larger hardware to secure one mounting bracket to the wall.

NOTE:

For location purposes of the second bracket, keep in mind that the mounting holes are 7.62 cm (3 5/8 in) apart.

3. Install the second mounting bracket level with the first.

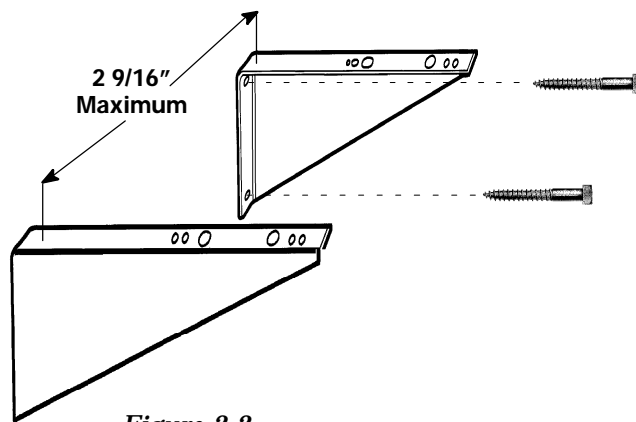


Figure 2-2
Mounting Brackets For Single Dock

Multidock Mounting Bracket Installation

On framed walls, it is preferable to drive lag screws directly into studs whenever possible. If this is not possible, it may be necessary to install scab studs or plywood (5/8 inch thickness or greater) reinforcement.

1. Position one mounting bracket at a suitable height and use 1/4 inch or larger hardware (lagscrew or concrete fastener) to secure one mounting bracket to the wall.
2. Use three fasteners in each bracket.

" **NOTE:** For location purposes of the second bracket, keep in mind that the mounting holes are 40.64 cm (16 in) apart.

3. Install the second mounting bracket level with the first.

" **NOTE:** When installing several multidocks across a wall, be sure to allow clearance between them for the power cables.

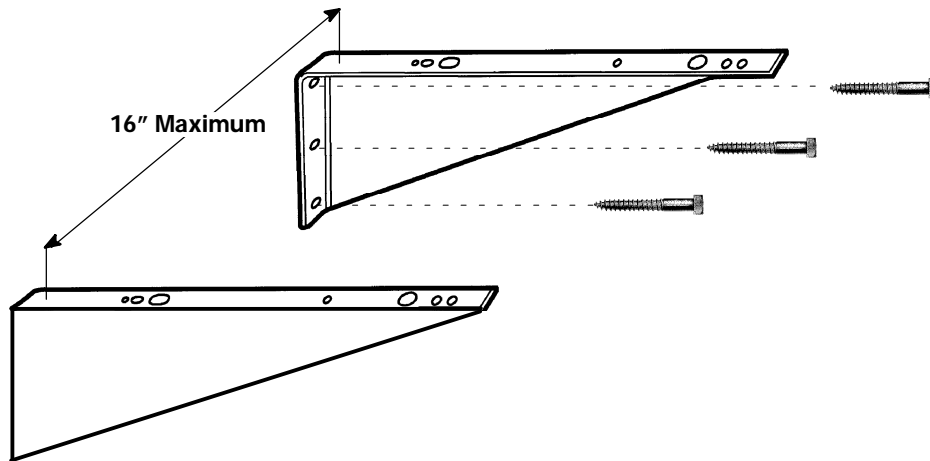


Figure 2-3
Mounting Brackets For Multidock

Section 3

Vehicle Dock Installation

Introduction

The vehicle dock for your Mobile Computer provides a secure place to store your computer in a vehicle. The dock and vehicle mount features and installation graphics are shown on the next several pages. The vehicle mount base is the type you use for mounting a cellular phone in your vehicle.

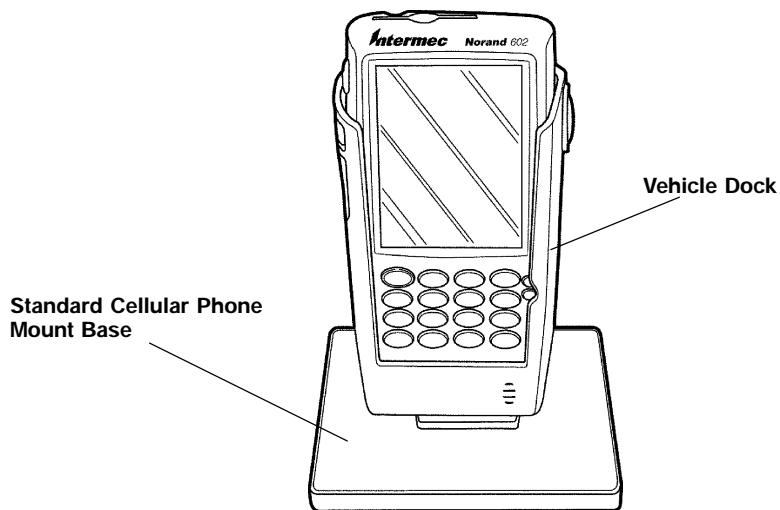


Figure 3-1
600 Dock and a Vehicle Mount

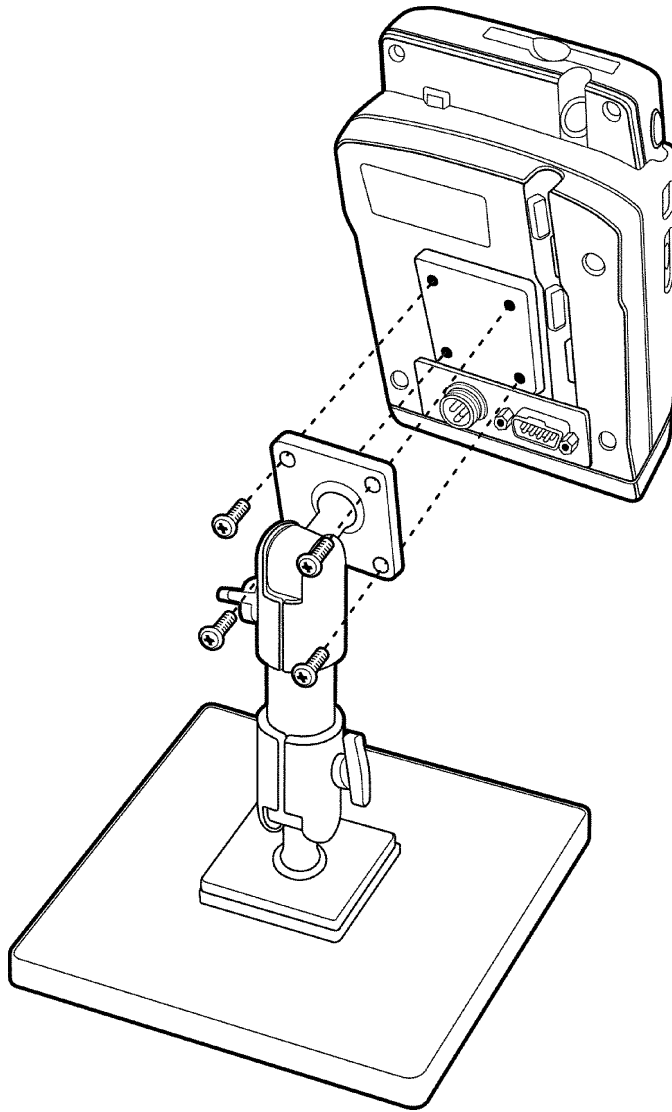


Figure 3-2
Installing Dock to Vehicle Mount

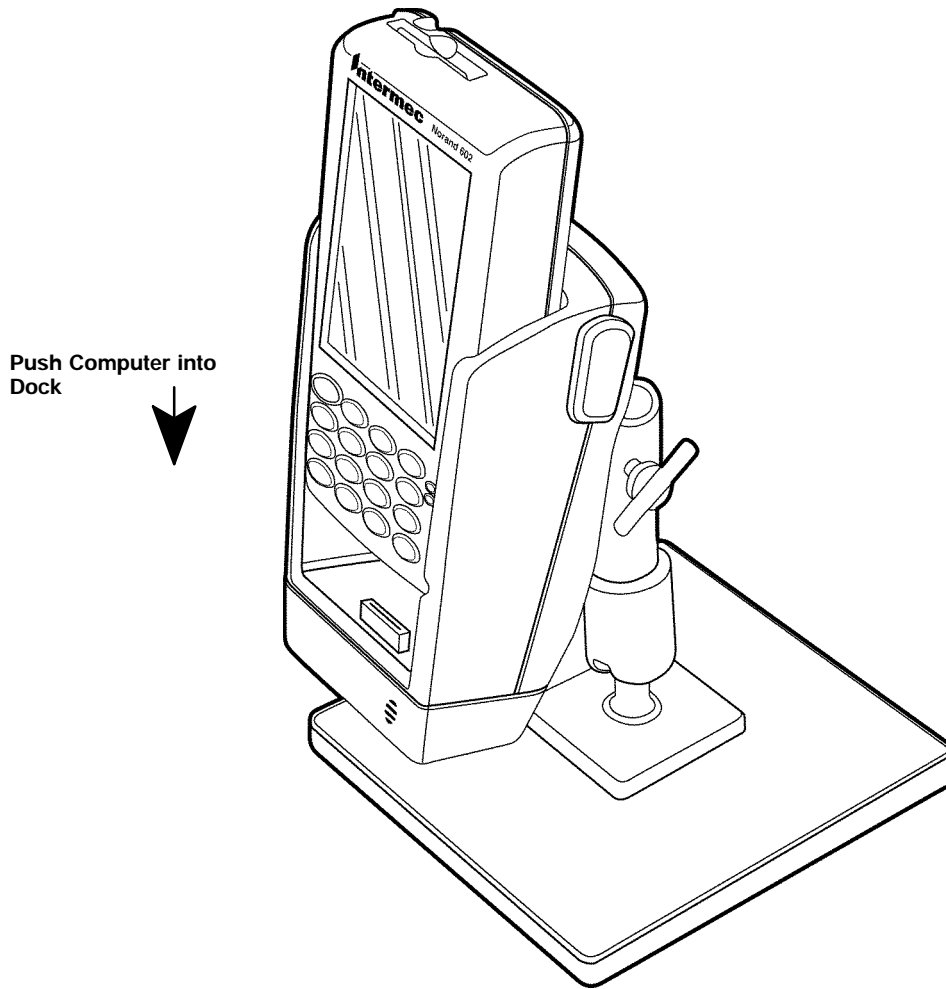


Figure 3-3
Inserting Mobile Computer into Vehicle Mount Dock

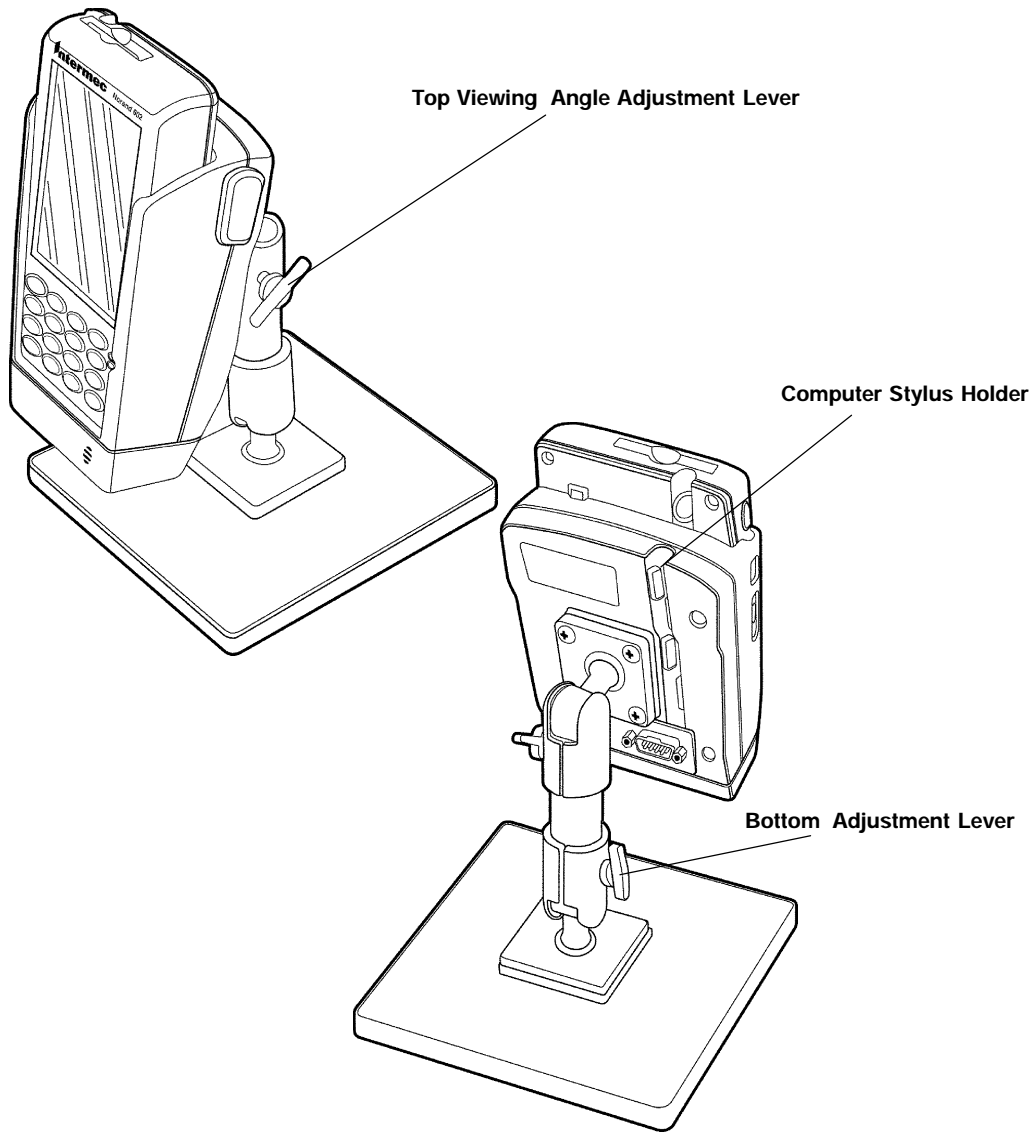


Figure 3-4
Vehicle Mount Features

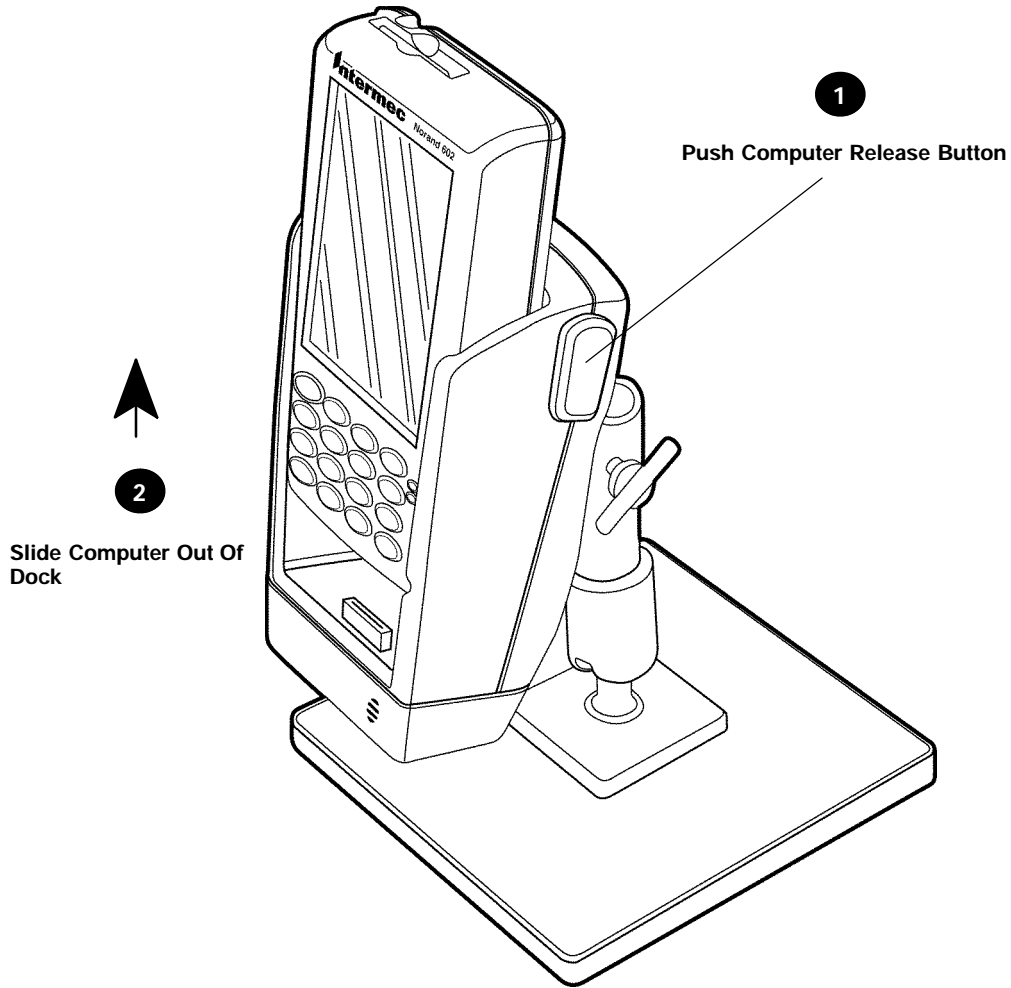


Figure 3-5
Removing Mobile Computer into Vehicle Mount Dock

Installation Guidelines

Since each situation or equipment type may pose unique requirements, mounting hardware selection and mechanical installation of the vehicle dock shall be the responsibility of the installer.

- 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 for your equipment.
- We can provide installation service, please contact your sales team to work out the detail for the installation plan.
- We recommend using 3/8-inch terminal rings for connecting the electrical cable directly to the vehicle battery.
- The vehicle dock mounting location must **not** restrict the drivers view. Mount the dock and cables away from the brake pedal, accelerator, steering wheel, emergency brake, gear shift, and any other area that interferes with safe operation of the vehicle.

The installation 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.

- A waterproof in-line fuse holder must be installed onto the end of the gray vehicle power cable. This gets installed onto the red wire of the power cable and the positive battery terminal.

Your tasks are to:

- Route and install the gray battery power cable (part number: 206-953-009) to the vehicle battery terminals
- Install the mounting hardware and vehicle dock

- Connect the black dock power cable (part number: 206-951-001) to the vehicle dock and the battery power cable. Depending on your installation, this may simply involve connecting the keyed connector, or it may involve cutting the connector off and wiring directly to the fuse block.

Installation Tools Required

- Wire crimping and stripping tool
- An electric drill, #26 drill bit
- Common hand tools (3/8" wrench, flat blade screwdriver, phillips screwdriver, allen wrenches, and small punch)

Vehicle Preparation

Vehicle Electrical Considerations

The vehicle's 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 (SAE J113).

B CAUTION: The vehicle 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 terminal battery (and in the printer battery if one is installed in the vehicle).

Excess electrical noise can be severe enough to defeat the electrical filtering that is built into your equipment. Defective ignition wiring, damaged insulation, or a faulty vehicle electrical component can cause electrical noise. When this happens, computers and other equipment can behave unpredictably.

Table 3-1
Parts and Accessories for
Vehicle Battery Kit 203-344-001/002

Description	Part Number	Qty
Fuse link	216-657-001	1
Bolts 3/8" x 1 1/2"	800-099-001	2
Washers 3/8"	803-099-001	4
Nuts 3/8"	802-099-001	4
Adjustable clamp	808-011-001	8
Self-tap screw #6 x 5/8"	800-008-001	8
#8 Flat washer	803-084-000	1
Snap-in bushing	807-065-003	1

Power Cables for Connecting to Vehicle Battery

Table 3-2
Cables for Connecting a Vehicle Dock to
Vehicle Battery Kit 203-344-001

Description	Part Number	Qty
Dock power cable (black)	206-951-001	1
Battery cable (gray)	206-953-009	1

Installing the Cables

Use cable clamps or wire-ties at least every 18 inches when installing cables on a vehicle. This eliminates loose or sagging cables, guarding against breakage and ensuring that they do not pose a hazard to the vehicle operator or to other workers.

These instructions detail how to route the cable, install the in-line fuse and make the battery connection onto a side terminal post or top terminal post type battery.

Decide the mounting location for the vehicle dock and the cables. When you are certain your arrangement works and that cables will reach from the batteries to the power converter to the dock, proceed with the instructions below.

1. Completely install the vehicle battery (gray) cable that connects to the vehicle battery before connecting onto the vehicle dock power (black) cable.
2. Route the cable from the vehicle battery toward the general area where the vehicle dock will be mounted.
3. Cut the battery power cable near the battery to eliminate the need for coiling excess cable.

" NOTE:

Do not cut the cable too short to reach the battery terminals.

4. Strip the battery power cable jacket back 12-14 inches.

Vehicle Battery Power Cable Assembly

The vehicle battery (gray) power cable must have an in-line fuse installed before making final connections to the vehicle battery. You must also crimp a 3/8 inch terminal ring to the end of the brown wire.

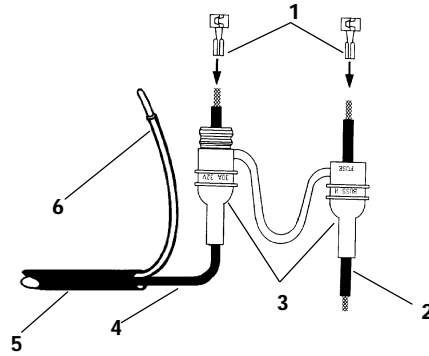
Assembling the In-line Fuse Holder

Refer to Figure 3-6 for help with completing this procedure. The in-line fuse holder (part number: 216-657-001) consists of a rubber boot, two crimp-type fuse clips, and a fuse.

This fuse holder may be preassembled, in which case you should skip the following fuse holder assembly procedures and go to the next set of instructions, **Connecting the Fuse Holder** on page 3-12.

If the fuse holder is not preassembled, carefully follow these instructions to assemble the in-line fuse holder.

1. Locate the in-line fuse holder components.
2. Cut the red wire in the battery power cable midway between its end and the cable jacket. Save the 6-7 inch length of red wire.
3. Strip 1/4-inch of insulation from the red wire that extends from the vehicle power cable; also strip 1/4-inch of insulation from both ends of the 6 inch length of red wire saved in step 2.
4. Slide the longer portion of the in-line fuse holder boot (yellow rubber) over the red wire that extends from the power cable.
5. Slip a fuse clip onto this wire and crimp the clip onto the wire.
6. Slip the remaining fuse clip onto one end of the 6 inch wire saved from step 2 and crimp securely.
7. Slide this wire into the other half of the fuse holder boot. Insert the fuse into the fuse clips and snap the halves of the fuse holder boot together.
8. Go to **Terminating the Wire Ends**.



1. Fuse clips
2. Red wire (6-7 inches)
3. Fuse holder "boot"
4. Red wire
5. Power cable
6. Brown wire

Figure 3-6
Assembling the In-line Fuse Holder

Terminating Wire Ends

Crimp 3/8-inch terminal rings to the stripped end of the brown wire and to the red wire from the fuse holder. See the battery drawing and instructions for recommended assembly to connect the cable to the vehicle battery.

1. Strip approximately 1/4" of insulation from the brown wire on the power cable.
2. Crimp the 3/8" terminal ring onto this wire.
3. Crimp a 3/8" terminal ring onto the red wire from the end of the in-line fuse holder

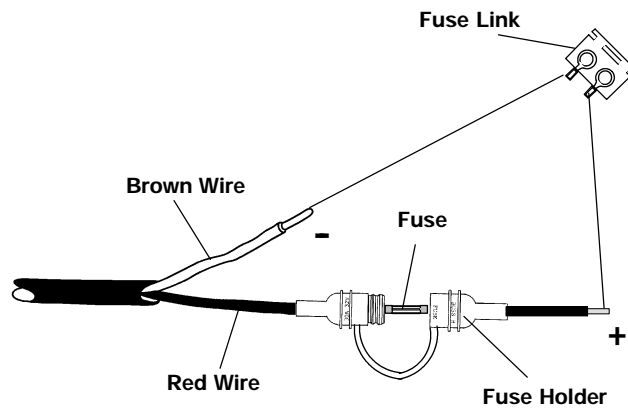
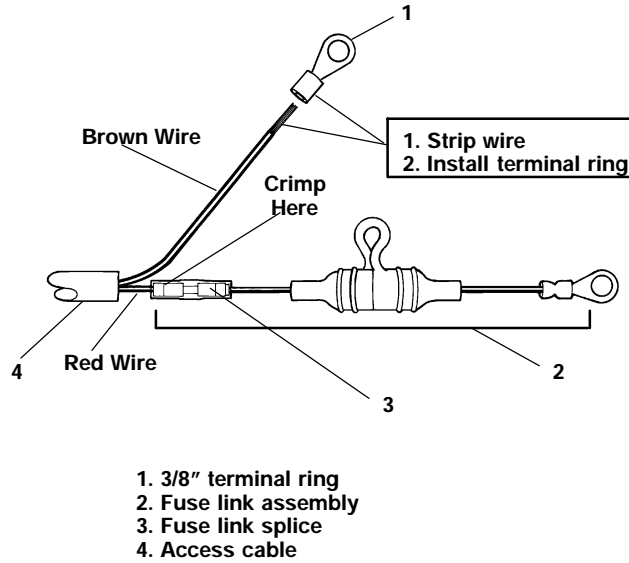


Figure 3-7
Terminating Wire Ends

Connecting the Fuse Holder

If the installation kit contains a preassembled in-line fuse holder, you must crimp it on the red wire from the vehicle battery (gray) power cable. Follow the instructions below to terminate the ends of the power cable when your kit includes a preassembled fuse holder.

1. Strip the brown wire.
2. Crimp the 3/8" terminal ring (1) onto the brown 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 3-8
Prepare Cable Ends*

Side Battery Terminal Post Connection

Refer to Figure 3-9 on page 3-15 for completing this procedure.



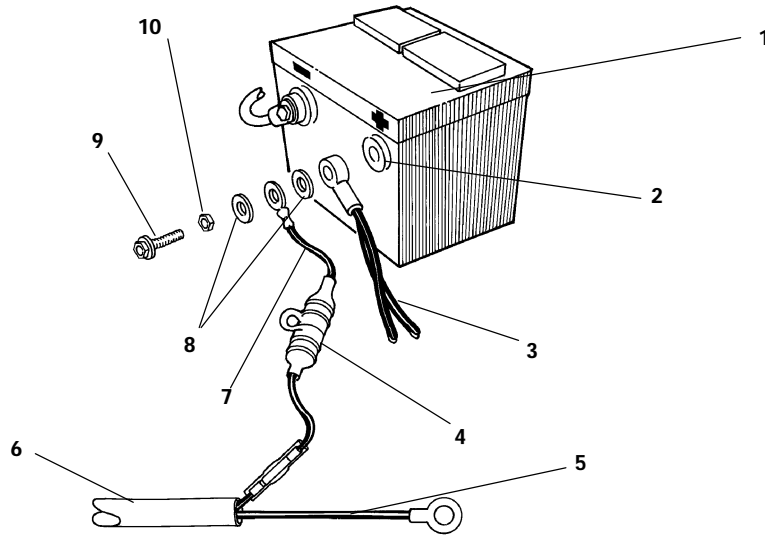
WARNING:

It is very important to make sure that you make the correct cable to battery connections, because electrical energy from vehicle batteries can harm equipment and people.

1. Remove both battery terminal side post bolts from the vehicle battery.
2. Screw a 3/8 inch nut (10) as far as it will go onto a 3/8" x 1 1/2" post (9) furnished in kit.
3. Slip a 3/8 inch washer (8) onto the battery terminal post.

4. Slide the positive (red wire) fuse link (7) terminal ring from the battery cable onto the positive (+) battery terminal post.
5. Slip a second 3/8 inch washer (8) onto the battery terminal post.
6. Slide the vehicle positive battery cable (3) onto the battery terminal post.
7. Thread the post assembly (steps 2-6, above) into the positive battery terminal. Tighten the battery terminal post securely.
8. Tighten the nut (9) installed in step 2 to secure washers (8) and cables firmly in place.

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



1. Battery
2. Positive battery post
3. Battery cable (positive)
4. Fuse link
5. Brown wire (negative)
6. Power cable
7. Red wire (positive)
8. Washers
9. Battery terminal post (positive)
10. Nut

Figure 3-9
Side Battery Terminal Posts

Top Battery Terminal Post Connection

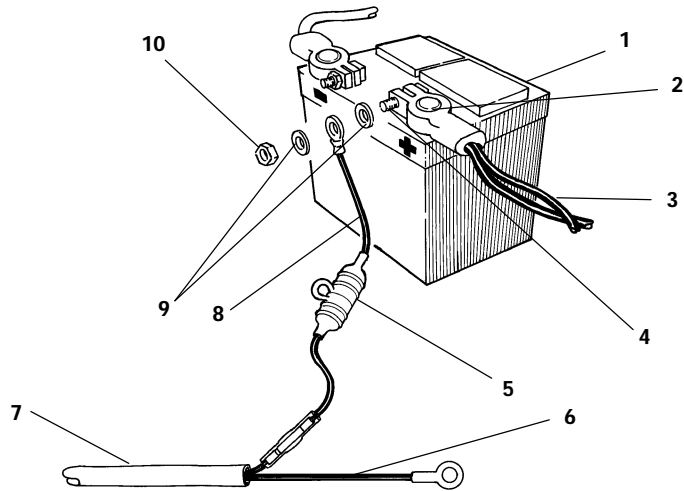
Refer to Figure 3-10 on page 3-17 for completing this procedure.

**WARNING:**

Because electrical energy from vehicle batteries can harm equipment and people, it is very important to make sure that you make the correct cable to battery connections.

1. Remove the battery clamp posts from the vehicle battery terminals.
2. Replace the battery clamp posts removed in step 1 with 5/16" x 1-1/2" posts (4) and nut (10) furnished in the installation kit. Tighten nut securely.
3. Slip a 3/8 inch washer (9) onto the extended end of each battery clamp bolt.
4. Slide the positive (red wire) fuse link (8) terminal ring from the battery cable onto the positive (+) battery clamp bolt (4).
5. Slip a second 3/8 inch washer (9) onto the battery clamp bolt (4).
6. Thread a second 3/8 inch nut (10) onto the battery clamp bolt (4).
7. Tighten the nut.

Repeat steps 3 through 6 for the negative (brown) wire from the battery cable, connecting the wire to the negative (-) battery terminal.



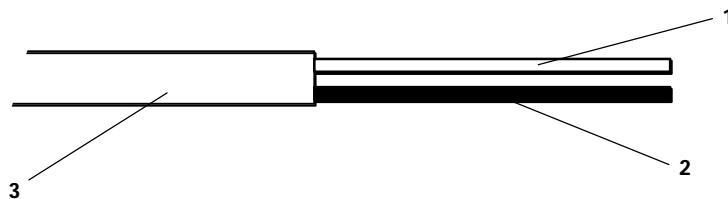
1. Battery
2. Positive battery terminal
3. Battery cable (positive)
4. 5/16" x 1-1/2" post
5. Fuse link
6. Brown wire (negative)
7. Gray power cable
8. Red wire (positive)
9. Washers
10. Nut (2)

Figure 3-10
Top Battery Terminal Posts

Installing Your Vehicle Dock With Other Equipment

There are many options that your installation might call for. This is another good reason to rely on your installation team as they are prepared to handle a wide variety of installations. For instance, you may be installing the vehicle dock with an additional in cab radio or satellite tracking device in which case you will need to modify the black dock cable part number 206-951-001 to connect into a vehicle fuse block that the installation team would install.

If this is the case you could install the cable designed to connect to the fuse block (part number: 226-109-001). Or you could cut off the white connector from the end of the black dock cable and wire the dock power cable to the fuse block. See Figure 3-11 to identify the positive and negative wires.



1. White wire (negative)
2. Black wire (positive)
3. Black dock power cable

Figure 3-11
Stripping the Power Cable Jacket

Installing an Optional Printer

If you are installing a printer into your system you need the power cables to connect the printer and vehicle dock to the vehicle battery. You also need a remote terminal cable (part number: 216-588-001) that you need to order separately. These cables allow you to locate the printer and the vehicle dock up to six feet (1.83 m) apart. This kit includes a power cable with a noise filter and a ground strap.

The installation for a system that includes a printer refer to pages 3-19 and 3-21 for the wiring diagram for the “Y” cable and installing the power cable with noise filter.

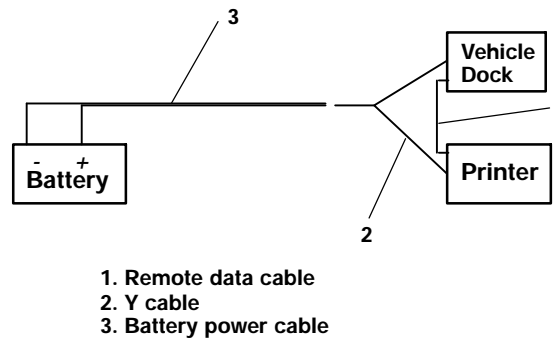


Figure 3-12
Wiring Diagram for Installing a Printer

Table 3-3
Cables for Connecting a Vehicle Dock and Printer to Vehicle Battery Kit 203-344-002

Description	Part Number	Qty
“Y” power cable	216-817-001	1
Battery cable with line filter	216-964-009	1

Vehicle Dock and Printer

1. Install a “Y” cable (part number: 216-817-001) to supply power to both the vehicle dock and to the printer. Refer to Figure 3-12 for the wiring diagram and Figure 3-14 for vehicle dock connectors.
2. Connect one end of this cable into the printer, the other into the vehicle dock.
3. Connect the keyed rectangular connector on the gray battery cable (part number: 216-964-009) into the “Y” power cable (part number: 216-817-001).

You must also connect a data cable (part number: 216-588-001) between the vehicle dock and the printer. This cable allows the terminal to communicate with the printer. Plug the appropriate end of this cable into the vehicle dock and the other end into the printer.

Fastening the Ground Cable

The power cable connector has a braided wire grounding strap 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 into the metal 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. Make sure to expose bare metal in order to make a good electrical connection.
4. Use a #8 x 5/8” screw and flat washer to secure the strap.

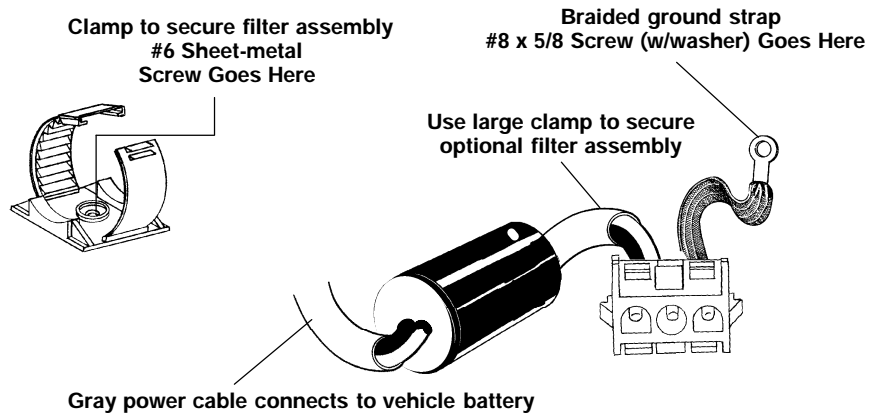


Figure 3-13
Installing the Power Cable In-Line Noise Filter

Final Connections

Vehicle Dock Alone

To use the vehicle dock by itself, connect one end of the dc power cable (part number 206-951-001) to the vehicle dock; the other end plugs into the previously installed battery cable.

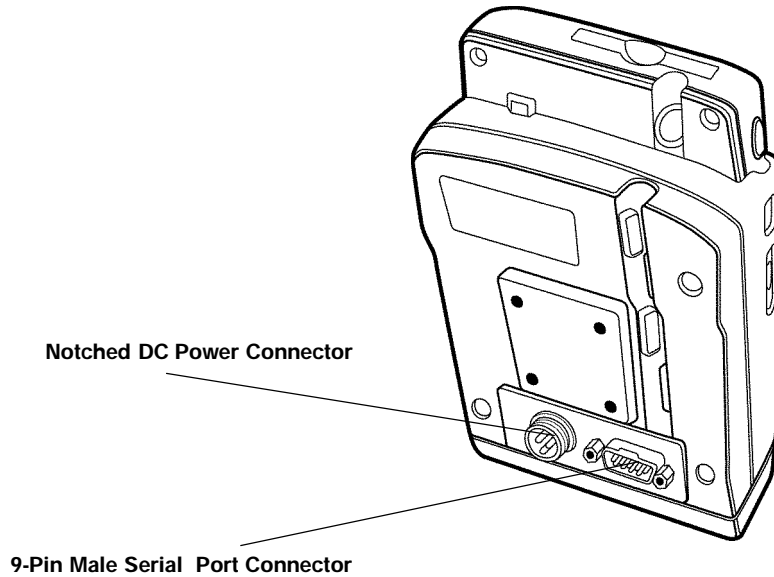


Figure 3-14
Vehicle Dock Connectors

Jump Starting Your Vehicle

- B CAUTION:** If you need to jump start your vehicle from another vehicle battery, disconnect the power cable running to the printer or dock. Failure to do so can result in loss or damage to your hand-held computer. To disconnect:
- Unscrew at the printer or dock or,
 - Disconnect at the Y-connection where the short cable plugs into the long cable.

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