

Disassembly guidelines

WARNINGS

REPAIR TO THE FRU LEVEL — Field repairs are recommended to the field replaceable unit (FRU) only. Attempting a field repair on a PCB or a factory sealed component or assembly could jeopardize the safe and effective operation of the patient monitor.

DAS ASSEMBLY — Do *not* open the DAS assembly as this breaks the isolation barrier which may result in patient death or serious injury. The DAS assembly is a field replaceable unit only. There are NO field repairs or adjustments for the DAS assembly.

BATTERY EXPLOSION HAZARD — When removing the GCX plate and the footpad from the bottom of the patient monitor, clearly identify the screws to ensure the same screws are used to replace both the footpad and the GCX plate. Do *not* re-assemble the footpad without the GCX plate. Screws that are too long will penetrate into the battery case and cause the battery to leak or to explode.

NOTE

GE recommends that you assemble the patient monitor using the *new* fasteners (screws, washers, etc.) provided in the FRU Kits. Some fasteners, like the screws with a thread locking coating, are *not* intended to be re-used more than three times.

Tools required

A standard set of hand tools is required for disassembly and assembly.

Before disassembly

Before you disassemble the patient monitor, you should *always* do the following tasks.

1. Remove AC power.
2. Remove both batteries.
3. Provide appropriate electrostatic discharge protection to prevent damaging the patient monitor.
4. Be aware that the nonspecific disassembly instructions apply to all patient monitors supported by this service manual. Disassembly for specific models of the patient monitor are identified when required.

Hardware precautions

When disassembling the patient monitor, observe the following guidelines:

- Remove the handle assembly, then remove the display assembly to access the field replaceable units of the display assembly and the main unit.
- Note the positions of wires, cables, and different sized screws; marking them if necessary to ensure they are replaced correctly.
- *Do not* kink, pinch, stretch, twist, or tightly fold a flex cable.
- Unless otherwise stated, reassemble the patient monitor in reverse order of disassembly.

Electrostatic discharge (ESD) precautions

All external connector inputs and outputs of the patient monitor are designed with protection from ESD damage. However, if the patient monitor requires service, exposed components and assemblies contained within are susceptible to ESD damage. This includes human hands, non-ESD protected work stations and/or improperly grounded test equipment.

The following guidelines help make a service workstation more resistant to the ESD damage:

- Discharge any static charge you may have built up before handling semiconductors or assemblies containing semiconductors.
- A grounded, antistatic wristband (3M part number 2046 or equivalent) or heel strap should be worn *at all times* while handling or repairing assemblies containing semiconductors.
- Use properly grounded soldering and test equipment.
- Use a static-free work surface (3M part number 8210 or equivalent) while handling or working on assemblies containing semiconductors.
- *Do not* remove semiconductors or assemblies containing semiconductors from antistatic containers (Velo-stat bags) until absolutely necessary.
- Make sure power to an assembly is turned off before removing or inserting a semiconductor.
- *Do not* slide semiconductors or electrical/electronic assemblies across any surface.
- *Do not* touch semiconductor leads unless absolutely necessary.
- Semiconductors and electrical/electronic assemblies should be stored only in antistatic bags or boxes.
- Handle all PCB assemblies by their edges.
- *Do not* flex or twist the circuit board.

These guidelines may not guaranty a 100% static-free workstation, but can greatly reduce the potential for failure of any electrical/electronic assemblies being serviced.

Replacement procedures

Unless otherwise stated, reassemble the patient monitor in reverse order of disassembly.

NOTE

When reassembling the patient monitor, observe the following guidelines:

- ◆ To prevent cracking the plastic components, do not overtighten the screws fastening the plastic components together.
- ◆ To prevent cross-threading plastic components, carefully start threading the screws by hand, then finish tightening the screws using an appropriate hand tool.

Remove or replace handle assembly

1. Remove the two screws holding the handle to the patient monitor. Take care not to strain the cables if your patient monitor has the alarm light option or the wireless option.

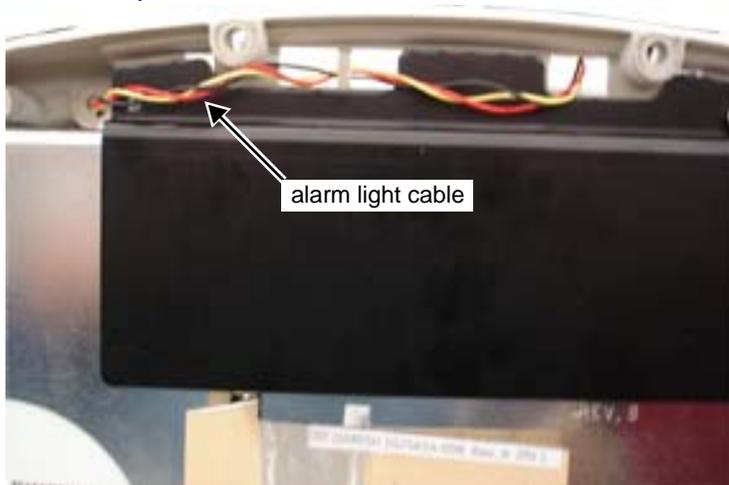


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2. If your patient monitor does not have the alarm light option or wireless option, replace the defective handle assembly or continue to [“Remove or replace display assembly”](#) on page 7-18 to replace other parts.
3. If your patient monitor has the alarm light option, replace the defective handle assembly, or continue to remove the display assembly to route the alarm light cable through the Dash housing (if it is not already routed) or to replace other parts. Refer to [“Remove or replace display assembly”](#) on page 7-18.

NOTE

For Dash 3000 only: If the replacement handle assembly has an alarm light, the DAS assembly must be removed to connect the cable to J1 on the writer board. Refer to [“Replace DAS assembly”](#) on page 7-37 for instructions on removing and reinstalling the DAS assembly.



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4. If your patient monitor has the wireless option, do the following to replace the defective handle assembly:

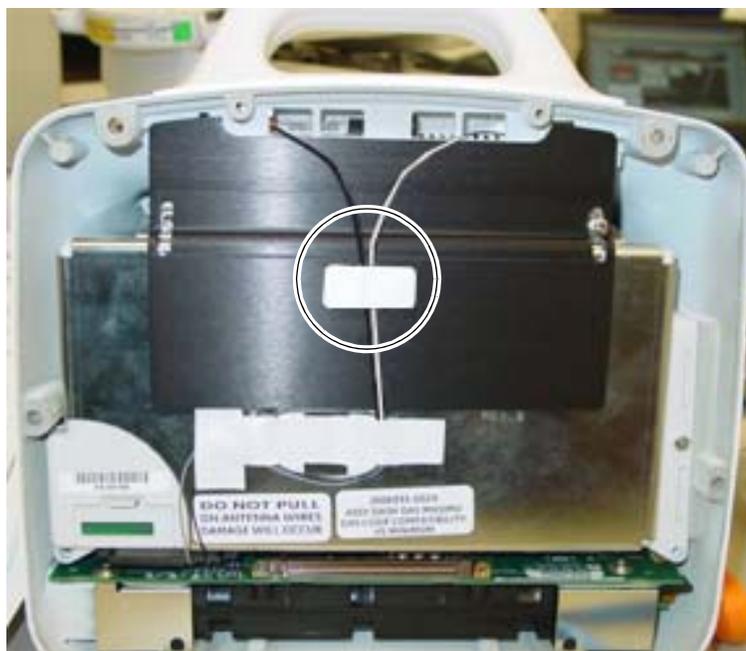
CAUTION

Do not pull on the 802.11a/b/g antennas or use force when connecting to the wireless card. Handle the antennas and connectors carefully as they can easily be damaged.

NOTE

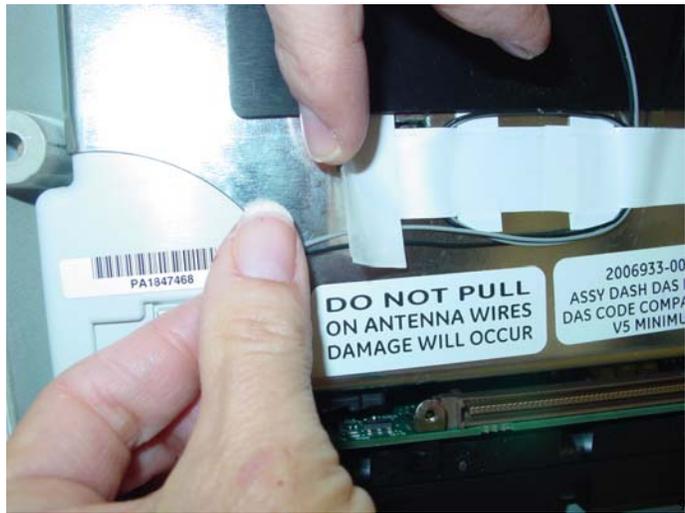
Do not kink or bend the antenna cables tighter than a 5 mm radius. Otherwise, the cable lining will delaminate and reduce antenna performance.

- a. Apply a piece of adhesive tape to temporarily hold the handle onto the unit.
- b. Remove the display assembly. Refer to “[Remove or replace display assembly](#)” on page 7-18.
- c. To completely remove the handle from the main unit, do the following:
 - ◆ Apply pressure against the antenna cables (to prevent pulling on the cables) and carefully remove the antenna label from the Dash monitor. Discard the used label.



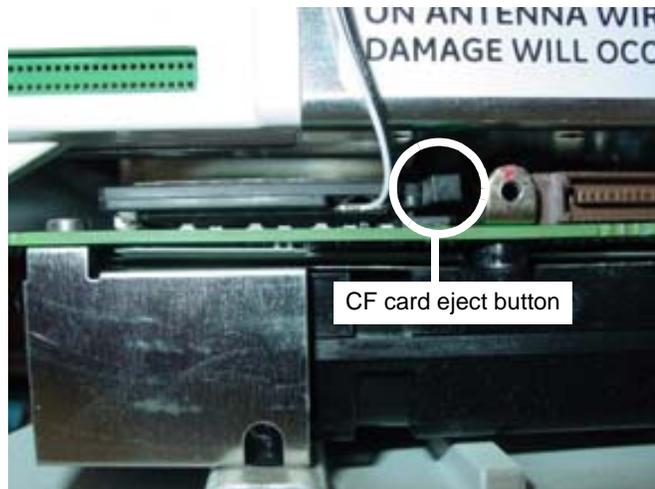
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- ◆ Apply pressure against the antenna cables (to prevent pulling on the cables) and carefully remove the antenna label from the antenna cables. Discard the label.

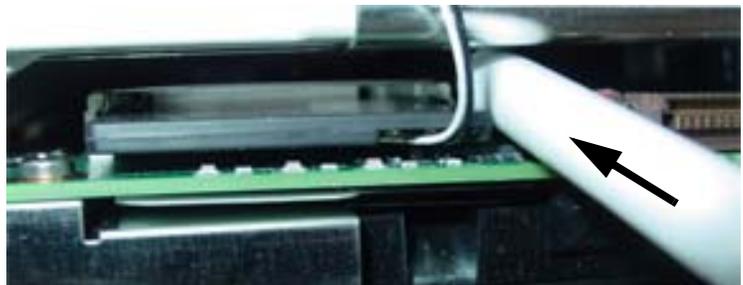


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- ◆ Remove the wireless card from the PC card bracket by pressing the CF card eject button. To press the CF card eject button, carefully insert the flat end of a pen approximately 1-inch deep and push the CF flash card eject button as shown.

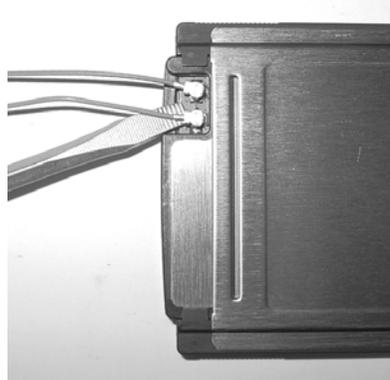


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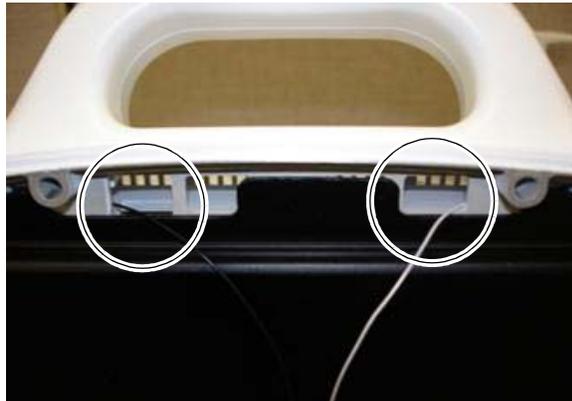
974A

- ◆ Carefully disconnect the antennas using a pen tip, small screwdriver, or needle nose pliers.



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- ◆ Place the wireless card in a safe place.
 - ◆ Remove the handle from the main unit, carefully removing the antenna cables from the housing holes.
- d. To replace the handle, route the antenna cables through the housing holes as shown. Apply adhesive tape to temporarily hold the handle into position.



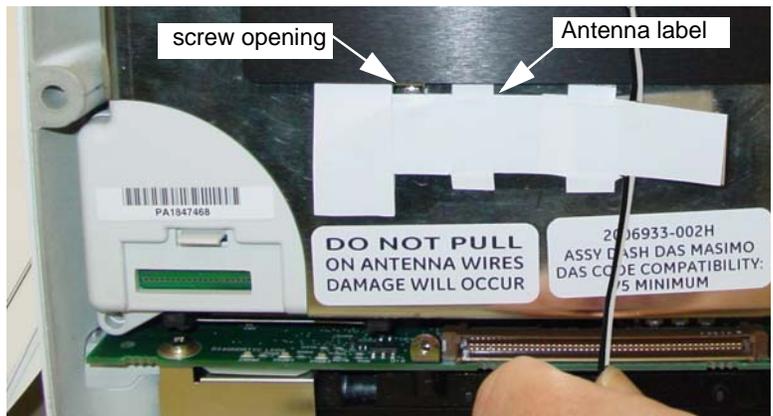
954B

- e. Gather the antenna cables together in the middle of the unit, then do the following:
- ◆ Make sure that the cables are lying flat and are not twisted around each other.
 - ◆ Provide enough slack in the cables to allow the handle to be removed if future repairs are required.
 - ◆ Remove the protective backing from the short antenna label and position the label over the untwisted antenna cables as shown.



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- f. Remove the center section of the protective backing from the long antenna label.
- g. Position the antenna label under the heat shield with the first and second tabs of the antenna label straddling the screw opening in the DAS assembly. Press to secure into place.



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- h. Route the cables under the righthand side of the antenna label as shown. Be sure that the cables are lying flat and are not twisted around each other.



955B

- i. Remove the protective backing from the right side of the antenna label and secure the antenna cables in place.

- j. Continue to wrap the antenna cables around the lefthand side of antenna label. Remove the protective backing from the left side of the antenna label and secure the antenna cables as shown.



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- k. Continue to wrap the antenna cables toward the righthand side of the antenna label and secure as shown.

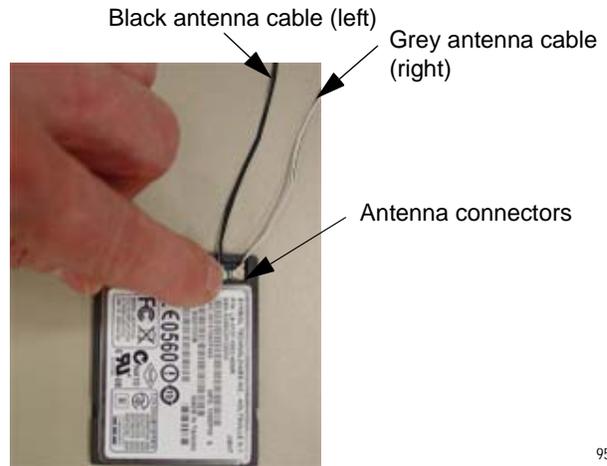


963B, 964B, 965B

CAUTION

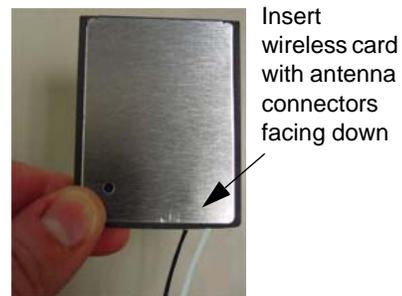
Do not pull on the 802.11a/b/g antennas or use force when connecting to the wireless card. Handle the antennas and connectors carefully as they can easily be damaged.

1. Connect the antenna cables to the wireless card (black cable to the left and grey cable to the right).



959C

- m. Insert the wireless card (with the antenna connectors facing down and the connected antenna cables on the righthand side) into the PC card bracket.



975B, 960C

- n. Continue to wrap the antenna cables towards the righthand side of the antenna label. Lift up the lefthand side of the secured antenna label and re-secure the additional cable loops under the label.



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- o. Check that there is no excessive slack in the antenna cables that could get pinched between the heat shield and the display assembly or between the display connector. The antenna cable should lie flat underneath the heat shield and the unsecured antenna cables connected to the wireless card should have little slack as shown.

NOTE

Due to the larger display size of the Dash 5000 monitor, the unsecured portion of the antenna cables between the antenna label and the wireless card has very little slack.



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- p. Reinstall the display assembly.

Remove or replace display assembly

1. Remove the handle assembly from the patient monitor. Refer to “Remove or replace handle assembly” on page 7-10.

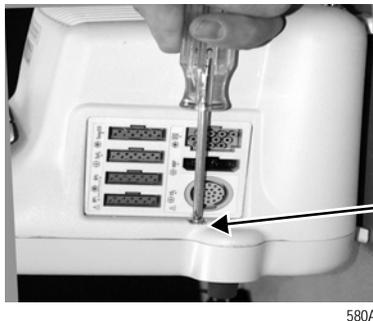
NOTE

This step is not necessary for Dash 5000 patient monitors.

2. Place the patient monitor face down on a non-abrasive, static-free surface. Make sure the **Trim Knob** control hangs off the edge of the surface to avoid damage.
3. Use a Phillips head screw driver to remove the four screws (six screws for Dash 5000 patient monitors) holding the display assembly to the main unit.



one screw on the left side of the unit...

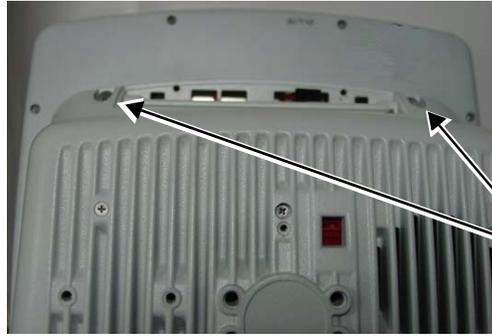


one screw on the right side of the unit...



Note: Use a screwdriver with a long blade or remove the GCX plate first for easy access to the bottom screws.

...and the two shorter screws from the bottom of the unit.



The Dash 5000 patient monitor has two additional screws.

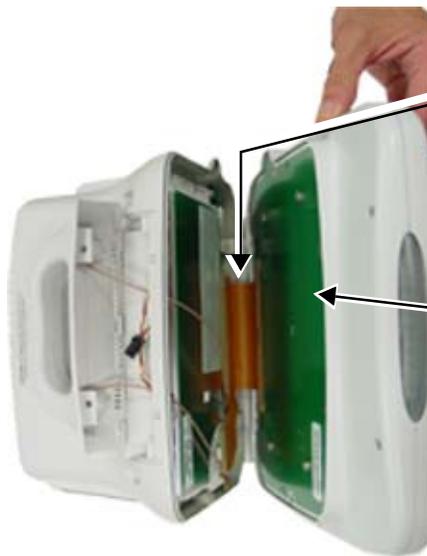
893A

4. Partially separate the display assembly from the main unit and look inside the unit to determine how the display flex cable is folded. Depending on the model, the Dash patient monitor may have a display flex cable that folds up from the bottom or from the right side of the display.

The location of the fold dictates how to position the display assembly to remove it from the main unit.

CAUTION

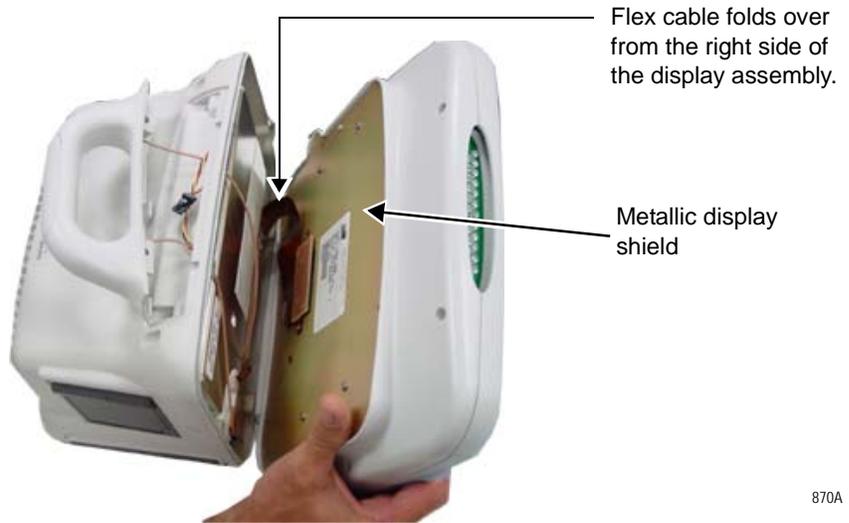
CABLE DAMAGE — Do not kink, pinch, stretch, twist, or tightly fold the display flex cable. If you do not handle the flex cable gently, you will damage the cable.



Flex cable folds up from the bottom of the display assembly.

Metal display shield plate

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5. To prevent damaging the display flex cable, position the display assembly for the patient monitor you are servicing.

Dash 3000 display assembly with circuit board display shield

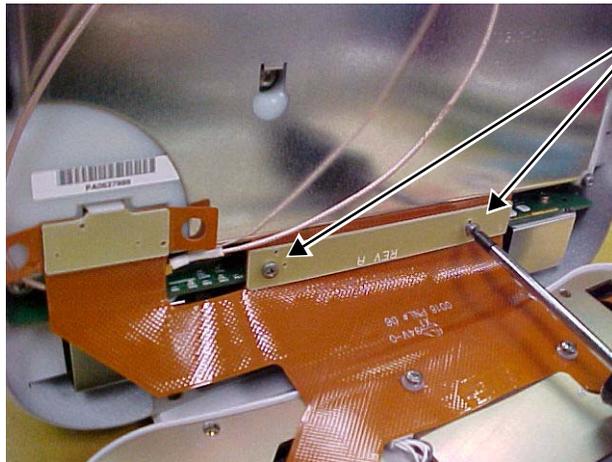


Display assembly with metallic display shield



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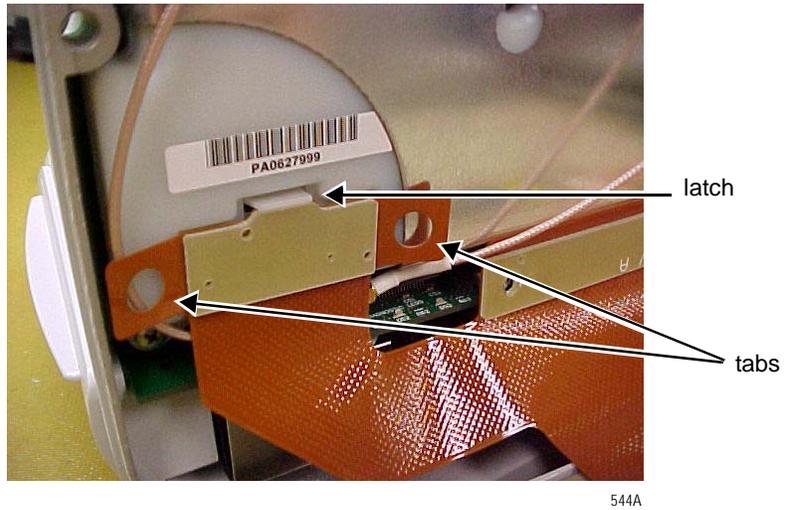
6. Remove the two screws attaching the flex circuit to the main unit's CPU/battery housing assembly. Remove the flex connector by pulling on the flex connector strain relief.



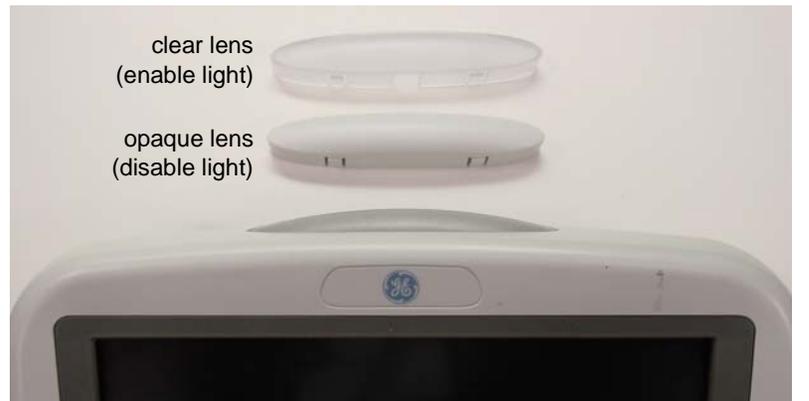
2 screws

543A

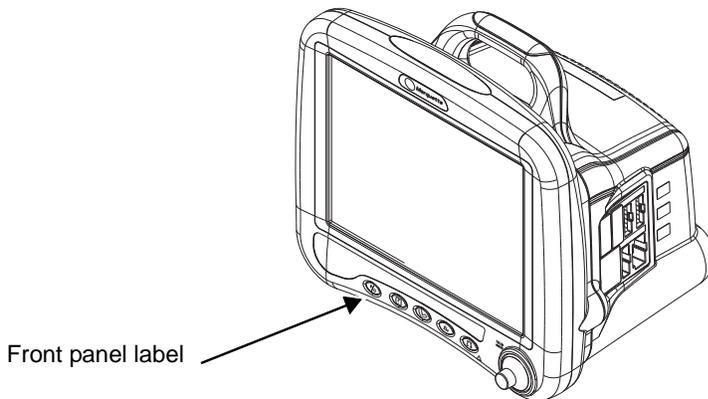
7. Remove the DAS connector by lifting the snap latch and tabs.



8. Place the display assembly face down on a non-static, non-abrasive surface. Make sure the **Trim Knob** control hangs off the edge of the surface to avoid damage.
9. Replace the defective display assembly.
10. To replace the Display Flex assembly, refer to [“Replace display flex assembly”](#) on page 7-24.
11. To replace parts in the main unit, refer to [“Replace main unit parts”](#) on page 7-34.
12. Refer to the figure below to determine if you need to enable or disable the alarm light on your Dash display assembly.



- a. To enable the alarm light option:
 - ◆ Verify the alarm light jumper is connected to both jumper pins on the alarm light PCB of the display you are replacing.
 - ◆ Snap in the clear lens.
 - b. To disable the alarm light option:
 - ◆ Remove the jumper from the alarm light PCB, or connect the jumper to only one of the jumper pins on the alarm light PCB.
 - ◆ Pop in the opaque lens.
13. Connect the display assembly to the main unit. Refer to page 7-18 and re-assemble the patient monitor in reverse order.
 14. Apply the Dash front panel label as shown below.



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15. Complete the procedures in “Recommended checkout” on page 7-52.

Replace display flex assembly

Dash 3000 display flex assembly

The Dash 3000 display assembly includes the flex assembly.

1. Remove the handle and display assemblies according to steps starting on page 7-10.
2. Replace the display assembly and reassemble the patient monitor in reverse order of disassembly.

Dash 4000 and 5000 display flex assembly

CAUTION

FLEX CABLE DAMAGE — *Do not* kink, pinch, stretch, twist, or tightly fold a flex cable.

1. Loosen the handle assembly as required. Refer to “[Remove or replace handle assembly](#)” on page 7-10.

NOTE

This step is not necessary for Dash 5000 patient monitors.

2. Remove the display assembly from the main unit. Refer to page 7-18.

NOTE

Use a thick book or some heavy object to support the display assembly while you attach the display flex to the main unit.

3. Remove the two screws to disconnect the flex cable from the display. Retain the screws.
4. Insert the new flex cable connector into the display connector as shown in the figure below.



5. Using two screws, secure the flex cable to the display assembly.

- Carefully bend the display flex as shown.



874A

- Pick up and support the display assembly between the main unit and a thick book.
- Use two screws to carefully secure the flex processor cable connector to the main processor PCB.



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- Carefully align and insert the DAS cable pins into the DAS assembly until the snap latch clicks into place.



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- Reassemble the patient monitor in reverse order of disassembly.
- Complete the procedures in **“Recommended checkout”** on page 7-52.

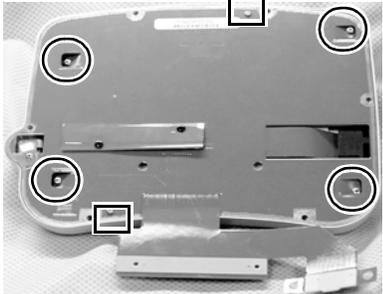
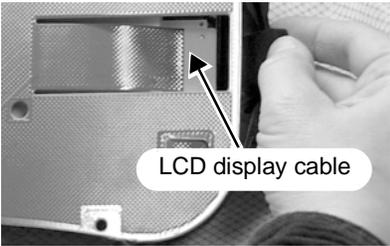
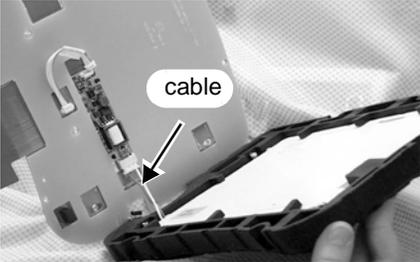
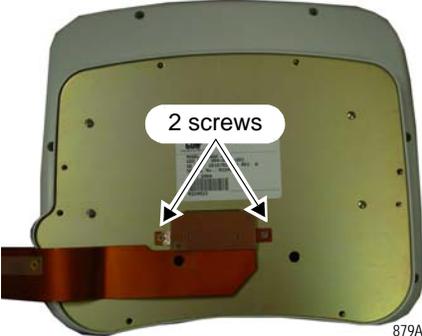
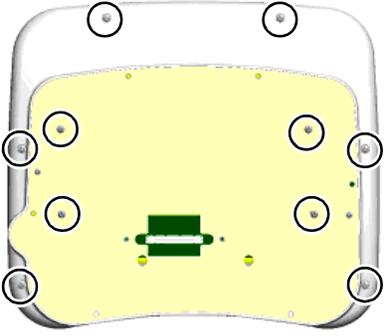
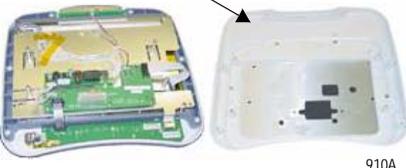
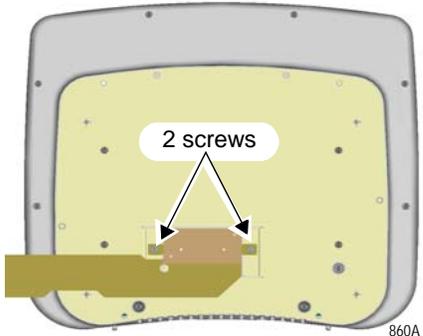
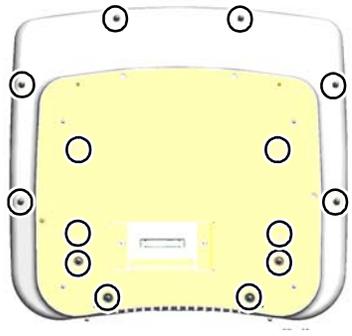
Replace display assembly parts

Use the following procedures to replace the display assembly parts:

1. “Remove or replace handle assembly” on page 7-10.
2. “Remove or replace display assembly” on page 7-18.
3. “Open display assembly” on page 7-27.
4. On the following pages find the steps for the part and Dash model you are servicing:
 - ◆ “Replace Dash 4000/5000 alarm light” on page 7-28.
 - ◆ “Replace display inverter” on page 7-28.
 - ◆ “Replace keypad assembly or Trim Knob control” on page 7-30.
 - ◆ “Replace display components without LCD” on page 7-31.

Open display assembly

Follow the steps below for the patient monitor you are servicing.

Dash 3000 patient monitor with display shield flex circuit	Dash 4000 patient monitor	Dash 5000 patient monitor
<p>Separate the patient monitor bezel from the LCD display.</p> <p>1. Remove and retain the four screws holding the display shield to the LCD display and two screws holding the display shield to the patient monitor bezel.</p> <p>○ 4 larger screws □ 2 smaller screws</p>  <p>500A</p> <p>2. Remove the display assembly from the patient monitor bezel.</p> <p>3. Pull the LCD display isolator out of the way. Disconnect the LCD display cable.</p>  <p>501A</p> <p>4. Disconnect the cable from the backlight inverter PCB.</p>  <p>502A</p>	<p>1. Remove and retain the two screws from the display flex cable. Pull up on the latch tabs to remove the flex cable from the display.</p>  <p>879A</p> <p>2. Remove and retain the 10 screws as shown.</p> <p>○ 10 screws</p>  <p>899A</p> <p>3. Separate the transition bezel from the front bezel. It is not necessary to remove the metal backplate.</p> <p>4. Set aside the transition bezel.</p>  <p>910A</p> <p>NOTE The display that is pictured above is a Sharp.</p>	<p>1. Remove and retain the two screws from the display flex cable. Pull up on the latch tabs to remove the flex cable from the display.</p>  <p>860A</p> <p>2. Remove and retain the 14 screws as shown.</p> <p>○ 14 screws</p>  <p>900A</p> <p>3. Separate the transition bezel from the front bezel. It is not necessary to remove the metal backplate.</p> <p>4. Set aside the transition bezel.</p>  <p>884A</p>

Replace Dash 4000/5000 alarm light

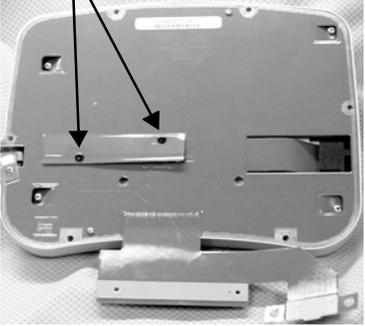
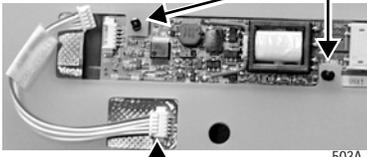
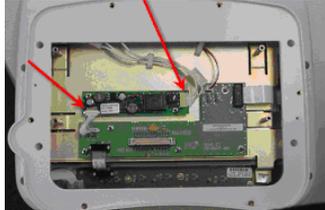
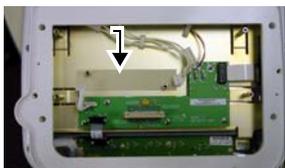
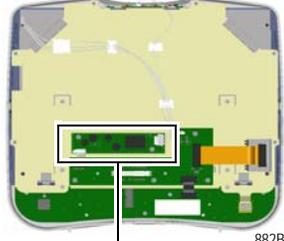
1. If required, remove the handle assembly. Refer to page 7-10.
2. Remove the display assembly from the main unit. Refer to page 7-18.
3. Open the display assembly. Refer to page 7-27.
4. If required, remove the clear alarm light lens.
5. Disconnect the alarm light cable from the alarm light PCB.



6. Carefully remove the defective alarm light PCB and set aside.
7. Insert the new alarm light PCB and connect the alarm light cable to the alarm light PCB connector.
8. Verify the alarm light jumper is secured to both jumper pins. Refer to step 12 on page 7-22.
9. Re-assemble the patient monitor in reverse order.
10. Complete the procedures in “Recommended checkout” on page 7-52.

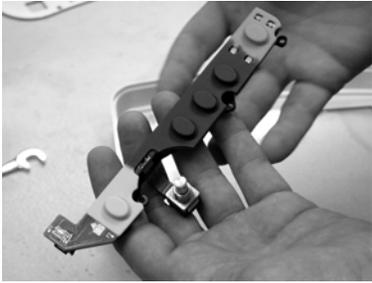
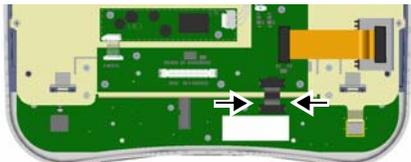
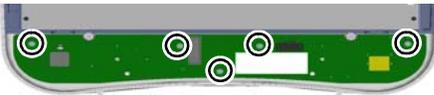
Replace display inverter

Follow the steps below for the patient monitor you are servicing.

Dash 3000 patient monitor with display shield flex circuit	Dash 4000 patient monitor	Dash 5000 patient monitor
<p>1. Flip over the display shield flex circuit. Remove the male end of the two snap rivets.</p> <p>plastic snap rivets (male end)</p>  <p>500A</p> <p>2. Flip over the display shield flex circuit. Disconnect the display shield cable from the backlight inverter PCB.</p> <p>plastic snap rivets (female end)</p>  <p>503A</p> <p>display shield cable</p> <p>3. Use a screw driver to remove the female end of the two snap rivets. Do not re-use these rivets.</p> <p>4. Replace the backlight inverter PCB.</p> <p>5. Reassemble the display assembly in reverse order.</p> <p>6. Complete the procedures in "Recommended checkout" on page 7-52.</p>	<p>1. Open the display assembly. Refer to page 7-27.</p> <p>NOTE If the display backplate is a PCB with an integrated flex assembly, refer to the section Replacing the Backlight Inverter PCB in the Dash Service Manual shipped with the product for information on how to replace the inverter. Dispose of the backplate and mylar insulator strip included in the new inverter replacement kit.</p>  <p>Backplate, PCB with integrated flex Assy Backplate, metal 896A, 879A</p> <p>2. If the backplate is metal, remove and dispose of the backplate. Retain the two screws.</p> <p>3. Disconnect the cables from the backlight inverter PCB connectors.</p>  <p>898A</p> <p>4. Remove and retain the two screws that fasten the backlight inverter PCB to the display mounting plate.</p>  <p>881A</p> <p>5. Install the mylar insulator over the inverter standoffs.</p>  <p>897A</p> <p>6. Install the new inverter using the two retained screws, and reconnect the inverter cables.</p> <p>7. Install the new metal backplate using the two retained screws.</p> <p>8. Reassemble the display assembly in reverse order.</p> <p>9. Complete "Recommended checkout" on page 7-52.</p>	<p>1. Open the display assembly. Refer to page 7-27.</p> <p>2. Disconnect the cable connectors from the backlight inverter PCB connectors.</p>  <p>882B</p>  <p>881A</p> <p>3. Remove and retain the two screws that fasten the backlight inverter PCB to the display mounting sub-plate.</p>  <p>881A</p> <p>4. Install the mylar insulator over the inverter standoffs.</p>  <p>897A</p> <p>5. Install the new inverter using the two retained screws, and reconnect the inverter cables.</p> <p>6. Reassemble the display assembly in reverse order.</p> <p>7. Complete "Recommended checkout" on page 7-52.</p>

Replace keypad assembly or Trim Knob control

Follow the steps below for the patient monitor you are servicing.

Dash 3000 patient monitor with display shield flex circuit	Dash 4000 patient monitor	Dash 5000 patient monitor
<p>1. Remove the rubber knob from the Trim Knob control shaft.</p> <p>2. Use an 11mm wrench or nut driver to remove the nut holding the Trim Knob control's shaft to the display bezel.</p>  <p>589A</p> <p>3. Open the display assembly. Refer to page 7-27.</p> <p>4. Remove the three screws holding the keypad assembly to the display bezel.</p>  <p>three screws</p> <p>590A</p>  <p>591A</p> <p>Keypad Assembly</p> <p>5. Place the new keypad assembly in the display bezel.</p> <p>6. Reattach the keypad cable.</p>	<p>1. Remove the rubber knob from the Trim Knob control shaft.</p> <p>2. Use an 11mm wrench or nut driver to remove the nut holding the Trim Knob control's shaft to the display bezel.</p>  <p>589A</p> <p>3. Open the display assembly. Refer to page 7-27.</p> <p>4. Follow these steps to remove the keypad assembly from the front bezel:</p> <p>a. Gently squeeze the latch release and pull up to disconnect the keypad cable from the keypad PCB.</p>  <p>883A</p> <p>b. Remove the five screws holding the keypad assembly to the front bezel.</p>  <p>883A</p> <p>c. Lift the mounting plate. Refer to steps 4b and 4c on page 7-31.</p> <p>5. Place the new keypad assembly in the display bezel.</p> <p>6. If required, replace the grounding strap.</p>	<p>1. Remove the rubber knob from the Trim Knob control shaft.</p> <p>2. Open the display assembly. Refer to page 7-27.</p> <p>3. Remove the keypad assembly from the front bezel.</p> <p>a. Gently squeeze the latch release and pull up to disconnect the keypad cable from the keypad PCB. Disconnect the display flex.</p>  <p>8831A</p> <p>b. If required, lift the mounting plate off the display bezel bosses to provide access to the keypad mounting screws.</p> <p>c. Remove the five screws holding the keypad assembly to the front bezel, and remove the keypad assembly.</p>  <p>8832A</p> <p>4. Place the new keypad assembly in the display bezel.</p> <p>5. Reattach the keypad cable.</p>

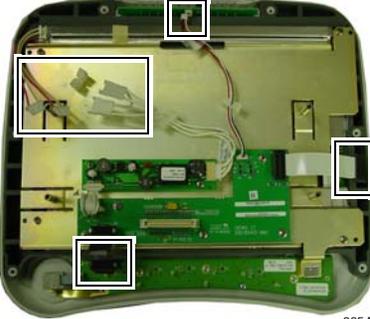
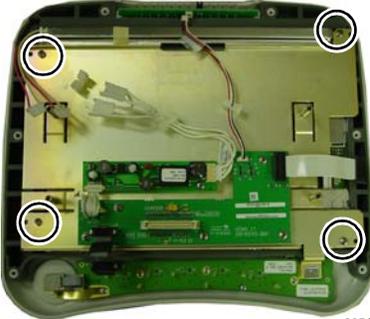
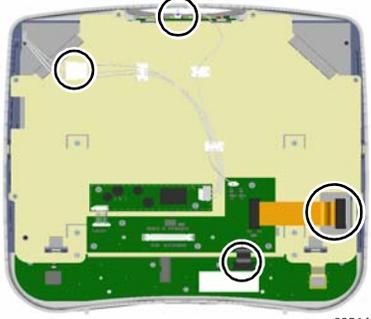
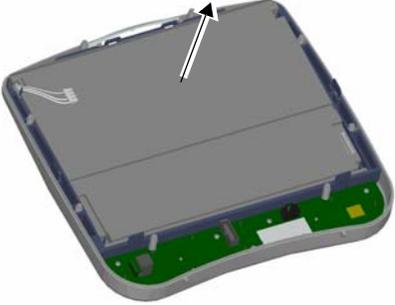
Dash 3000 patient monitor with display shield flex circuit	Dash 4000 patient monitor	Dash 5000 patient monitor
<p>7. Secure the new keypad with the screws.</p> <p>8. Make sure the washer tab fits in the retaining slot of the Trim Knob control's shaft and re-install the 11mm nut.</p> <p>9. Secure the Trim Knob by reassembling the display assembly in reverse order.</p> <p>10. Complete the procedures in "Recommended checkout" on page 7-52.</p>	<p>7. Reattach the keypad cable.</p> <p>8. Secure the new keypad with the screws.</p> <p>9. Make sure the washer tab fits in the retaining slot of the Trim Knob control's shaft and re-install the 11mm nut.</p> <p>10. Secure the Trim Knob and reassemble the display assembly in reverse order.</p> <p>11. Complete the procedures in "Recommended checkout" on page 7-52.</p>	<p>6. Secure the new keypad with the screws.</p> <p>7. Secure the Trim Knob and reassemble the display assembly in reverse order.</p> <p>8. Complete the procedures in "Recommended checkout" on page 7-52.</p>

Replace display components without LCD

NOTE

These instructions are to replace the display components, not the LCD. If the LCD fails, order the Display Assembly field replaceable unit.

1. Open the display assembly. Refer to page 7-27.
2. Remove the LCD display. Follow the steps for the patient monitor you are servicing.

Dash 3000 patient monitor with display shield flex circuit	Dash 4000 patient monitor	Dash 5000 patient monitor
<p>a. Peel back and remove the rubber display isolator from around the display.</p>  <p style="text-align: right; font-size: small;">504A</p> <p>b. Go to next step.</p>	<p>a. Disconnect the five cable connectors.</p>  <p style="text-align: right; font-size: small;">885A</p> <p>b. Remove the four screws anchoring the mounting plate to the LCD display.</p>  <p style="text-align: right; font-size: small;">885A</p> <p>c. Remove the mounting plate and set aside.</p>	<p>a. Disconnect the four or five cable connectors, as required.</p>  <p style="text-align: right; font-size: small;">8851A</p> <p>b. Remove the mounting plate and set aside.</p> <p>c. Lift out the LCD display from the rubber display isolator and set aside.</p>  <p style="text-align: right; font-size: small;">8871A</p>

- d. Use a 5 mm nut driver to remove the four stand-off screws anchoring the display to the rubber display isolator.

NOTE

The stand-offs are shimmed at the factory. Save the washers and make sure you put them in the same location when you reassemble the display



886A

- e. Lift out the LCD display from the rubber display isolator and set aside.



887A

3. Dampen a clean, soft cloth with window cleaner and carefully clean and dry the LCD display and the display filter to remove fingerprints and dust particles.
4. If required, replace the display filter, front bezel, and insert.
5. Install the existing LCD display and reassemble the display assembly in reverse order.
6. Complete the procedures in **“Recommended checkout”** on page 7-52.

Replace main unit parts

Use the following procedures to replace the main unit parts:

1. “Remove or replace handle assembly” on page 7-10.
2. “Remove or replace display assembly” on page 7-18.
3. On the following pages find the steps for the part and Dash model you are servicing:
 - ◆ “Replace wireless card” on page 7-34.
 - ◆ “Replace DAS assembly” on page 7-37.
 - ◆ “Replace NBP pump assembly” on page 7-40.
 - ◆ “Replace writer assembly or writer flex” on page 7-41.
 - ◆ “Replace speaker assembly” on page 7-42.
 - ◆ “Replace CPU/battery housing assembly” on page 7-44.
 - ◆ “Replace power supply assembly” on page 7-48.

Replace wireless card

Complete the following procedures to replace the wireless card.

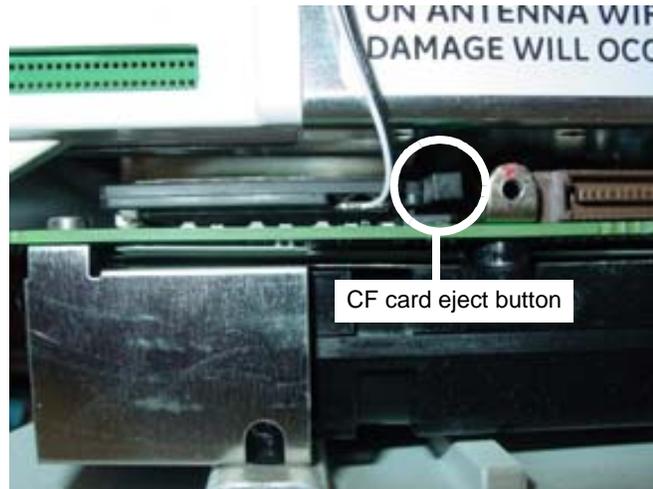
1. Remove the two screws holding the handle to the patient monitor. Refer to page 7-10.
2. Remove the display assembly from the main unit. Refer to page 7-18.
3. Release the antenna cables from underneath the left side of the antenna label to allow enough slack in the cable to allow the wireless card to be removed from the card slot.



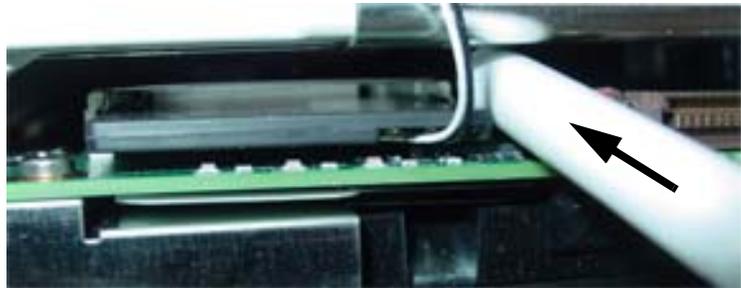
961B

4. Remove the wireless card from the card slot by pressing the CF card eject button. To press the CF card eject button, carefully insert the

flat end of a pen approximately 1- inch deep and push the CF flash card eject button as shown.

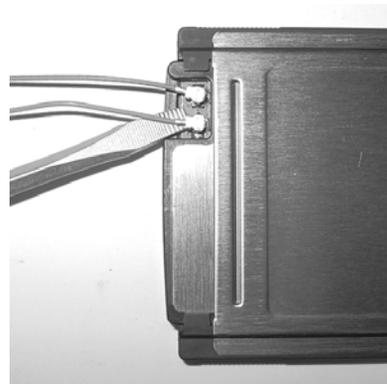


973A



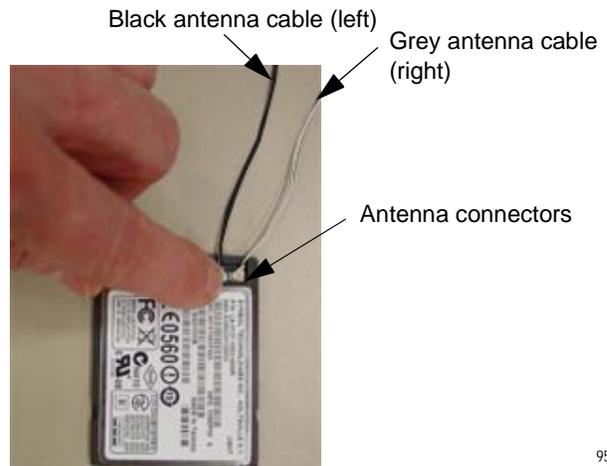
974A

5. Carefully disconnect the antennas using a pen tip, small screwdriver, or needle nose pliers.



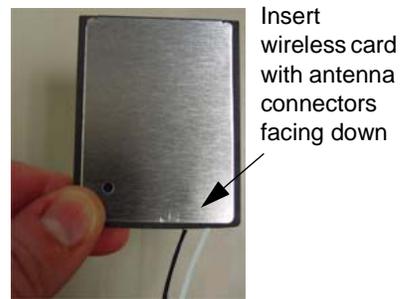
942A

6. Reconnect the antennas connectors to the replacement wireless card. The black antenna cable connects to the connector on the left and the grey antenna cable on the right.



959C

7. Reinsert the wireless card into the PC card bracket.



975B

8. Re-secure the antenna cables underneath the antenna label as shown.



962B

Replace DAS assembly

WARNING

DAS ASSEMBLY — Do *not* open the DAS assembly as this breaks the isolation barrier which may result in patient death or serious injury. The DAS assembly is a field replaceable unit only. There are NO field repairs or adjustments for the DAS assembly.

CAUTION

The patient monitor requires software version 5 or later to operate with the Masimo SET SPO2 and 4 BP SuperStat DAS upgrade. If the installation of software version 5 or later is required, GE recommends that you **FIRST** install the software. Then, install the Masimo SET SPO2 and 4 BP SuperStat hardware upgrade.

1. Remove the two screws holding the handle to the patient monitor. Refer to page 7-10.
2. Remove the display assembly from the main unit. Refer to page 7-18.
3. Remove the four screws anchoring the Data Acquisition System (DAS) assembly in place.

CAUTION

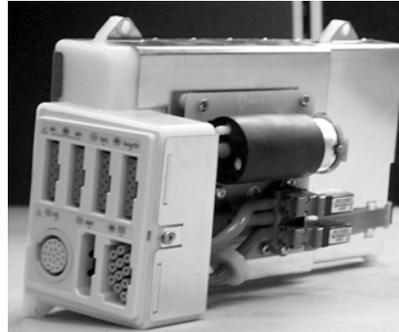
CAREFULLY remove the DAS assembly so that you do NOT hit the components on the CPU/battery housing assembly.

On the Dash 5000 patient monitor the top two screws attach to a bracket, not the rear housing as shown.



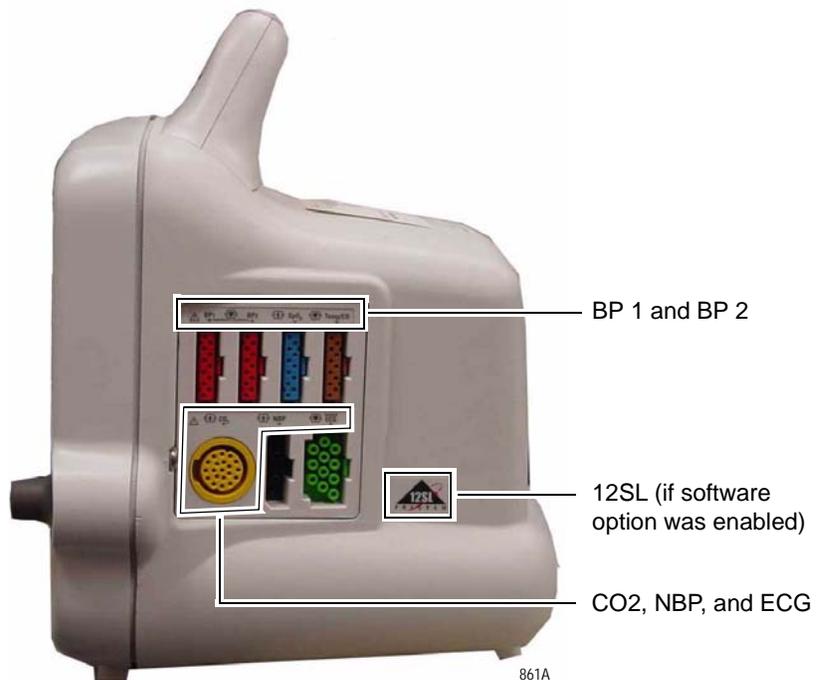
545A

4. Remove the DAS assembly by first pulling the *left* side out 1/4-inch, then sliding the whole assembly out of the patient monitor. If the Wireless LAN option is installed, use a needle nose pliers to remove the antennae by disconnecting both coax connectors from the compact flash card.



525A

5. Replace the DAS assembly.
6. Reassemble the unit reversing the order of removal steps.
7. If you installed the Generic Ohmeda DAS assembly, place the labels as shown below.



861A

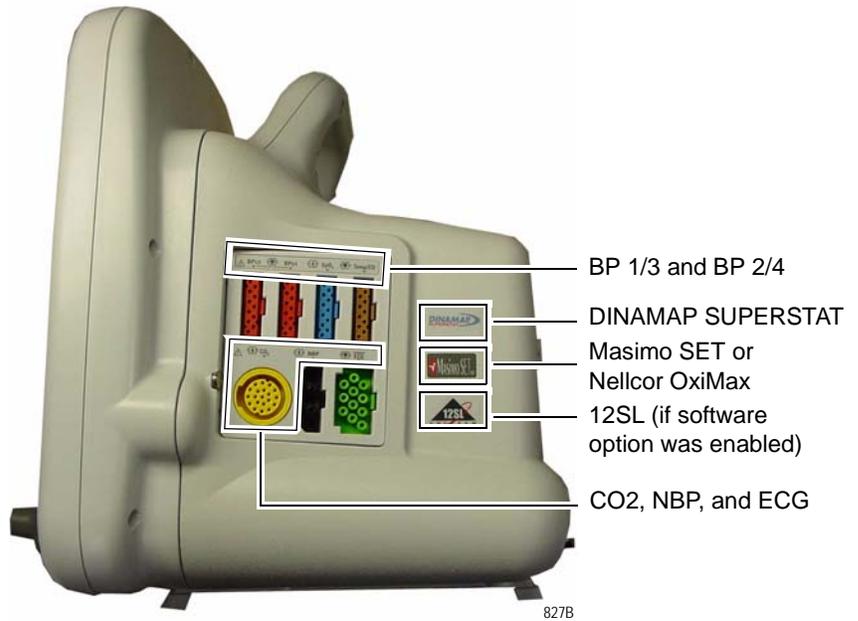
NOTE

The BP 1 and BP 2 label looks similar to the example below.



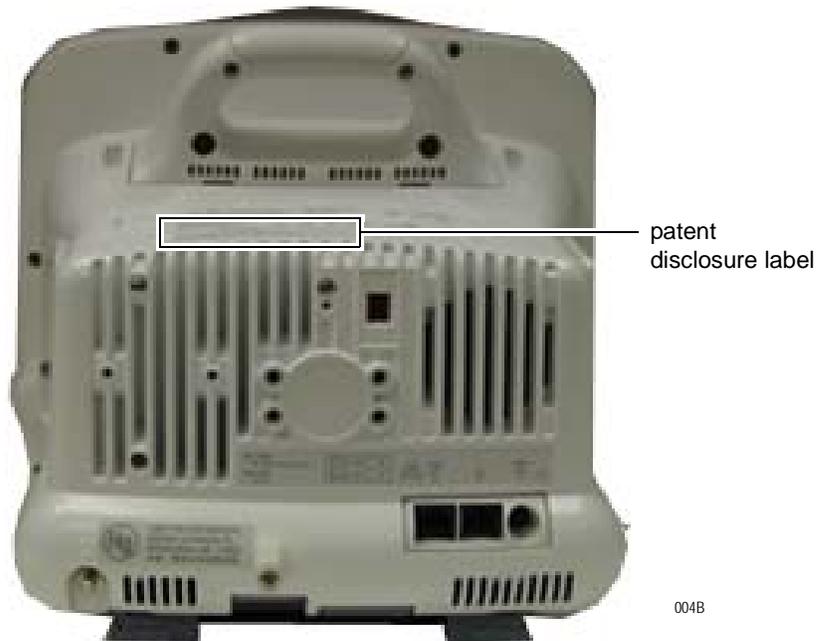
862A

8. If you installed the Nellcor OxiMax or Masimo SET SPO2 and 4 BP SuperStat upgrade, place the labels as shown below.



NOTE

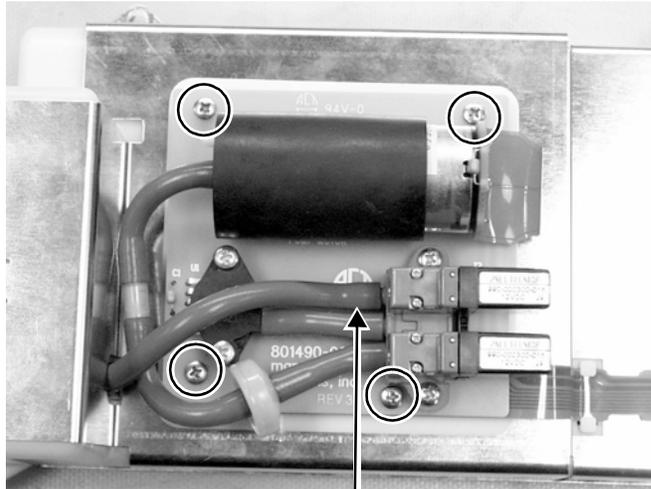
The BP 1/3 and BP 2/4 label looks similar to the example below.



9. Complete the procedures in “Recommended checkout” on page 7-52.

Replace NBP pump assembly

1. Remove the DAS assembly according to steps starting on page 7-37.
2. Remove the four screws and remove the NBP assembly from the cover of the DAS assembly.
3. Disconnect the tube from the inner solenoid going into the NBP assembly.

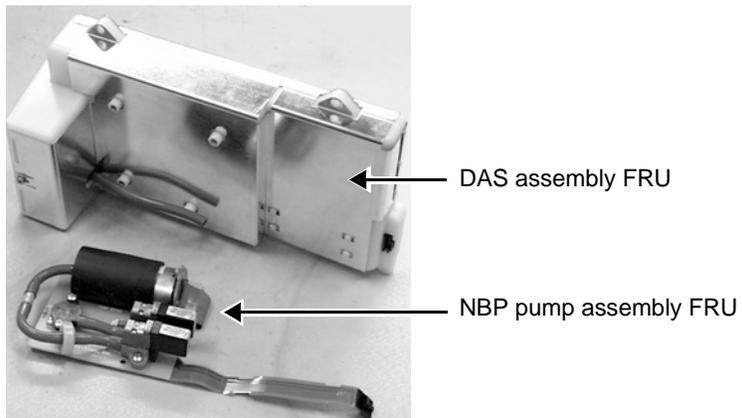


570A

4. Using a small, flat-blade screwdriver, remove the connector from the NBP assembly to the DAS assembly.



527A



526A

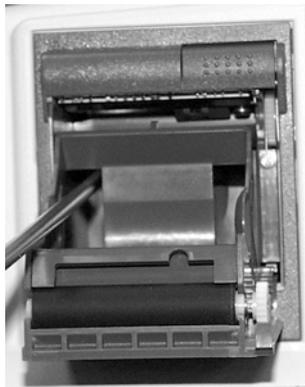
5. Attach the NBP assembly to the DAS assembly. Do *not* forget:
 - ◆ the four mounting screws,
 - ◆ the tube connection, and
 - ◆ the flex connector.
6. Reassemble the patient monitor in reverse order.

Replace writer assembly or writer flex

1. Remove the DAS assembly according to steps starting on page 7-37.
2. Remove the writer by unscrewing the two captive screws inside the writer.

CAUTION

Approach the screw from *below* the top bar on the paper roll holder so that you do not damage the unit.

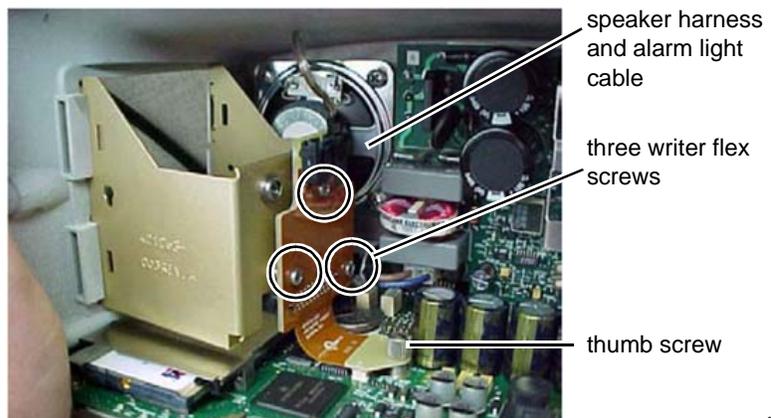


533A

3. Unscrew the thumb screw anchoring the writer cable to the main assembly and disconnect the flex cable from the CPU/battery housing assembly.

NOTE

When securing the thumb screw for reassembly, first finger-tighten the thumb screw. Then, use a flat-head screw driver to tighten the screw an additional 1/4 turn.

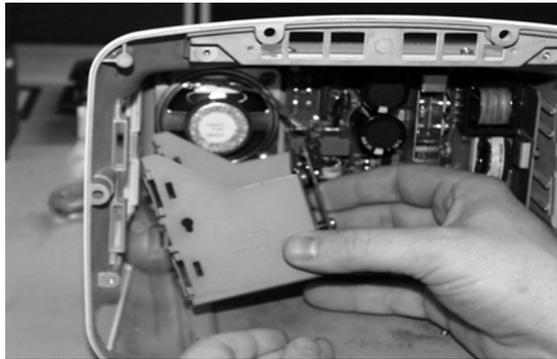


562B

4. Remove the speaker harness and the optional alarm light cable harness from the top of the writer board.
5. Remove three screws holding the writer flex to the writer bracket.
6. Replace writer assembly and/or writer flex and reassemble the patient monitor in reverse order.
7. Complete the procedures in “Recommended checkout” on page 7-52.

Replace speaker assembly

1. Remove the DAS assembly according to steps starting on page 7-37.
2. Remove the writer assembly/writer flex according to steps on page 7-41.
3. Remove the writer bracket from the frame by squeezing the sides together.



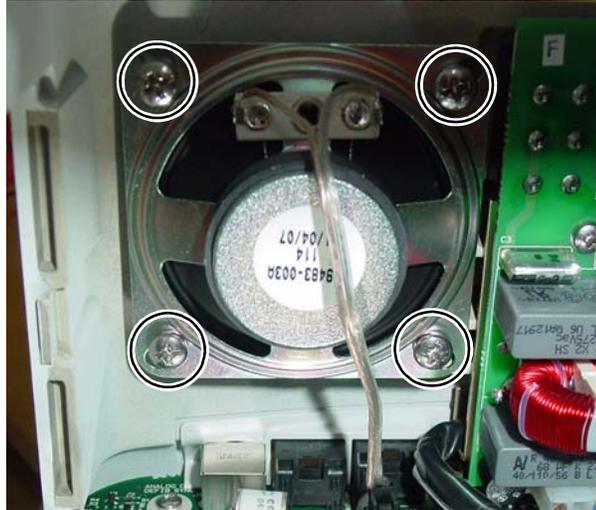
532A

4. Disconnect the speaker cable connector from the processor board.



586B

5. Remove the four screws anchoring the speaker to the frame. Remove the speaker from the unit.



586B

6. Install the new speaker in the unit.
7. Fasten the speaker with the four screws.
8. Connect the speaker cable connector to the processor board.
9. Reassemble the patient monitor in reverse order.

NOTE

When securing the thumb screw on the writer flex, first finger-tighten the thumb screw. Then, use a flat-head screw driver to tighten the screw an additional 1/4 turn.

10. Complete the procedures in **“Recommended checkout”** on page 7-52.

Replace CPU/battery housing assembly

1. For Dash 3000 patient monitors, remove the handle assembly. Refer to page 7-10. For Dash 4000 or 5000 patient monitors, go to the next step.
2. Remove the display assembly from the main unit. Refer to page 7-18.
3. If present, remove the wireless card.

CAUTION

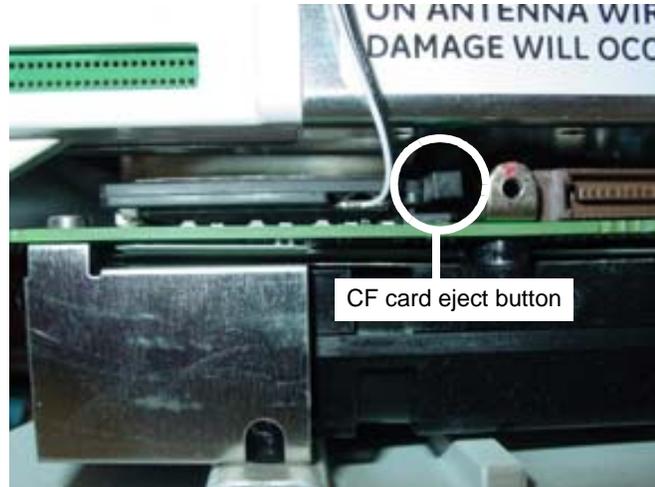
Do not pull on the 802.11a/b/g antennas or use them to remove the wireless card. They can easily be damaged.

- a. Release the antenna cables from underneath the left side of the antenna label to allow enough slack in the cable to allow the wireless card to be removed from the PC card bracket.

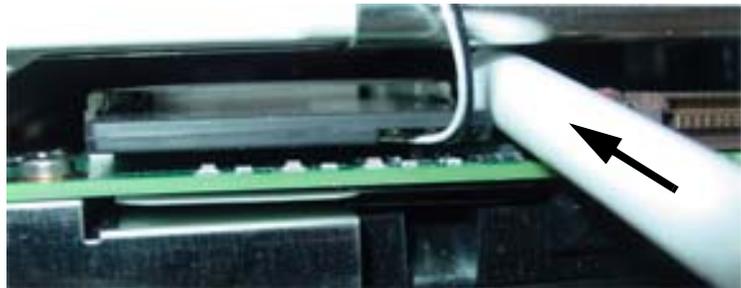


961B

- b. Remove the wireless card from the PC card bracket by pressing the CF card eject button. To press the CF card eject button, carefully insert the flat end of a pen approximately 1- inch deep and push the CF flash card eject button as shown.

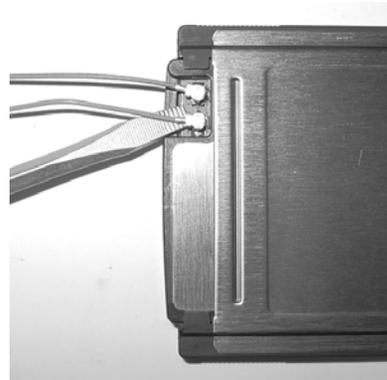


973A



974A

- c. Carefully disconnect the antennas using a pen tip, small screwdriver, or needle nose pliers.



942A

- d. Place the wireless card in a safe place.
4. Remove the DAS assembly according to steps starting on page [7-37](#).

5. Unscrew the thumb screw anchoring the writer cable to the CPU assembly and disconnect the flex cable from the CPU/battery housing assembly.
6. Remove the three screws anchoring the battery door assembly to the rear housing. Remove the battery door assembly.



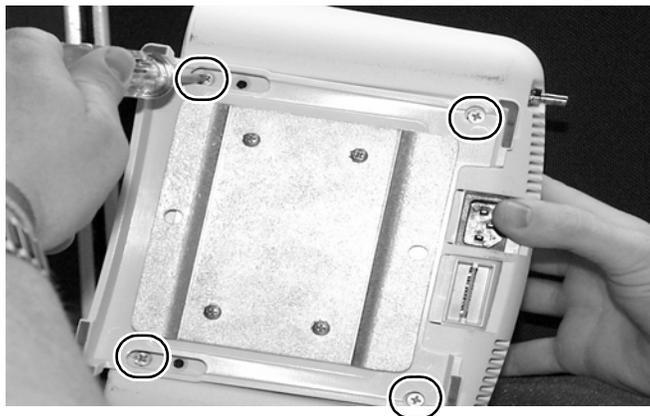
Screws holding battery door.

581B



895A

7. If replacing the battery door only, install the new door and reassemble the patient monitor. Otherwise, continue with the next step.
8. Remove the four panhead screws anchoring the CPU/battery housing assembly to the frame. These screws are attached at the bottom of the unit.



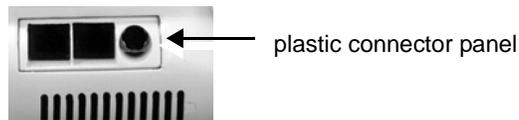
517A

9. *Carefully* pull the CPU/battery housing assembly from the unit.



547A

10. Remove the plastic connector panel from the three connectors at the back of the CPU/battery housing assembly. Install this panel on the new CPU/battery housing assembly before you slide the new assembly into the rear housing.



572A

11. Install the new assembly in the unit.

NOTE

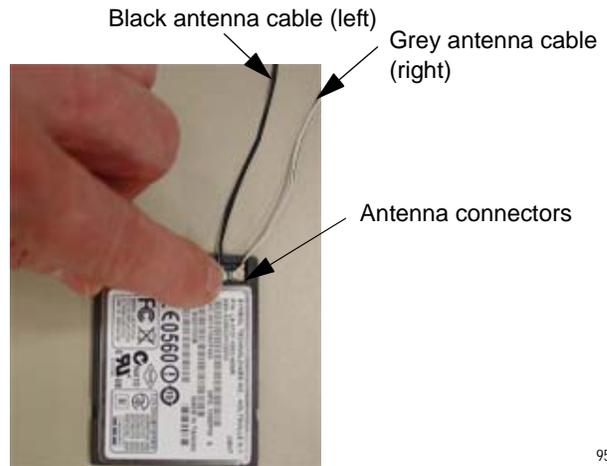
When securing the thumb screw on the writer flex, first finger-tighten the thumb screw. Then, use a flat-head screw driver to tighten the screw an additional 1/4 turn.

12. If present, install the wireless card into the new CPU/battery housing assembly.

CAUTION

Do not pull on the 802.11a/b/g antennas or use force when connecting to the wireless card. Handle the antennas and connectors carefully as they can easily be damaged.

- a. Connect the antenna cables to the wireless card (black cable to the left and grey cable to the right).

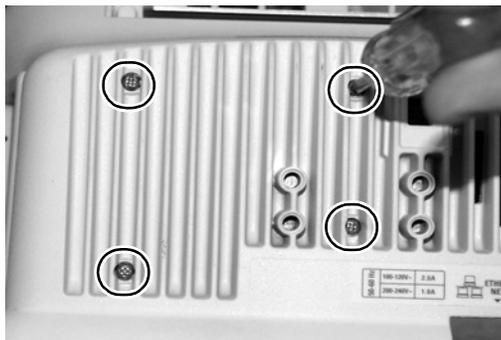


959C

- b. With the antenna connection facing down, install the card into the card bracket.
13. Reassemble the patient monitor in reverse order.
 14. Be sure to complete the following procedures in **“Recommended checkout”** on page 7-52:
 - ◆ electrical safety tests
 - ◆ checkout procedures
 - ◆ calibration
 15. Also configure the patient monitor and enable the software options previously installed. Refer to **“Configuration”** on page 4-1.

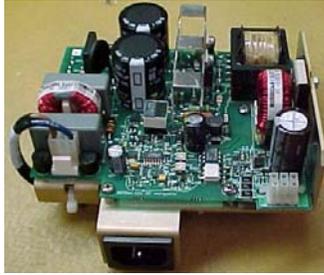
Replace power supply assembly

1. Remove the CPU/battery housing assembly according to steps starting on page 7-44.
2. While holding the power supply assembly with one hand, remove the four screws from the back of the unit.



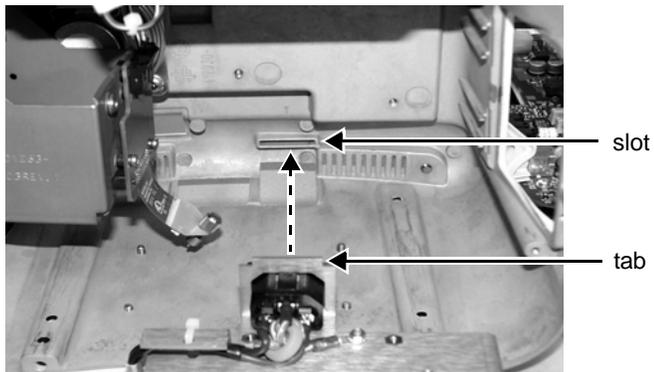
575A

3. Remove the assembly from the unit.



569A

4. Align the tab on the power supply mounting bracket with the slot in the rear housing and install the new assembly in the unit. Fasten the assembly to the rear housing with the new screws.



576A

NOTE

When securing the thumb screw on the writer flex, first finger-tighten the thumb screw. Then, use a flat-head screw driver to tighten the screw an additional 1/4 turn.

5. Reassemble the patient monitor in reverse order.
6. Complete the procedures in **“Recommended checkout”** on page 7-52.

Replace battery door

1. Remove the three screws anchoring the battery door assembly to the rear housing. Remove the battery door assembly.



Screws holding battery door.

581B



895A

2. Install the new door and reassemble the patient monitor.

Replace foot

1. Remove four screws holding the foot to the patient monitor.



926A

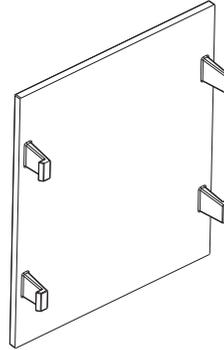
NOTE

Your unit may or may not have a mounting plate. The same four screws anchor the mounting plate and foot.

2. Replace the foot and screw to the patient monitor.

Replace writer cover

Dash patient monitors without a writer have a blank door where the writer assembly would be installed. The door snaps into the writer space above the battery door.



927A

Recommended checkout

After reassembling the patient monitor, ALWAYS complete the electrical safety tests, checkout procedures, calibration tests, and regular maintenance procedures identified and described in this section. Safety and functional checkout tests should be documented in the checklist provided in “[Checklist](#)” on page D-1.

Recommended calibration, electrical safety tests, and checkout procedures			
Replacement procedure	Calibration tests	Checkout procedures	Electrical safety tests
Handle assembly	None	<ul style="list-style-type: none"> ■ “Patient monitor power-up tests” on page 8-21. ■ “Display test” on page 8-45. ■ “Wireless antenna signal strength test (option)” on page 8-49. Use this procedure if the wireless option is installed. ■ “Wireless LAN test (option)” on page 8-52. Use this procedure if the wireless option is installed. 	<ul style="list-style-type: none"> ■ “Electrical safety tests” on page 8-4.
<ul style="list-style-type: none"> ■ Display assembly ■ Display assembly components ■ Display inverter assembly 	None	<ul style="list-style-type: none"> ■ “Patient monitor power-up tests” on page 8-21. ■ “Display test” on page 8-45. 	
Speaker	None	<ul style="list-style-type: none"> ■ “Patient monitor power-up tests” on page 8-21. ■ “Speaker test” on page 8-46. ■ “Wireless antenna signal strength test (option)” on page 8-49. Use this procedure if the wireless option is installed. ■ “Wireless LAN test (option)” on page 8-52. Use this procedure if the wireless option is installed. 	
Keypad assembly/ Trim Knob	None	<ul style="list-style-type: none"> ■ “Patient monitor power-up tests” on page 8-21. ■ “Display test” on page 8-45. 	

Recommended calibration, electrical safety tests, and checkout procedures			
Replacement procedure	Calibration tests	Checkout procedures	Electrical safety tests
DAS assembly	"NBP calibration" on page 8-37.	<ul style="list-style-type: none"> ■ "ECG tests" on page 8-22. ■ "Respiration tests" on page 8-25. ■ "Temperature tests" on page 8-26. ■ "Cardiac output tests (option)" on page 8-27. ■ "Invasive blood pressure tests (option)" on page 8-27. ■ "Pulse oximetry tests for GE Ohmeda SPO2 oximeter" on page 8-30. Use this procedure if you installed a GE Ohmeda DAS assembly. ■ "Pulse oximetry tests for Masimo SET SPO2" on page 8-32. Use this procedure if you installed a Masimo DAS assembly. ■ "Pulse oximetry tests for Nellcor OxiMax SPO2" on page 8-33. Use this procedure if you installed a Nellcor OxiMax DAS assembly. ■ "Noninvasive blood pressure tests" on page 8-35. ■ "Wireless antenna signal strength test (option)" on page 8-49. Use this procedure if the wireless option is installed. ■ "Wireless LAN test (option)" on page 8-52. Use this procedure if the wireless option is installed. ■ Refer to the CO2 chapter in the patient monitor's operator manual to checkout the mainstream End-tidal CO₂. ■ To check out the sidestream End-tidal CO₂, refer to the documentation that came with the module. 	<ul style="list-style-type: none"> ■ "Electrical safety tests" on page 8-4.

Recommended calibration, electrical safety tests, and checkout procedures			
Replacement procedure	Calibration tests	Checkout procedures	Electrical safety tests
NBP assembly	"NBP calibration" on page 8-37.	<ul style="list-style-type: none"> ■ "Noninvasive blood pressure tests" on page 8-35. 	<ul style="list-style-type: none"> ■ "Electrical safety tests" on page 8-4.
Wireless LAN	None	<ul style="list-style-type: none"> ■ "Patient monitor power-up tests" on page 8-21. ■ "Network test (option)" on page 8-46. ■ "Wireless antenna signal strength test (option)" on page 8-49. ■ "Wireless LAN test (option)" on page 8-52. 	
Wireless card	None	<ul style="list-style-type: none"> ■ "Wireless antenna signal strength test (option)" on page 8-49. ■ "Wireless LAN test (option)" on page 8-52. 	
Power supply assembly	None	<ul style="list-style-type: none"> ■ "Patient monitor power-up tests" on page 8-21. ■ "Wireless antenna signal strength test (option)" on page 8-49. Use this procedure if the wireless option is installed. ■ "Wireless LAN test (option)" on page 8-52. Use this procedure if the wireless option is installed. 	
CPU	<p>"End-tidal CO2 test (option)" on page 8-44.</p> <p>"NBP calibration" on page 8-37.</p>	<ul style="list-style-type: none"> ■ "Patient monitor power-up tests" on page 8-21. ■ "Analog output and defibrillator synchronization tests" on page 8-40. ■ "Graph or print tests (option)" on page 8-44. ■ "Display test" on page 8-45. ■ "Speaker test" on page 8-46. ■ "Network test (option)" on page 8-46. ■ "Wireless antenna signal strength test (option)" on page 8-49. Use this procedure if the wireless option is installed. ■ "Wireless LAN test (option)" on page 8-52. Use this procedure if the wireless option is installed. ■ "TRAM-rac 2A module housing peripheral device test (option)" on page 8-54. 	
Writer, writer flex	None	<ul style="list-style-type: none"> ■ "Patient monitor power-up tests" on page 8-21. ■ "Graph or print tests (option)" on page 8-44. ■ "Wireless antenna signal strength test (option)" on page 8-49. Use this procedure if the wireless option is installed. ■ "Wireless LAN test (option)" on page 8-52. Use this procedure if the wireless option is installed. 	