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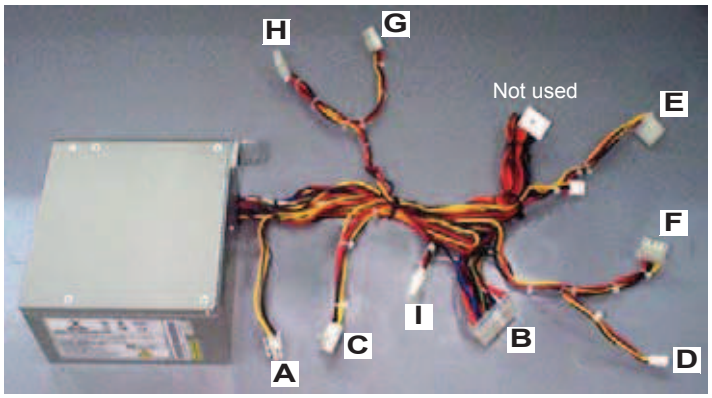
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8-5-16-4 BEP2 Power Supply Installation Procedure

Note: When performing this procedure, it is recommended to work with the BEP2 lying on its side (as shown in Figure 8-78 on page 8-91), to provide easier access.

NOTE: For clarification, the letters appearing in square brackets in the following steps correspond to the letters shown in the illustration of the BEP2 Power Supply and cable connectors in Figure 8-82 below.



	Cable Connections
A	Motherboard (beside CPU)
B	Motherboard (beside ECG)
C	BEP rear
D	Floppy Disk
E	PC-VIC
F	Hard Disk
G	CD-RW
H	MOD
I	ECG

Figure 8-82 BEP2 Power Supply with Cable Loom and Connectors

1.) Route the cable loom down into the cavity of the BEP casing (placing the cable labelled [**E**] in Figure 8-82 at the front of the loom) and arrange each of the cables in the approximate position. Carefully feed the cable connectors underneath the data cables.

2.) Holding the new BEP2 power supply in one hand, connect the 4-pin external connector [**A**] to the motherboard (beside the CPU).

3.) Slide the power supply into the BEP power supply location (see Figure 8-83 below) and push the metal stabilizing bracket (located on the side of the power supply) *downwards* to hold the power supply in position.

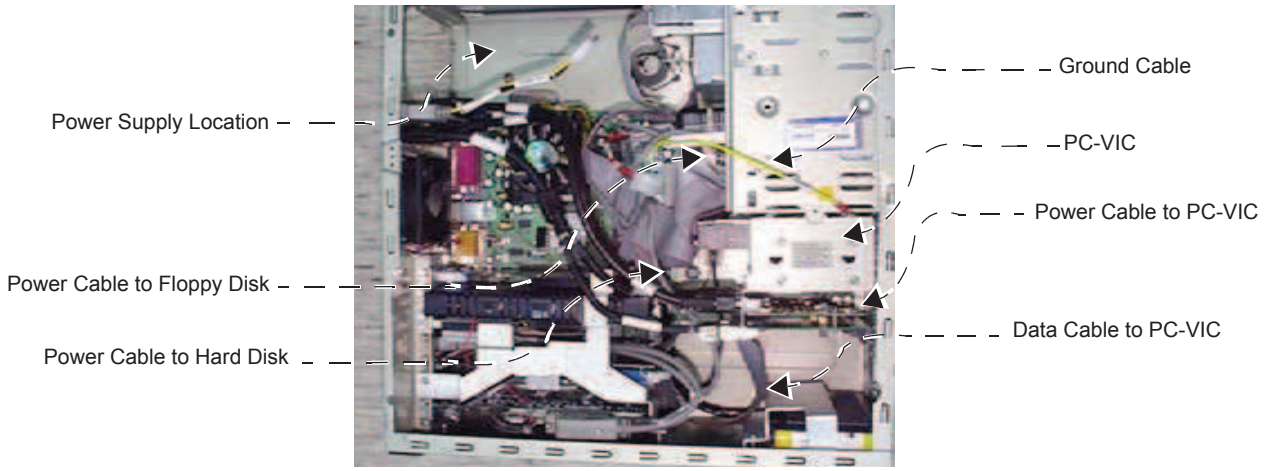


Figure 8-83 BEP2 Power Supply Location

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4.) Re-connect the mains power cable [**B**] to the motherboard (beside the ECG location).

5.) Re-connect the mains power cable (4-pin flat connector [**C**] - Part No. 2252981) to the rear of the BEP, and fasten with cable ties.

6.) Re-connect the power cable to the Floppy Disk (labelled [**D**] in Figure 8-82); refer also to Figure 8-83, above.

7.) Slide the PC-VIC & hard disk out sufficiently to be able to re-connect the power cable (labelled [**E**] in Figure 8-82) to the PC-VIC; refer also to Figure 8-83, above.

8.) Re-connect the data cable to the PC-VIC (see Figure 8-83, above).

9.) Re-connect the power cable to the Hard Disk (labelled [**F**] in Figure 8-82); refer also to Figure 8-83, above.

10.) Return the Ground cable and screw that fastens the PC-VIC in position, as shown in Figure 8-80 on page 8-92.

11.) Re-connect the power cables to the media drives (and CD-RW [**G**]) and MOD [**H**] .

12.) Carefully place the ECG Module in the front of the BEP, sliding it into position and re-connecting the power cable [**I**] to the rear of the ECG Module. (Refer to the BEP2 - ECG Module Installation Procedure on page 8 - 86).

13.) Gently slide the power supply up into the final position in the BEP casing.

14.) Check that all cable connections are secured firmly and fasten with additional cable ties, as necessary.

NOTE: Make sure that all data cables, memory boards, etc. are securely in position and that nothing has erroneously become disconnected during the power supply removal procedure.

15.) Stand the BEP2 upright.

16.) At the rear of the BEP2, return and loosely tighten the four screws that fasten the power supply in position on the BEP, as shown in Figure 8-77 on page 8-91.

17.) Return the BEP front cover as described in the BEP2 - Front Cover Installation Procedure on page 8 - 68.

18.) Return the one screw previously removed from the top of the side cover, as shown in Figure 8-76 on page 8-90.

19.) Fully tighten the four screws at the rear of the BEP (refer to step 16) to secure the power supply firmly in position.

20.) Return the BEP2 side covers, as described in the BEP2 - Side Cover Installation Procedure on page 8 - 66.

21) Carefully return the BEP2 to the original position on the machine chassis, and proceed as follows:

a.) Re-connect all the cables on the rear of the BEP (refer to the step-by-step instructions provided in Back End Processor Installation Procedure on page 8 - 60).

b.) Return the screws of the *lower* left and *right* BEP brackets see Figure 8-54 on page 8-59.

a.) Return the two screws of *upper* BEP bracket (Figure 8-54).

22.) Replace the Vivid™ 3 rear cover - refer to the Rear Cover Installation Procedure on page 8 - 7.

23) Remove the Vivid™ 3 left and right side covers - refer to the Side Covers Installation Procedure on page 8 - 4.

24) Re-connect the mains AC power cable for the mains power wall outlet.

25) Turn ON the main circuit breaker located on rear of the Vivid™ 3.

26) Turn ON the Vivid™ 3 by pressing the ON/OFF button on the Control Console.

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8-5-17 Hard Disk Replacement Procedure

8-5-17-1 Tools

Use the appropriate flat and Phillips-type screw drivers and a wire cutter as indicated in the Hard Disk replacement procedure.

8-5-17-2 Preparation

Shut down the Vivid™ 3 ultrasound unit, as described in *Chapter 3 - Installation*.

8-5-17-3 Hard Disk Removal Procedure

1) Remove the left cover, as described *Side Covers Removal Procedure* section, page 8-4.

2.) Remove the BEP side cover as described in the appropriate procedure:
BEP1 - Left and Right Side Cover Removal Procedure on page 8 - 64, or BEP2 - Side Cover Removal Procedure on page 8 - 66.

3.) Remove the screw that holds the hard disk module in position (as shown in Figure 8-74 below).

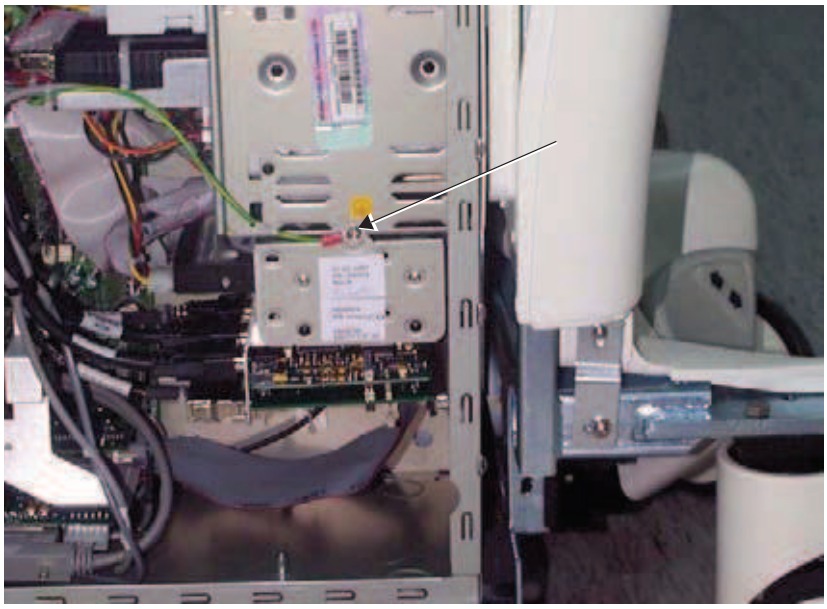


Figure 8-84 Hard Disk Removal 1

4) Carefully slide the module out from the unit.

5) Remove each of the four screws (two on each side), as shown in Figure 8-85 on page 8-97.

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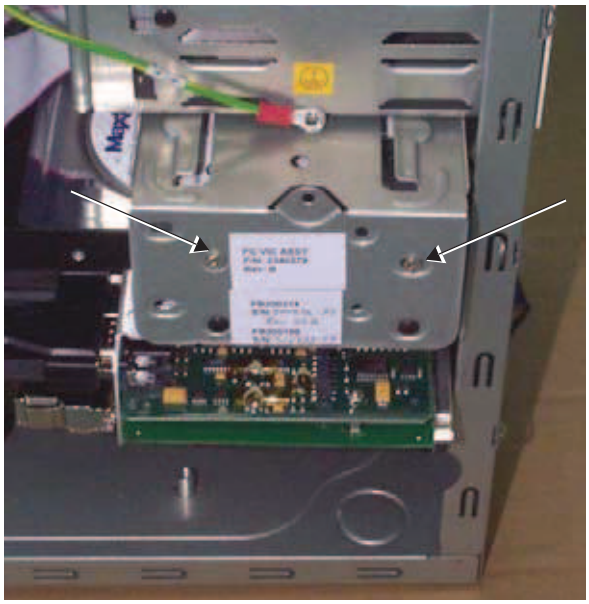
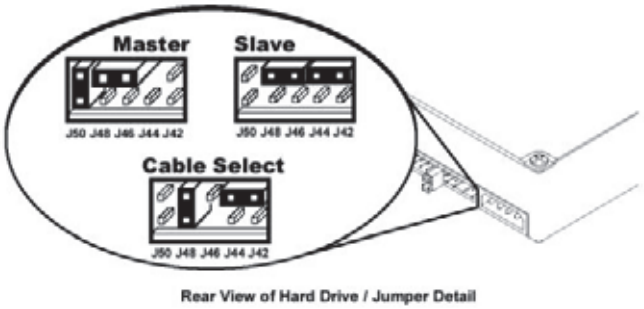


Figure 8-85 Hard Disk Removal 2

6.) Disconnect all the cables at the rear of the hard disk.
7.) Remove the hard disk.

8-5-17-4 Hard Disk Installation Procedure

Note: Before installing a new hard disk, make sure the jumper settings are as shown below:



Rear View of Hard Drive / Jumper Detail

1) Place the new hard disk in position in the hard disk module holder.
2.) Reconnect all the cables at the rear of the hard disk.
3) Fasten each of the four screws (two on each side), as shown in Figure 8-85 on page 8-97.
4) Carefully slide the module holder into position in the unit.
5) Return and fasten the screw that holds the hard disk module in position (as shown in Figure 8-74 on page 8-88

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6) Install the BEP side cover, as described in the appropriate procedure:
BEP1 - Left and Right Side Cover Removal Procedure on page 8 - 64, or BEP2 - Side Cover Installation Procedure on page 8 - 66.

7) Return the Vivid™ 3 left cover, as described in the Side Covers Installation Procedure on page 8 - 4.

Note: When a new hard disk arrives from the manufacturer, usually it is partitioned and ready for software installation.
Refer to Software Loading on page 8 - 121 for software installation instructions .

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Section 8-6
Lower Section Components Replacement

8-6-1 AC Distribution Box Replacement Procedure

8-6-1-1 Tools

Use the appropriate flat and Phillips-type screw drivers and a wire cutter as indicated in the AC Distribution Box replacement procedure.

8-6-1-2 Preparation

Shut down the Vivid™ 3 ultrasound unit, as described in *Chapter 3 - Installation*.

8-6-1-3 AC Distribution Box Removal Procedure

1) Remove the Vivid™ 3 left, right and rear covers, as described in the Side Covers Removal Procedure on page 8 - 4, and Rear Cover Removal Procedure on page 8 - 7.
2) Unplug all the internal cables from the AC Distribution Box and the voltage setting plugs at Jumper1 and Jumper2.
3) Unscrew the Ground cable located at the top-right corner of the AC Distribution Box.
4) Remove the two screws that are located on the lower bracket of the AC Distribution Box.

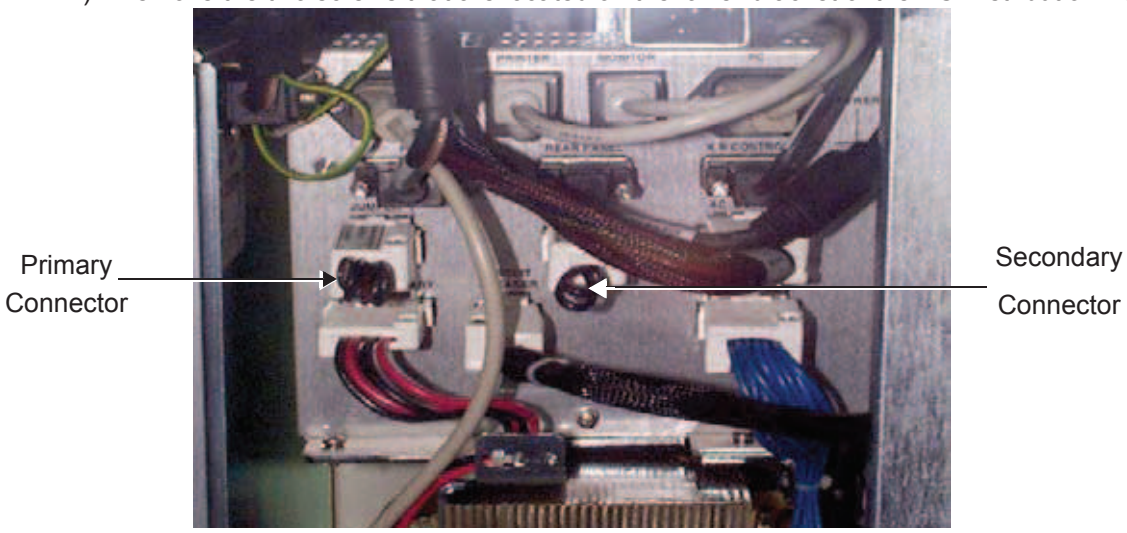


Figure 8-86 Lower Bracket of the AC Distribution Box

5) Gently pull the AC Distribution Box towards you, pulling it out through the rear of the machine.

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8-6-1-4 AC Distribution Box Installation Procedure

1) Insert the AC Distribution Box through the rear of the machine and then push it into its original position.
2) Fasten the AC Distribution Box using the two screws located in the lower bracket of the AC Distribution Box.
3) Tighten the screw that connects the Ground cable to the AC Distribution Box.
4) Plug in all the internal cables to the AC Distribution Box, including the voltage setting plugs at Jumper1 and Jumper2.
5) Install the rear, left and right covers, as described in the Rear Cover Installation Procedure on page 8 - 7 and the Side Covers Installation Procedure on page 8 - 4.

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8-6-2 AC Input Box Replacement Procedure

8-6-2-1 Tools

Use the appropriate flat and Phillips-type screw drivers and a wire cutter as indicated in the AC Input Box replacement procedure.

8-6-2-2 Preparation

Shut down the Vivid™ 3 ultrasound unit, as described in *Chapter 3 - Installation*.

8-6-2-3 AC Input Box Removal Procedure

1) Unplug the AC line power cable.
2) Remove the Vivid™ 3 left, right and rear covers, as described in the Side Covers Removal Procedure on page 8 - 4, and the Rear Cover Removal Procedure on page 8 - 7.
3) Unplug the internal power cable from the AC Distribution Box.
4) Unscrew the Ground cable from the AC Distribution Box.
5) Remove the two screws on both the *left* and the *right* sides that secure the AC Input Box to the chassis.

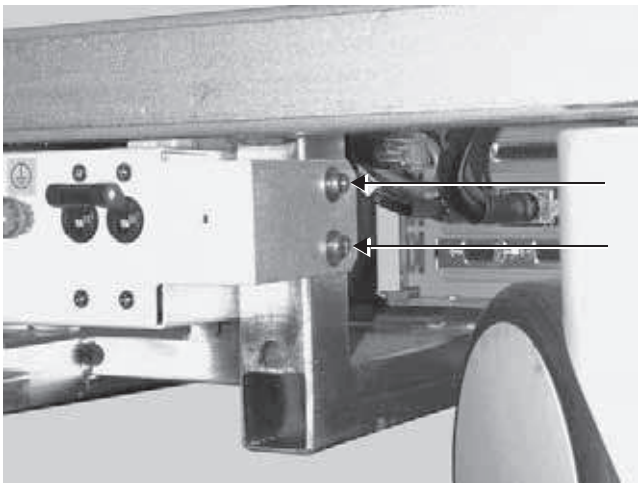


Figure 8-87 AC Input Box Screws

6) Remove the AC Input Box.

8-6-2-4 AC Input Box Installation Procedure

1) Return the AC Input Box to its original position.
2) Tighten the two screws on both the *left* and the *right* sides that secure the AC Input Box to the chassis.
3) Tighten the screw that connects the Ground cable to the AC Distribution Box.
4) Reconnect the internal power cable to the AC Distribution Box.
5) Install the Vivid™ 3 rear, left and right covers, as described in the Rear Cover Installation Procedure on page 8 - 7 and the Side Covers Installation Procedure on page 8 - 4.

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8-6-3 Keyboard or Monitor Cable Replacement Procedure

8-6-3-1 Tools

Use the appropriate flat and Phillips-type screw drivers, a wire cutter and the appropriate Allen keys as indicated in the keyboard or monitor cable replacement procedure.

8-6-3-2 Preparation

Shut down the Vivid™ 3 ultrasound unit, as described in *Chapter 3 - Installation*.

8-6-3-3 Keyboard or Monitor Cable Removal Procedure

1) Remove the Vivid™ 3 left, right and rear covers, as described in the Side Covers Removal Procedure on page 8 - 4, and the Rear Cover Removal Procedure on page 8 - 7.
2) Use the front handle to raise the console to its highest position.
3) Locate the black cable track containing all the cables, at the back of the unit.
4) Open the track by hooking a thumb or finger under the right side of one of the tracks and pulling the side of the track. The track clicks open, enabling you to select the required cable.



Figure 8-88 Opening the Track

5) Disconnect both ends of the cable that is to be replaced.
6) Replace the cable, adding new ties to bind the cables together where necessary, and snap the track back to the closed position.

8-6-3-4 Keyboard or Monitor Cable Installation Procedure

1) Route the cables, adding new ties to bind the cables together where necessary.
2) Reconnect both ends of the cable that was replaced.
3) Close the track by pressing a thumb or finger on the left and right sides of each of the tracks and pushing the track until it snaps back to the closed position.
4) Replace the Vivid™ 3 rear, left and right covers, as described in the Rear Cover Installation Procedure on page 8 - 7 and the Side Covers Installation Procedure on page 8 - 4.

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8-6-4 AC, BEP or FE Cable Replacement Procedure

Use the appropriate flat and Phillips-type screw drivers, a wire cutter, the appropriate Hex wrenches and the appropriate Allen keys as indicated in the cable replacement procedure.

8-6-4-1 Preparation

Shut down the Vivid™ 3 ultrasound unit, as described in *Chapter 3 - Installation*.

8-6-4-2 AC, BEP or FE Cable Removal Procedure

1) Disconnect both ends of the required cable.
2) Open the plastic ties that hold the cables together.
3) Remove the required cable.

8-6-4-3 AC, BEP or FE Cable Installation Procedure

1) Route the required cable.
2) Connect both ends of the new cable.
3) Replace the ties and secure the cable in position.

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8-6-5 Gas Spring Cable Replacement Procedure

Use the appropriate flat and Phillips-type screw drivers, a wire cutter and the appropriate open-wring wrenches as indicated in the gas spring cable replacement procedure.

8-6-5-1 Preparation

Shut down the Vivid™ 3 ultrasound unit, as described in *Chapter 3 - Installation*.

8-6-5-2 Gas Spring Cable Removal Procedure

1) Pull out and remove the air filter, as described in the Front Cover Removal Procedure on page 8 - 5.
2) Remove the Vivid™ 3 side covers and the rear cover, as described in the Side Covers Removal Procedure on page 8 - 4 and in the Rear Cover Removal Procedure on page 8 - 7.
3) Remove the front end crate, as described in the Front End Crate Removal Procedure on page 8 - 50.
4) Raise the control console to its *maximum* height.
5) Remove the bottom keyboard cover, as described in the Bottom Keyboard Cover Removal Procedure on page 8 - 14.
6) Cut all the cable ties to free the required cable.
7) Remove the securing screw from the cable holder located on the gas spring rod.
8) Turn the cable holder to free the cable end sleeve, and then remove the cable end stopper from the trigger arm.
9) Loosen the securing nut located near the release handle underneath the keyboard, and then completely release the adjustable sleeve.

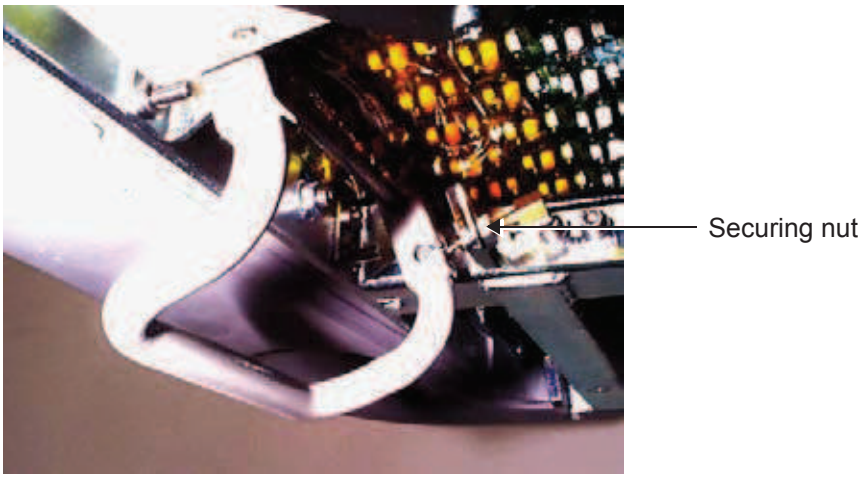


Figure 8-89 Release Handle

10) Remove the cable end stopper from the release handle.
11) Remove the gas spring release cable. Before removing the cable, pay attention to its path inside the machine, and the position of each of its parts.

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8-6-5-3 Gas Spring Cable Installation Procedure

1) Raise the control console to its *maximum* height.
2) Route the gas spring cable along its original path in the machine. The end of the cable with the adjustable sleeve should be next to the release handle underneath the keyboard; the other end of the cable should be next to the lower end of the gas spring.
3) Fit the cable end stopper on the trigger arm.
4) Fit the groove of the cable end sleeve on the hinge of the gas spring head.
5) Turn the cable holder over the cable end sleeve, and then fasten it with the securing screw.
6) Insert the other cable end stopper into the release handle located underneath the keyboard, and then insert the wire into the slot and screw in the cable adjustment sleeve.
7) Adjust the securing nut so that there is no backlash of the release handle, and secure the adjustment with the nut.
8) Using the release handle, lower and raise the control console several times to verify its proper operation.
9) Fasten the cables to the machine with cable ties (at the original positions).
10) Return the front end crate to its original position, as described in the Front End Crate Installation Procedure on page 8 - 51.
11) Replace the Vivid™ 3 rear, left and right covers, as described in the Rear Cover Installation Procedure on page 8 - 7 and *Side Covers Installation Procedure* section, page 8-4.
12) Raise the control console to its *maximum* height, and then replace the bottom keyboard cover, as described in the Bottom Keyboard Cover Installation Procedure on page 8 - 15.
13) Insert the air filter in its original location, as shown in Figure 8-3 on page 8-5.

Note: It is recommended to clean the filter before returning it to its original location, as described in *Chapter 10 - Periodic Maintenance*.

14) Verify that the gas spring release handle is functioning correctly.

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8-6-6 Up/Down Handle Replacement Procedure

NOTE: This section describes two removal procedures (for both the old [plastic] and new-type [metal] handles) and one installation procedure (for the new-type handle), as follows:

- Removal of the old-type (plastic) Up/Down Handle (Part No. 2260300) - see Up/Down Handle Removal - Procedure 1, below.
- Removal of the new-type (metal) Up/Down Handle with support (Part No. 237002-2) - see Up/Down Handle Removal Procedure 2 on page 8 - 107.
- Installation of the Up/Down Handle with support (Part No. 237002-2) - see Up/Down Handle Replacement Procedure on page 8 - 108.

8-6-6-1 Tools

Use the appropriate the Phillips-type screw drivers, as indicated in the up/down handle removal procedure.

8-6-6-2 Preparation

Shut down the Vivid™ 3 ultrasound unit, as described in *Chapter 3 - Installation*.

8-6-6-3 Up/Down Handle Removal - Procedure 1

NOTE: This describes the procedure for removing the old-type (plastic) Up/Down Handle (Part No. 2260300).

1) Raise the control console to its *maximum* height. Remove the bottom keyboard cover, as described in the Bottom Keyboard Cover Removal Procedure on page 8 - 14.
2) Loosen and remove the nut on the M6 screw (see Figure 8-90 below) that secures the up/down handle in position.

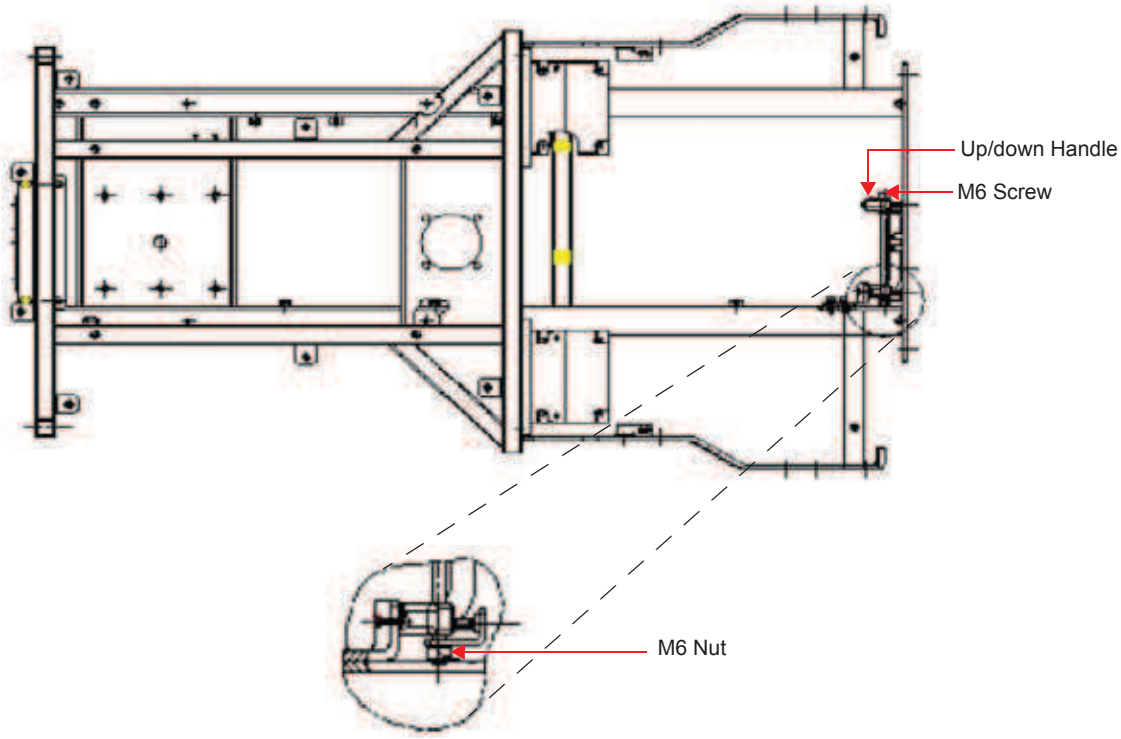


Figure 8-90 Up/Down Handle Securing Mechanism

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3.) Extract the M6 screw from the up/down handle by sliding it out.

4.) Release the gas spring cable from the broken up/down handle - see Figure 8-91 on page 8-107.

5.) Remove the broken up/down handle.

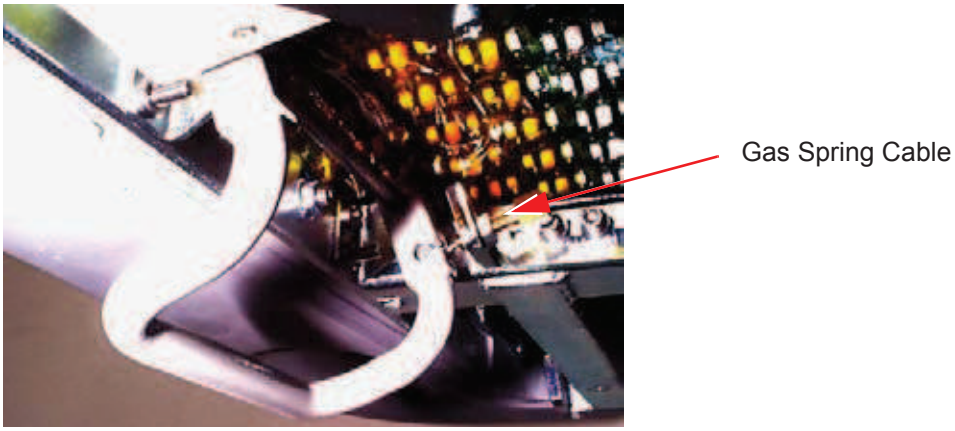


Figure 8-91 Gas Spring Release Handle

8-6-6-4 Up/Down Handle Removal Procedure 2

NOTE: This describes the procedure for removing the new-type (metal) Up/Down Handle (Part No. 237002-2).

1) Remove the bottom keyboard cover, as described in the Bottom Keyboard Cover Removal Procedure on page 8 - 14.

2) Remove the right and left probe holders, as described in the Right and Left Probe Holders Removal Procedure on page 8 - 23.

3) Remove the front handle from the console, as described in the Front Handle Removal Procedure on page 8 - 24.

4.) Release the gas spring cable by loosening the securing nut (shown in Figure 8-92 below). Slide the cable out of the retaining bracket and slide the end of the cable out through the slot on the handle assembly (see below, and refer to the detail in Figure 8-94 on page 8-109).

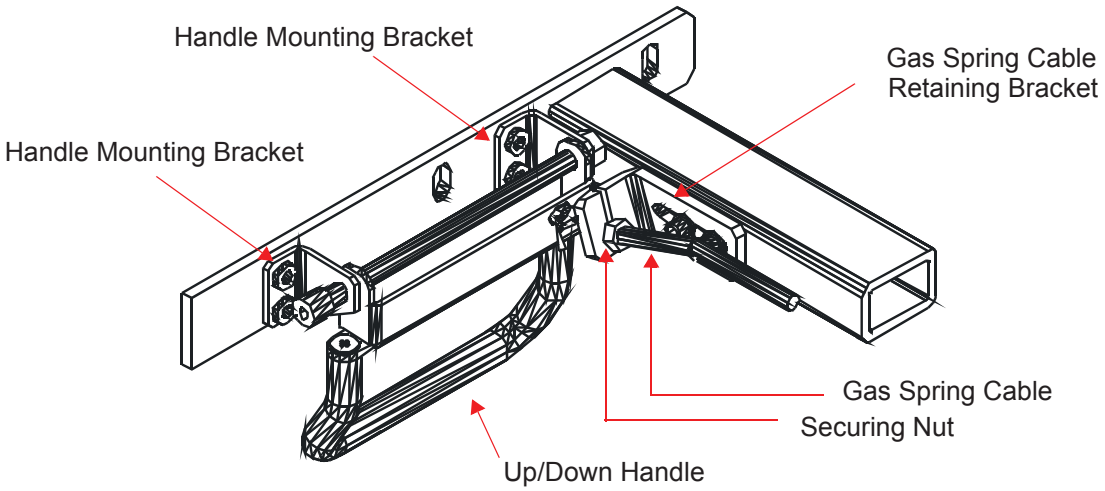


Figure 8-92 Up/Down Handle Securing Mechanism

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5.) Remove the four screws (two short and two long) that secure the handle mounting brackets to the chassis (see Figure 8-92, above) and remove the handle assembly. Refer also to Figure 8-95 on page 8-109.

6.) Loosen and remove the M6 nut from the handle assembly axis screw - refer to Figure 8-93 on page 8-108.

7.) Extract the axis screw from the handle assembly and remove the defective Up/Down handle.

8-6-6-5 Up/Down Handle Replacement Procedure

NOTE: This describes the procedure for installing the new-type (metal) Up/Down Handle (Part No. 237002-2).

1) Insert the M6 Axis screw through the screw hole in the first handle mounting bracket, through the two holes in the new metal Up/Down handle, then through the screw hole in the second bracket and into M6 nut, as shown in Figure 8-93 below.

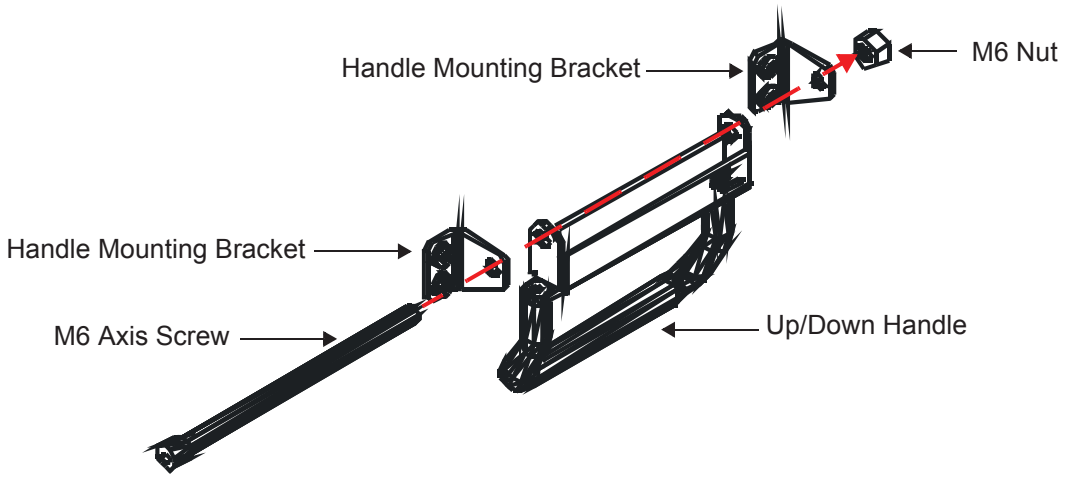


Figure 8-93 Fixing the Up/Down Handle to the Handle Mounting Brackets

2.) Tighten the M6 nut fully to secure the handle mounting brackets to the handle assembly.

3.) Insert the end of the gas spring cable through the slot on the gas spring cable retaining bracket and into the grooved hole on the Up/Down handle. Slide the end of the cable into the groove, carefully aligning the groove on the cable with that of the groove in the hole (see Figure 8-94 below). Tighten the securing nut against the gas spring cable retaining bracket, to hold the cable securely in position.

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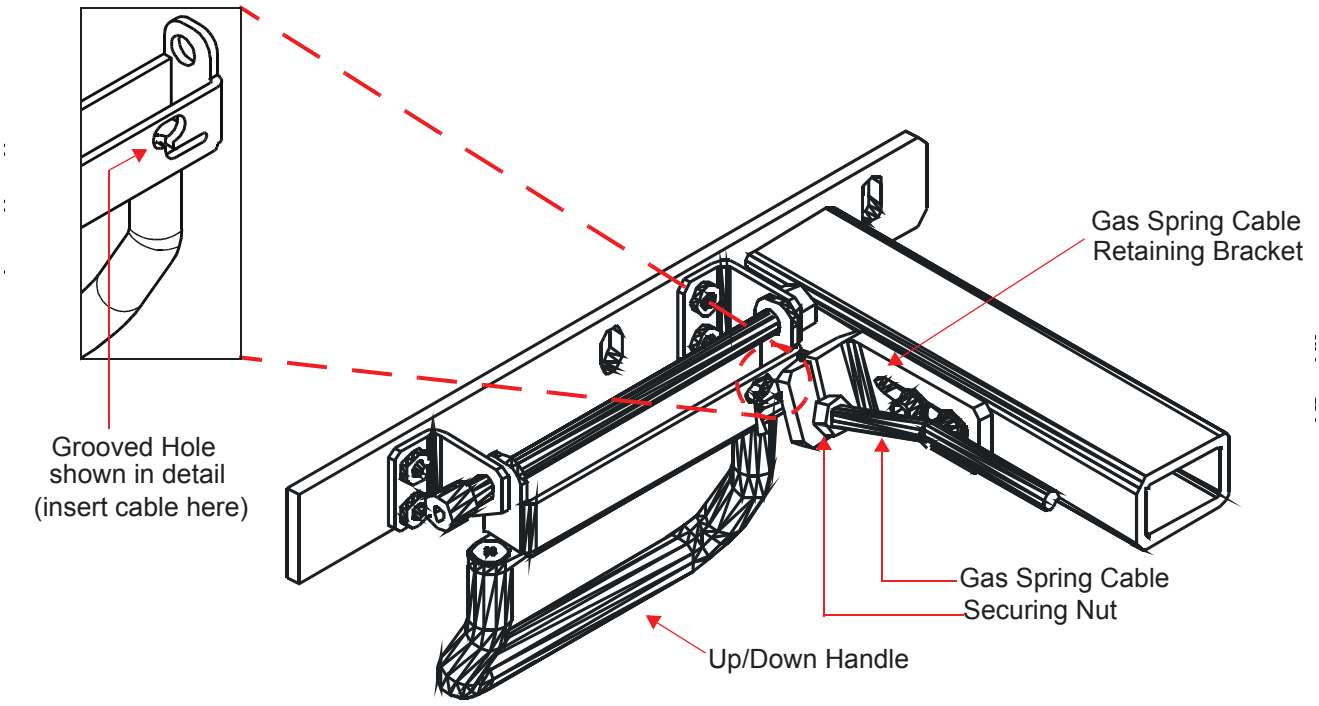


Figure 8-94 Fitting Gas Spring Cable to Up/Down Handle

4) Mount the handle mounting brackets onto the chassis using one long and one short screw for each bracket, as shown in Figure 8-95. Tighten the screws to secure the brackets firmly in position.

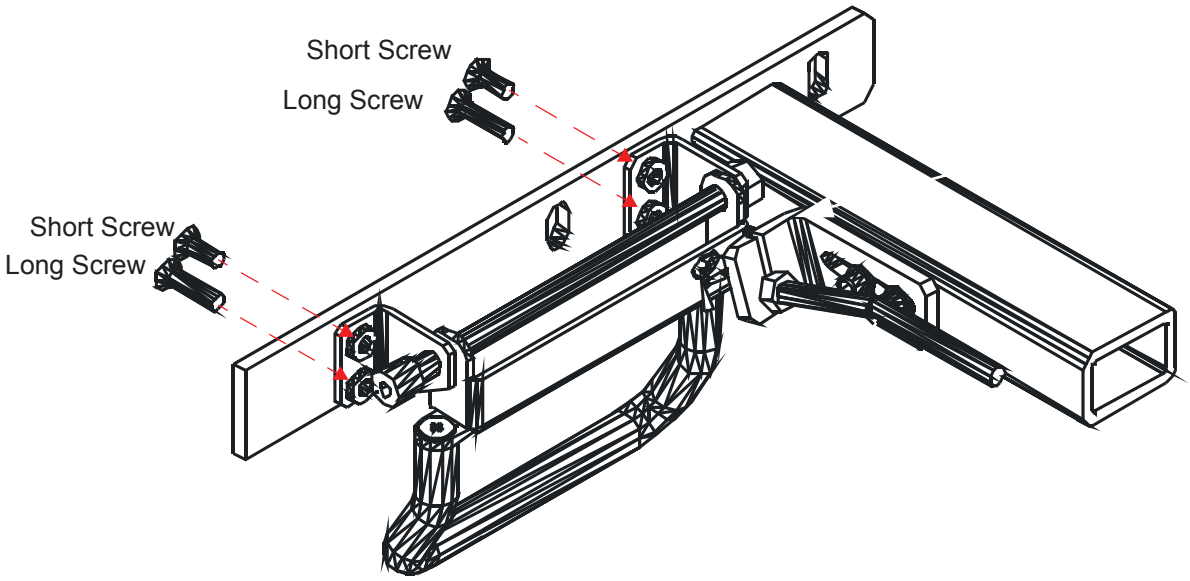


Figure 8-95 Mounting the Brackets onto the Chassis

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5) Test the Up/Down handle to make sure the mechanism is operating properly and that the handle is fastened securely on the chassis.

6.) Return the front handle to the console and secure in position, as described in the Front Handle Installation Procedure on page 8 - 24

7) Return the right and left probe holders and secure in position, as described in the Right and Left Probe Holders Installation Procedure on page 8 - 23.

8) Return the bottom keyboard cover and secure in position, as described in the Bottom Keyboard Cover Installation Procedure on page 8 - 15.

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8-6-7 Gas Spring Replacement Procedure

8-6-7-1 Tools

Use the appropriate flat and Phillips-type screw drivers, a wire cutter, the appropriate open-ring wrenches and a Hex M8x80mm screw as indicated in the gas spring replacement procedure.

8-6-7-2 Preparation

Shut down the Vivid™ 3 ultrasound unit, as described in *Chapter 3 - Installation*.

8-6-7-3 Gas Spring Removal Procedure

1) Pull out and remove the air filter, as described in the Front Cover Removal Procedure on page 8 - 5.
2) Remove the Vivid™ 3 side covers and the rear cover, as described in the Side Covers Removal Procedure on page 8 - 4 and the Rear Cover Removal Procedure on page 8 - 7.
3) Remove the front end crate, as described in the Front End Crate Removal Procedure on page 8 - 50.
4) Lower the control console to its *minimum* height.
5) Remove the two screws located at the bottom of the left compartment of the control console, and then remove the white metal box from the compartment.

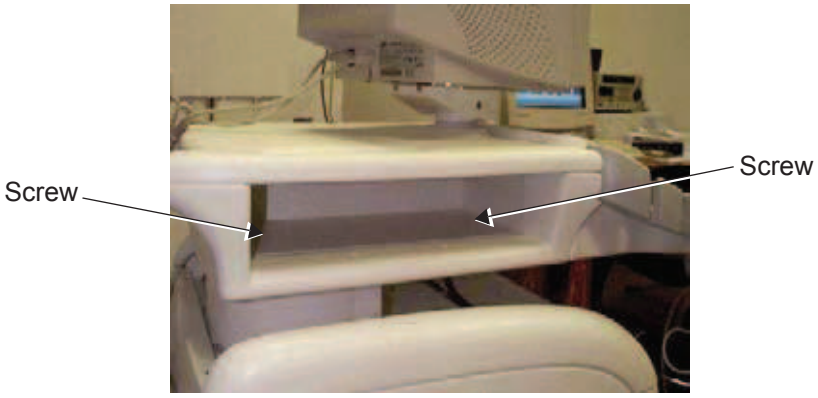


Figure 8-96 Left Compartment of the Control Console

6) Remove the securing screw from the cable holder located on the gas spring rod.

Note: In the following steps, all the gas spring components indicated by letters can be seen in Figure 8-97 and Figure 8-98 on page 8-112.

7) Turn the cable holder (**B**) to free the cable end sleeve (**C**) then remove the cable end stopper (**D**) from the trigger arm (**E**).

DANGER: Do not activate the trigger arm as this will cause the expansion of the gas spring and may cause damage and/or injury!

8) Remove the retaining washer (**K**) from the pin (**L**) at the lower end of the gas spring.
9) Insert the Hex M8x80mm screw in the appropriate hole to the left of the compartment at its base, and then tighten the screw until the pin (**L**) at the lower end of the gas spring is loose enough to be removed, and remove the pin.

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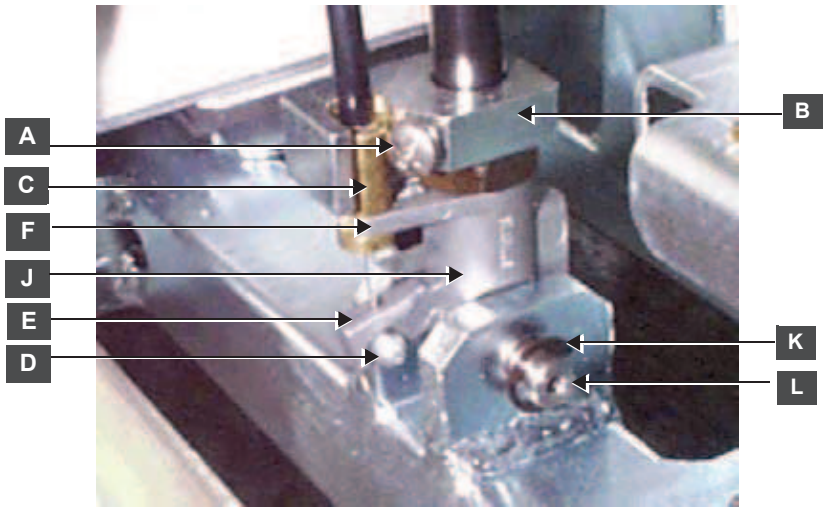


Figure 8-97 Gas Spring - Lower End and Cable

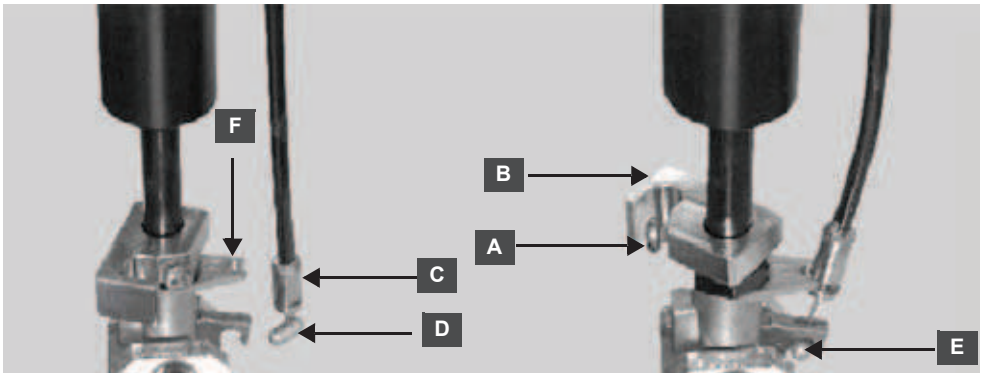


Figure 8-98 Gas Spring Lower End Cable - Close-up View

10) Remove the retaining washer (**K**) from the pin (**L**) at the lower end of the gas spring.

11) Insert the Hex M8x80mm screw in the appropriate hole to the left of the compartment at its base, and then tighten the screw until the pin (**L**) at the lower end of the gas spring is loose enough to be removed, and remove the pin.

Note: In the following step, the gas spring components indicated by letters can be seen in Figure 8-99 on page 8-113.

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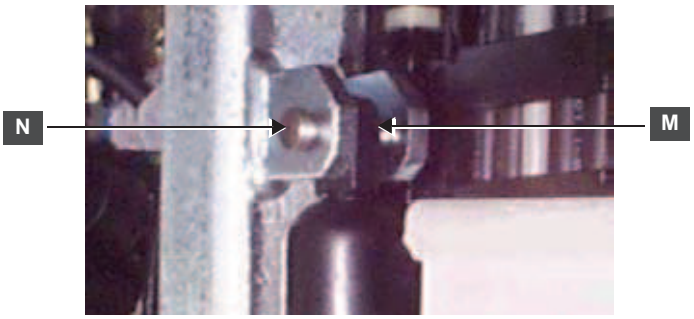


Figure 8-99 Gas Spring - Upper End

12) Remove the retaining washer (**M**) from the pin (**N**) at the upper end of the gas spring, and then remove the pin.

13) Carefully remove the gas spring.

8-6-7-4 Gas Spring Installation Procedure

Note: All the gas spring components indicated by letters in the following steps can be seen in Figure 8-99, above and Figure 8-97 and Figure 8-98 on page 8-112.

DANGER: ***Do not activate the trigger arm as this will cause the expansion of the gas spring and may cause damage and/or injury!***

1) Return the gas spring to its original position.

2) Insert the upper pin (**N**) and secure it with the retaining washer (**M**). You may have to adjust the M8x80mm screw before inserting the pin.

3) Insert the lower pin (**L**) and secure it with the retaining washer (**K**). You may have to adjust the M8x80mm screw before inserting the pin.

4) Fit the cable end stopper (**D**) on to the trigger arm (**E**).

5) Fit the groove of the cable end sleeve (**C**) on the hinge (**F**) of the gas spring head.

6) Turn the cable holder (**B**) over the cable end sleeve (**C**), and then fasten it with the securing screw (**A**).

7) Remove the Hex M8 screw from the compartment.

8) Using the release handle, lower and raise the control console several times to verify its proper operation.

9) Return the front end crate back to its original position, as described in the Front End Crate Installation Procedure on page 8 - 51.

10) Return the Vivid™ 3 rear, left and right covers, as described in the Rear Cover Installation Procedure on page 8 - 7 and the Side Covers Installation Procedure on page 8 - 4.

11) Raise the control console to its maximum height, and then replace the bottom keyboard cover, as described in the Bottom Keyboard Cover Installation Procedure on page 8 - 15.

12) Insert the air filter in its original location, as shown in Figure 8-3 on page 8-5.

Note: It is recommended to clean the filter before returning it to its original location, as described in *Chapter 10 - Periodic Maintenance*.

13) Verify that the gas spring release handle is functioning correctly.

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8-6-8 Front Wheel Replacement Procedure

NOTE: This section describes the installation and removal procedures for the earlier-type of front wheel (Part No. 2269437) and the newer improved type (Part No. 2392789). The installation procedure is slightly different for each type of front wheel, as described in the procedures below.

*When replacing the earlier type of front wheel (Part No. 2269437) with the **same** type of wheel, refer to the following instructions:*

- Front Wheel Removal - Procedure 1 (see below)
- Front Wheel Installation - Procedure 1 on page 8 - 118.

*When replacing the earlier type of front wheel (Part No. 2269437) with newer improved type (Part No. 2392789) make sure you replace **BOTH** front wheels. When ordering the new-type Front wheels, you will receive a new transverse arm which should also be replaced (between the two wheels). Refer to these instructions:*

- Front Wheel Removal - Procedure 1 on page 8 - 114
- Front Wheel Installation - Procedure 2 on page 8 - 118.

*If replacing the newer improved type (Part No. 2392789) with the **same** type of wheels, refer to the following instructions:*

- Front Wheel Removal - Procedure 2 on page 8 - 116
- Front Wheel Installation - Procedure 2 on page 8 - 118.

8-6-8-1 Tools

Use the appropriate flat and Phillips-type screw drivers, a wire cutter, the appropriate Hex wrenches and the appropriate Allen keys as indicated in the front wheel replacement procedure.

8-6-8-2 Preparation

Shut down the Vivid™ 3 ultrasound unit, as described in *Chapter 3 - Installation*.

8-6-8-3 Front Wheel Removal - Procedure 1

Note: Before you begin, make sure you are working on a flat surface with the wheels facing the *front* and the brake in the left (*locked*) position, preventing movement.
The machine will remain stable, even after one wheel has been removed. However, for a safer working environment, it is recommended to support the unit with wooden blocks or a jack.

WARNING: Do not lean on the machine, or leave it unattended without support, if a wheel has been removed.

1) Remove the Vivid™ 3 front cover, as described in the Front Cover Removal Procedure on page 8 - 5.
2) Using a flat screwdriver, push up and release the locking spring washer located in the center of the transverse arm (wheel position bar), as shown in Figure 8-100 on page 8-115. Lift the wheel position bar upwards (without completely removing it).

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Figure 8-100 Releasing the Spring Washer from the Center of the Transverse Arm

3) Remove the four bolts (three wrench bolts and one Allen bolt) that secure the front wheel to the chassis (see Figure 8-100 below) and remove the wheel.

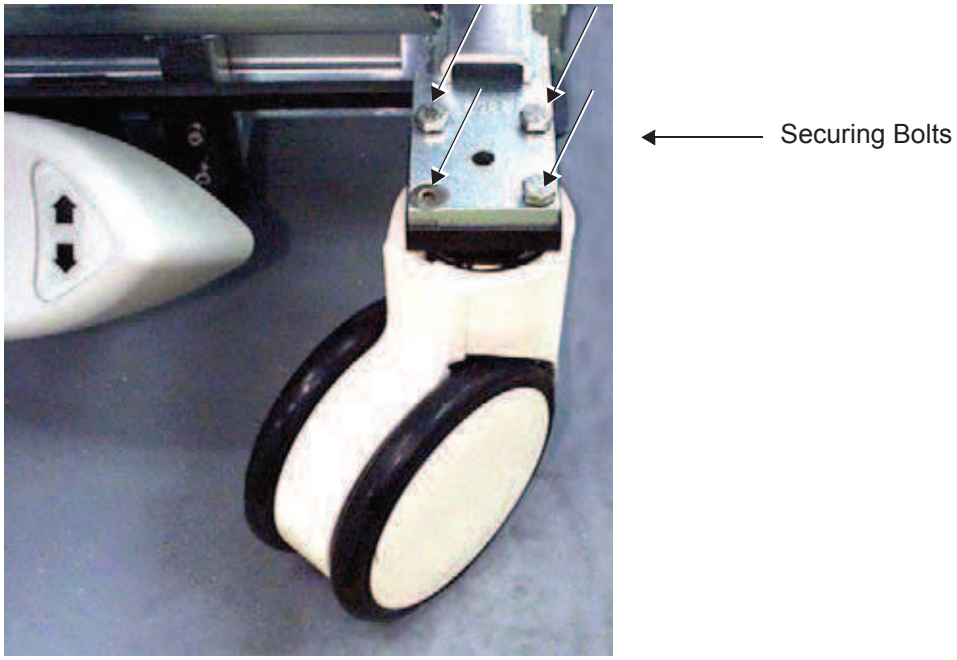


Figure 8-101 Front Wheel (Part No 2269437) Bolted to Chassis

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8-6-8-4 Front Wheel Removal - Procedure 2

WARNING: When performing this procedure, the machine must be safely supported on two wooden blocks (or on a jack capable of supporting the weight of the machine). Do not lean on the machine, or leave it unattended without support, when the wheels have been removed. Always remove and replace one wheel at a time, before attempting to remove the second wheel.

Note: Before you begin, make sure you are working on a flat surface with the wheels facing the front and the brake in the left (*locked*) position, preventing movement.

1) Remove the Vivid™ 3 front cover, as described in the Front Cover Removal Procedure on page 8 - 5.
2) Remove the locking washer, located on the black wheel position bar, and lift the wheel position bar.
3) Using a flat screwdriver, push up and release the locking spring washer located in the center of the transverse arm (wheel position bar), as shown in Figure 8-100 on page 8-115.
4.) Release the locking spring washer from the underside of each end of the transverse arm, as shown in Figure 8-102 below.

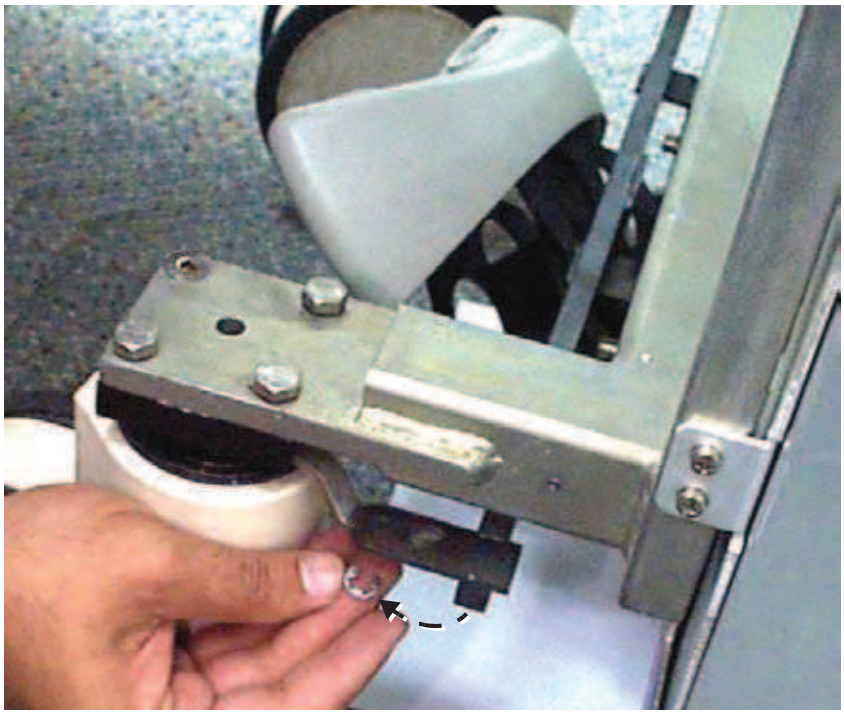


Figure 8-102 Releasing the Spring Washer from the End of the Transverse Arm

5.) Lifting the transverse arm upwards, unhook it from the central locking pin located above the brake pedal and remove it completely. Refer to Figure 8-103 on page 8-117.

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Figure 8-103 Removing the Transverse Arm

6) Remove the four bolts (three wrench bolts and one Allen bolt - see Figure 8-104 below) that secure one of the front wheels to the chassis, and remove the wheel.

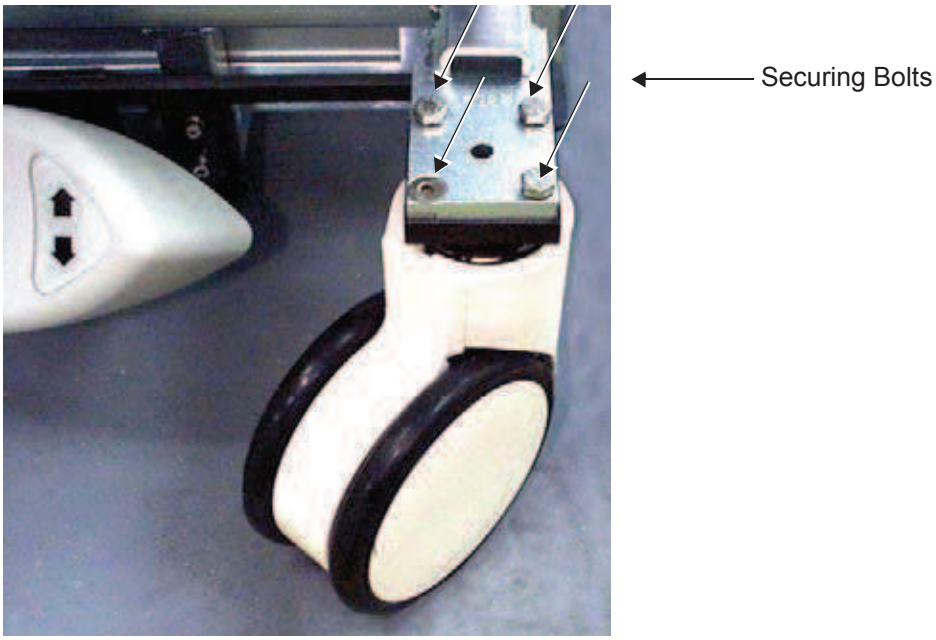


Figure 8-104 Front Wheel (Part No 2392789) Bolted to Chassis

7.) Proceed to step 1 of the Front Wheel Installation - Procedure 2 on page 8 - 118 to install a new front wheel in place of the one removed.

8.) Repeat step 6 above, to remove the other front wheel from the chassis.

9.) Proceed to step 2 of the Front Wheel Installation - Procedure 2 on page 8 - 118, to install the second new front wheel, then complete the remaining steps of the front wheel installation procedure.

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8-6-8-5 Front Wheel Installation - Procedure 1

Note: The machine will remain stable, even after one wheel has been removed. However, for a safer working environment, it is recommended to support the unit with wooden blocks or a jack.

1) Install the new wheel (Part No. 2269437) on the machine chassis in the same position as that of the previously-removed wheel. Make sure it is correctly positioned, parallel to the other front wheel.
2.) Lift the transverse arm (wheel position bar) and secure it into position by re-attaching the spring washer to the central locking pin (refer to Figure 8-100 on page 8-115).
3.) Return the four bolts (three wrench bolts and one Allen bolt - removed in step 3 on page 8-115) and make sure that wheel is secured firmly to the chassis (see Figure 8-101 on page 8-115).
4.) Return the Vivid™ 3 front cover, as described in the Front Cover Installation Procedure on page 8 - 6.

8-6-8-6 Front Wheel Installation - Procedure 2

WARNING: When performing this procedure, the machine must be safely supported on two wooden blocks (or on a jack capable of supporting the weight of the machine). Do not lean on the machine, or leave it unattended without support, when the wheels have been removed. Always remove and replace one wheel at a time, before attempting to remove the second wheel.

1) Having removed one wheel from the machine chassis (as described in Front Wheel Removal - Procedure 2 on page 8 - 116), install one of the new wheels (Part No. 2392789) in its place, ensuring that the wheel is correctly positioned.

   Install the four bolts (three wrench bolts and one Allen bolt removed in step 6 on page 8-117 [refer to Figure 8-104 on page 8-117]), making sure that the wheel is secured firmly to the chassis.

2) Having removed the second wheel from the machine chassis (as described in Front Wheel Removal - Procedure 2 on page 8 - 116), install the other new wheel in its place, ensuring that the new wheel is correctly positioned, parallel to the other new front wheel.

   Install the four bolts (three wrench bolts and one Allen bolt removed in step 6 on page 8-117 [refer to Figure 8-104 on page 8-117]), making sure that each wheel is secured firmly to the chassis.

3.) Install the new transverse arm (wheel position bar) by hooking it onto the central locking pin located above the brake pedal and securing it into position (attach the spring washer [supplied] to the central pin - refer to Figure 8-103 on page 8-117 and Figure 8-100 on page 8-115).
4.) Lift the transverse arm *upwards* and attach a new locking spring washer (supplied) to the underside of each end of the transverse arm. Refer to step 4 on page 8-116 and Figure 8-102 on page 8-116.
5.) Return the Vivid™ 3 front cover, as described in the Front Cover Installation Procedure on page 8 - 6.

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8-6-9 Rear Wheel Replacement Procedure

NOTE: This section describes the installation and removal procedure of the earlier-type of rear wheel (Part No. 2269436) and the newer improved type (Part No. 2389102). The installation procedure is the same for each type of rear wheel, as described in the procedure below.

*NOTE: **IMPORTANT** - When replacing the earlier type (Part No. 2269436) with newer improved type (Part No. 2389102) make sure you replace **BOTH** rear wheels.*

8-6-9-1 Tools

Use the appropriate flat and Phillips-type screw drivers and combination spanner as indicated in the rear wheel replacement procedure.

8-6-9-2 Preparation

Shut down the Vivid™ 3 ultrasound unit, as described in *Chapter 3 - Installation*.

8-6-9-3 Rear Wheel Removal

Note: The machine will remain stable, even after one wheel has been removed. However, for a safer working environment, it is recommended to support the unit with wooden blocks or a jack.

WARNING: When BOTH rear wheels are being removed, the machine must be safely supported on two wooden blocks (or on a jack capable of supporting the weight of the machine). Always remove and replace one wheel at a time, before attempting to remove the second wheel.

1) Remove the Vivid™ 3 side covers and the rear cover, as described in the Side Covers Removal Procedure on page 8 - 4 and the Rear Cover Removal Procedure on page 8 - 7.

2) Position the machine so that the wheel that is to be changed is not in contact with the ground, while ensuring that the other three wheels remain on the ground. If replacing *both* wheels, support the machine on two wooden blocks (or a suitable jack).

3) Loosen the shaft screw (see Figure 8-105 on page 8-120) and remove the defective wheel from the machine chassis.

4) Proceed to the Rear Wheel Installation Procedure on page 8 - 120 to install the new rear wheel in place of the one removed.

5.) If replacing *both* wheels, repeat step 3 above on the other wheel, then proceed to the Rear Wheel Installation Procedure on page 8 - 120 to install the second new rear wheel and complete the rear wheel installation procedure.

WARNING: Do not lean on the machine, or leave it unattended without support, if a wheel has been removed.

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8-6-9-4 Rear Wheel Installation Procedure

WARNING: Do not lean on the machine, or leave it unattended without support, if a wheel has been removed.

WARNING: When BOTH rear wheels are being replaced, the machine must be safely supported on two wooden blocks (or on a jack capable of supporting the weight of the machine). Always remove and replace one wheel at a time, before attempting to remove the second wheel.

1) Having removed one rear wheel, position the new wheel on the chassis (in the same position as that of the wheel removed).

2) Tighten the shaft screw (see Figure 8-105 below), making sure the wheel is firmly secured.

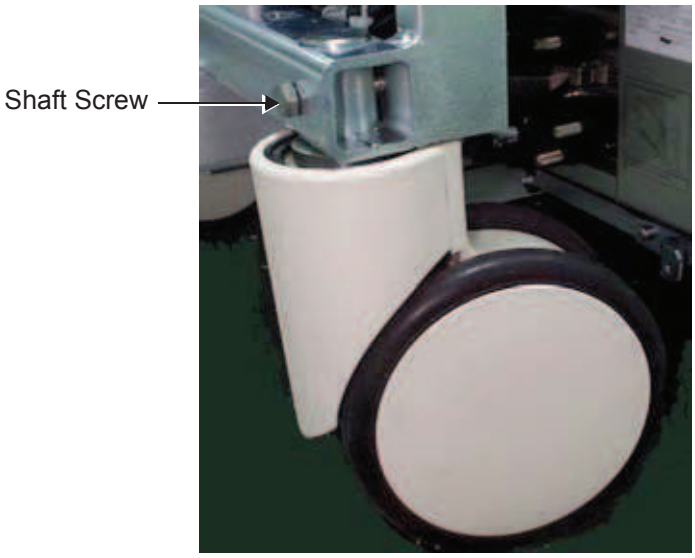


Figure 8-105 Rear Wheel Installation

3.) If replacing both wheels, when the second rear wheel has been removed, repeat step 1 and step 2 above to install the second new rear wheel.

4) Return the Vivid™ 3 rear, left and right covers, as described in the Rear Cover Installation Procedure on page 8 - 7 and the Side Covers Installation Procedure on page 8 - 4.

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Section 8-7
Software Loading

8-7-1 Software Installation/Upgrade Procedure

Note: It is recommended to back-up the archive and the settings as described in the Vivid™ 3 Pro/ Vivid™ 3 Expert User Manual, before commencing software installation (or whenever upgrading the software).

WARNING: Do not attempt to install software that was not designated for your Vivid™ 3 unit. Attempting to install un-approved software will cause irreversible damage to hardware and software!

Normally the Vivid™ 3 system is supplied from the manufacturer with the software already installed. In some cases, it is necessary to re-install the software (for example, after replacing the Back-end Processor) by following the software installation procedure shown in Table 8-5 below.

Table 8-5 Software Installation

	Step	Expected Result
1	Press the <Eject> button of the CD drive and remove any media if present.	The CD drive tray ejects.
2	Insert the CD provided with the software kit, and press the <Eject> button again.	The CD drive tray will load the software CD.
3	Hold down the <ON/OFF> button for 5 seconds to shutdown the system.	The shutdown options are displayed on-screen.
4	Select **Full Shutdown**.	The system powers down.
5	Hold down the <ON/OFF> button for three seconds.	The system powers ON and when system boot-up from the CD is complete, the following message is displayed prompting you to select the required option: **A. Install Vivid 3 Software** **B. Service Tools** **C. Exit without Actions** Select option A) **Install Vivid 3 Software**.
6	Press <Enter>.	The CD begins the software installation process. A message is displayed on-screen prompting you to press <Eject> and remove the CD, then to press <CTRL + ALT + DELETE> to reboot the system.
7	Press <Eject> and remove the CD. Press <CTRL+ALT+DELETE>.	The system re-boots.
8	Follow the on-screen instructions, clicking OK (or Cancel) when prompted.	The machine performs 4 reboots before completing the installation. The installation process will take between 20 and 50 minutes - ***DO NOT ATTEMPT TO STOP THE INSTALLATION BEFORE COMPLETION!*** When the installation process is complete, the system will be in regular display mode (Probe Select Screen). Note: If this is a new software version, an adhesive Rating Plate is supplied with the software CD. Adhere the plate in the appropriate position on the metal cover under the control console.

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Section 8-8
Peripherals

8-8-1 B/W Video Printer Replacement Procedure

NOTE: This section describes the installation and removal procedure for the Sony UP-895MDW B/W Video Printer.



Figure 8-106 SONY B/W Video Printer

8-8-1-1 Tools

Use the appropriate flat and Phillips-type screw drivers.

8-8-1-2 Manpower

One person - 30 mins.

8-8-1-3 Preparations

1) Shut down the Vivid™ 3 ultrasound unit, as described in *Chapter 3 - Installation*.
2.) Remove the Connectors Panel cover as shown in the Connector Panels Cover Removal Procedure on page 8 - 8.
3.) Unpack the B/W Video Printer.
4.) Check that the B/W Video Printer AC voltage corresponds to that of your local voltage.
5.) Verify that all the DIP Switches on the rear panel of the B/W Video Printer are in the **Down** position as shown in Figure 8-107 on page 8-124.

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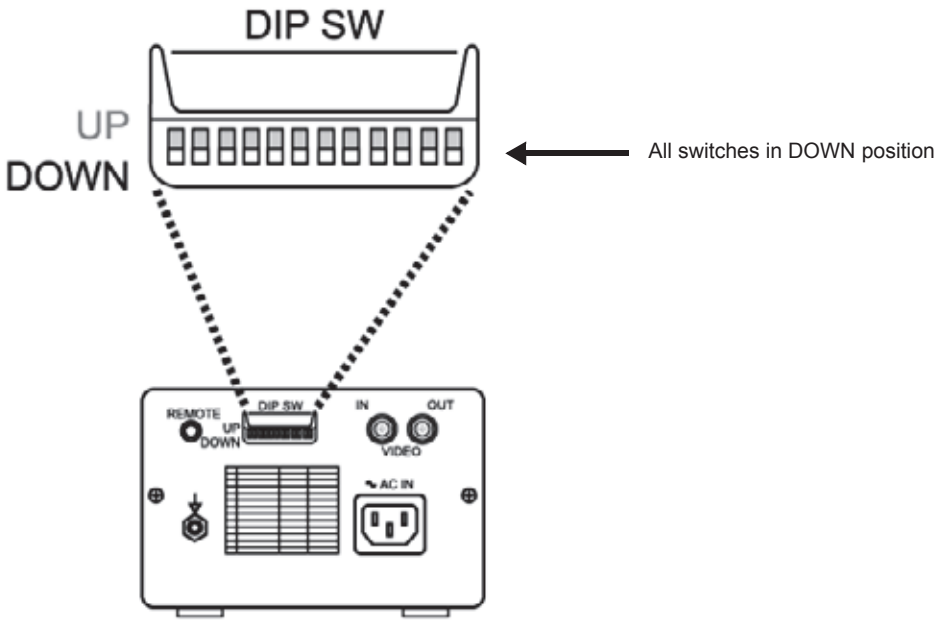


Figure 8-107 B/W Video Printer, DIP Switches on the Rear Panel

8-8-1-4 B&W Printer Installation Procedure

1.) Place the B/W Video Printer on the *right* side of the Vivid™ 3 ultrasound unit's top surface (below the control console - as shown in Figure 8-108) and next to the VCR (if present), allowing sufficient room to access the cables at the rear of the printer.

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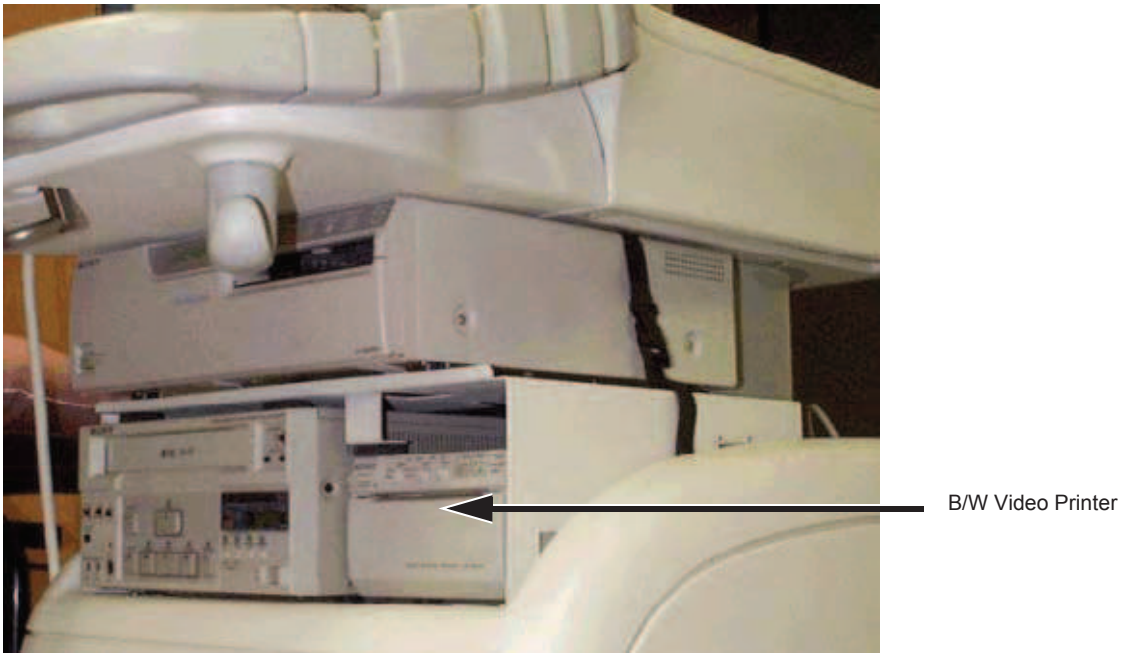


Figure 8-108 B/W Video Printer Installed in the Vivid™ 3 |(Configuration for UP2950 and 2800 Printers)

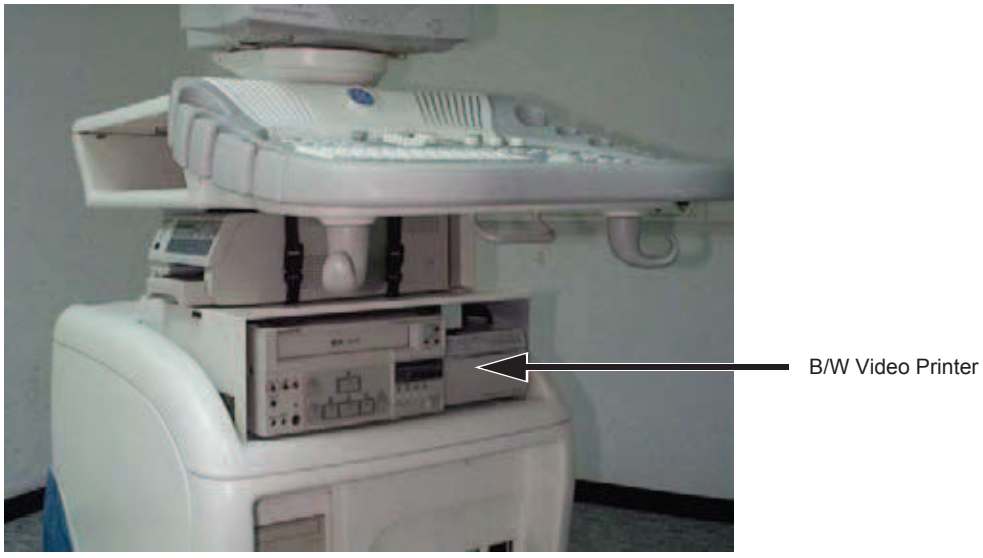


Figure 8-109 B/W Video Printer Installed in the Vivid™ 3 |(Configuration with UP21MD Printer)

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2.) Connect the Remote cable, the B/W Video IN cable, and the Power cable, as shown in Figure 8-110 below.

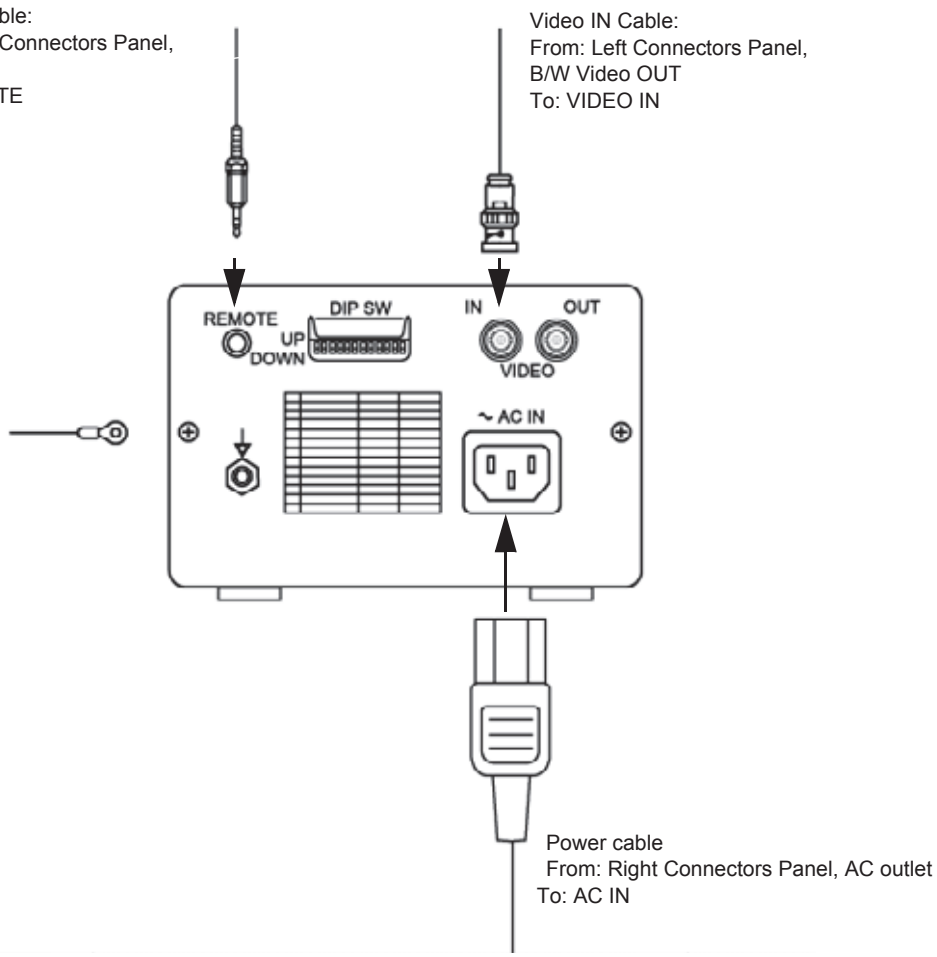


Figure 8-110 B/W Video Printer Connection Cables

3.) Place the B/W printer in its correct final position.

4.) Secure the B/W printer by fastening the belt around it, or together with the VCR (if present).

5.) If more secure fastening is desired, install the optional shelf (P/N H45011CN), which can be ordered separately if the Color Printer option is not installed.

NOTE: For shelf installation instructions refer to Color Printer installation in the Color Video Printer Installation - Procedure1 section, page 8-157.

6.) Re-install the Connectors Panels Cover as described in the Connector Panels Cover Installation Procedure on page 8 - 8.

7) Reconnect the mains AC power cable from the wall outlet.

8) Turn ON the main circuit breaker located on rear of the Vivid™ 3.

9) Turn ON the Vivid™ 3 by pressing the ON/OFF button on the Control Console.

10.) Select the activation key under System Configuration, VCR/ECG Tab, A/B Swap.
By default, Print B key will be B&W Video printer and Print A key will be Color Video printer. For more information on switching printer settings, see VCR/ECG Tab on page 3 - 45.

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8-8-1-4-1 Setting the Switches on the Paper Tray

1.) Press the OPEN button in the front of the B/W Video Printer.
2.) Ensure that the switches on the Paper Tray are set as shown in Figure 8-111 below.
3.) Load the Paper Roll as described in the Printer's Operating Instructions.

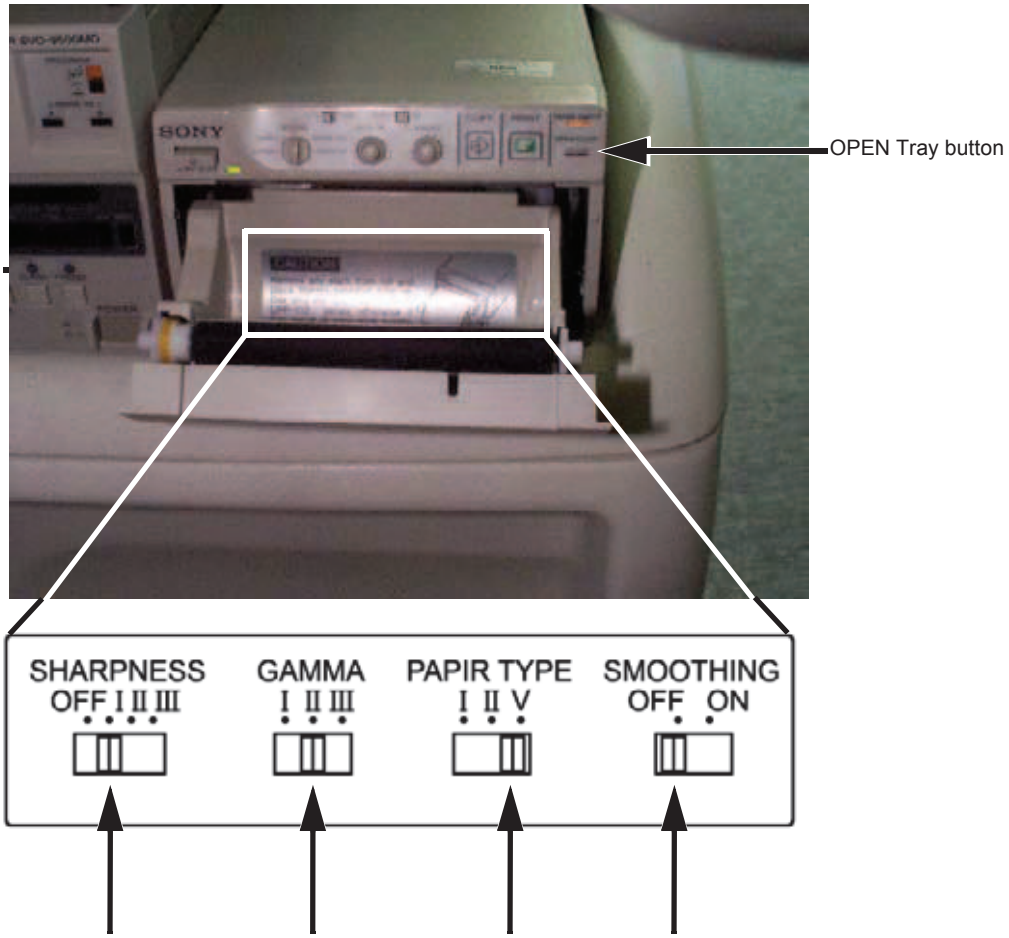


Figure 8-111 B/W Video Printer, Slide Switches Location and Settings on the Paper Tray

8-8-1-5 B&W Printer Removal Procedure

1.) Remove the Connectors Panels Cover as described in the Connector Panels Cover Removal Procedure on page 8 - 8.
2.) If optional shelf (P/N H45011CN) is present, refer to *Color Video Printer Removal - Procedure 1* section, page 8-161.
3.) Release the B/W printer by undoing the fastening belt secured around it (and around the VCR, if present).
4.) Disconnect the Remote cable, the B/W Video IN cable, and Power cable from rear of the printer (refer to Figure 8-110 on page 8-126).
5.) Remove the B/W Video Printer from the *right* side of the Vivid™ 3 ultrasound unit (taking it out from below the control console and from beside the B/W printer, if present) - refer to Figure 8-108 on page 8-125.

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8-8-2 Mitsubishi VCR Replacement Procedure

NOTE: This section describes the installation and removal procedure of the following MITSUBISHI VCR models:

- HS-MD3000E (PAL) - P/N: 066E9513
- HS-MD3000U (NTSC) - P/N: 066E9514

The VCR will not operate without initial setup and adjustments, as described below.



Figure 8-112 Mitsubishi Video Cassette Recorder (VCR)

8-8-2-1 Tools

No special tools needed.

8-8-2-2 Manpower

One person - 30 mins.

8-8-2-3 Preparations

1) Shut down the Vivid™ 3 ultrasound unit, as described in *Chapter 3 - Installation*.
2.) Remove the Connectors Panels Cover as described in the Connector Panels Cover Removal Procedure on page 8 - 8.
3.) Unpack the VCR.
4.) Check that the VCR AC voltage corresponds to that of your local voltage.

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8-8-2-4 Mitsubishi VCR Installation Procedure

1.) Place the VCR on the *left* side of the Vivid™ 3 ultrasound unit's top surface (below the control console - as shown in Figure 8-113 below) and next to the B/W Printer, if present, allowing sufficient room to access the cables at the rear of the VCR.



Figure 8-113 Video Cassette Recorder (VCR) Installed in the Vivid™ 3 Ultrasound Unit Configuration with UP2950 Printer

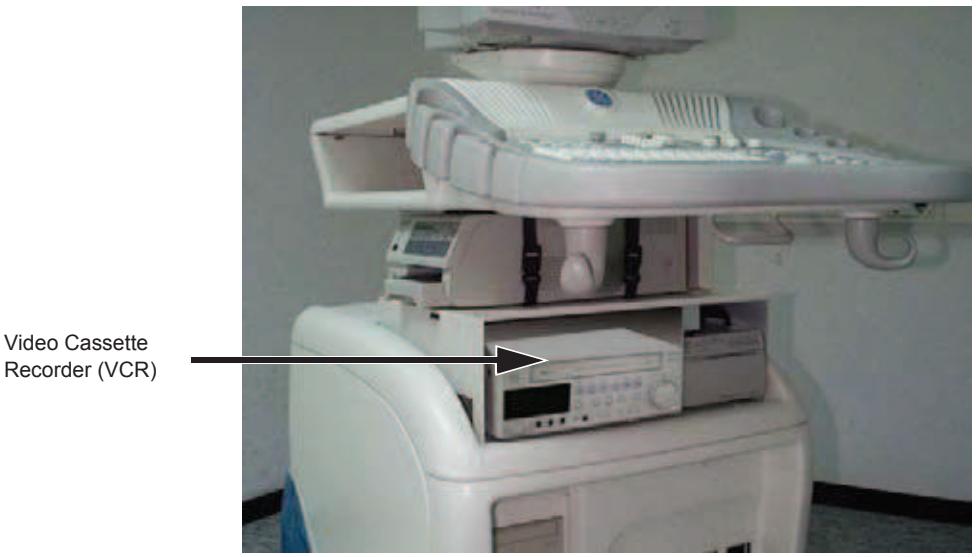


Figure 8-114 Video Cassette Recorder (VCR) Installed in the Vivid™ 3 Ultrasound Unit (Configuration with UP21MD Color Printer and Shelf)

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2.) Connect one end of the VCR power cable (P/N: 2269430) to the power outlet on the Vivid 3 rear panel and the other end to the AC power socket on the VCR rear panel - see Figure 8-115 on page 8-130.

3.) Using the S-video cable (P/N: 2266743), connect one end to the **Video OUT** socket on the VCR rear panel (refer to Figure 8-115) and the other to the **Video IN** socket on the Vivid 3 rear panel.



Figure 8-115 Mitsubishi VCR Rear Panel

4.) Boot up the Vivid™ 3 ultrasound unit by pressing the ON/OFF button on the control console.

5.) Power ON the VCR by pushing the power switch on VCR front panel.



Figure 8-116 Mitsubishi VCR Front Panel - Power Switch

6.) Press **Config** then, from the System Configuration window, activate the **VCR / ECG** tab.

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7.) Under the VCR Options list, choose Mitsubishi from the **VCR model** drop-down list (Figure 8-117).

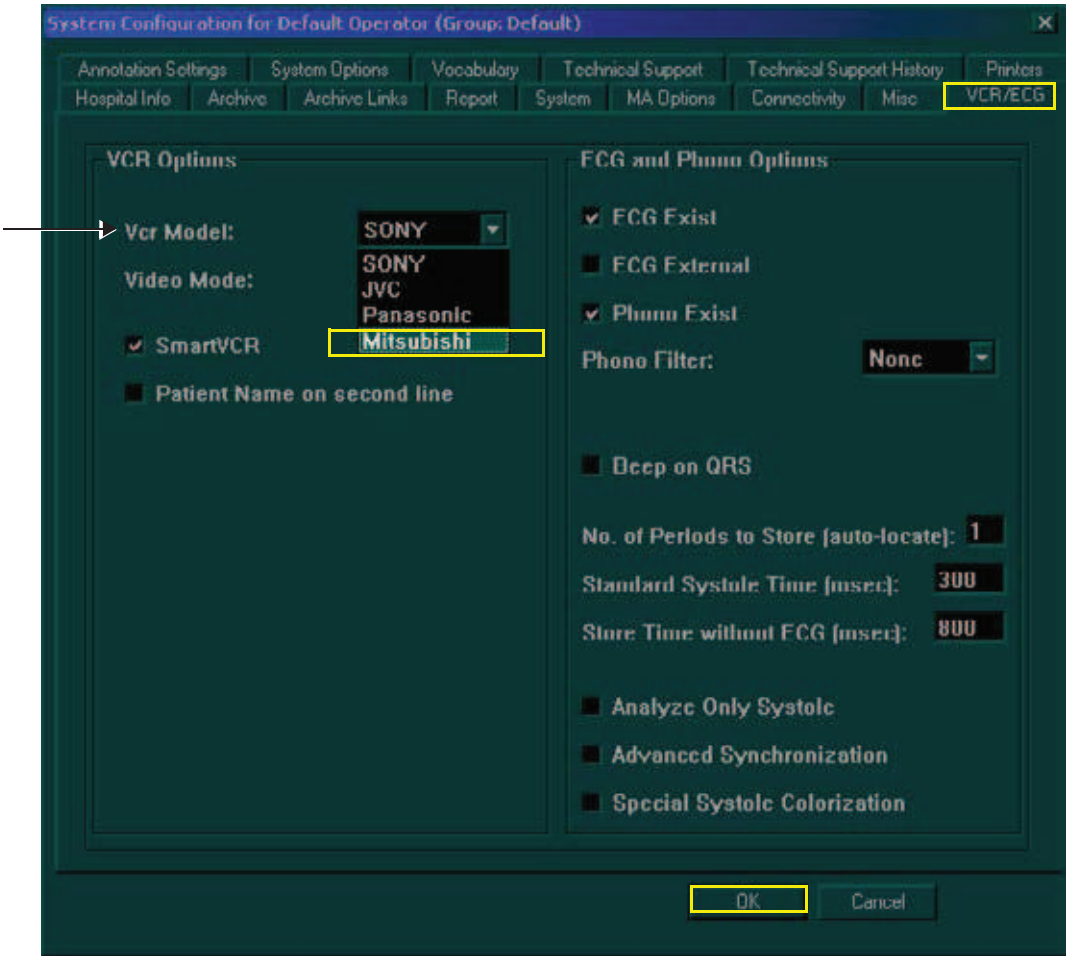


Figure 8-117 Selecting VCR Model - Mitsubishi

8.) From the **Video Mode** drop-down list, choose PAL or NTSC (according to video system in your region), then press **OK** to apply the changes.

9.) Proceed to the VCR Setup procedure, described below.

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8-8-2-4-1 Mitsubishi VCR Setup Procedure

NOTE: This procedure must be performed on initial Mitsubishi VCR installation.

NOTE: The Mitsubishi VCR can be configured using the Menus on the front panel (Figure 8-118) as follows:

- Use the **Jog button** to navigate between the selections.
- Push the **Enter button** to apply your selection.

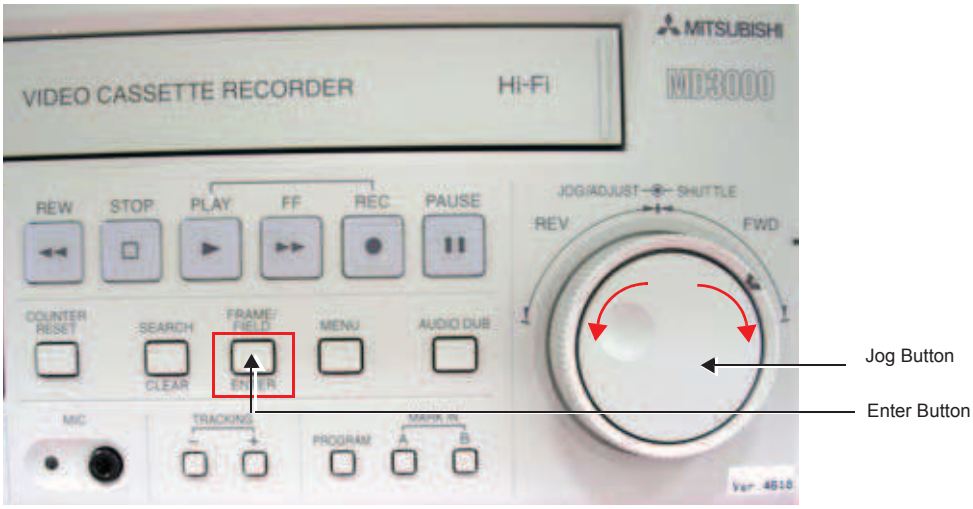


Figure 8-118 Mitsubishi VCR Front Panel

To configure the Mitsubishi VCR:

1.) Press the **VCR Play B.** button on the Vivid™ 3 control console to display the VCR menus on the Vivid™ 3 monitor.

2.) Using the *Jog* button on the VCR front panel (Figure 8-118), select the required VCR menu language (Figure 8-119), then press the *Enter* button to continue to the next menu.



Figure 8-119 Language Menu

3.) Select the **<Menu1>** settings, according to the configuration shown in Figure 8-120 below , then press the *Enter* button to continue to the next menu.

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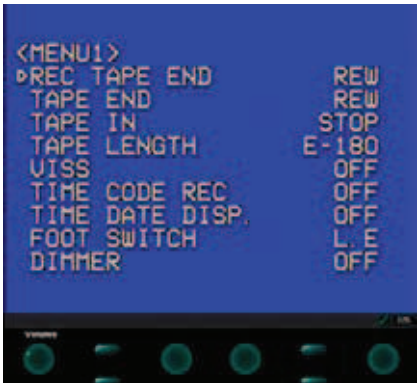


Figure 8-120 Menu 1 Settings

4.) Select the **<Menu2>** settings, according to the configuration shown in Figure 8-121 below , then press the *Enter* button to continue to the next menu.



Figure 8-121 Menu 2 Settings

5.) Skip **<Menu3>** (Figure 8-122) by pressing the *Enter* button to continue to the next menu.



Figure 8-122 Menu 3

6.) Select the **<RS-232C>** settings, according to the configuration shown in Figure 8-123 below, then press the *Enter* button to continue to the next menu.

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Figure 8-123 RS-232C Menu Settings

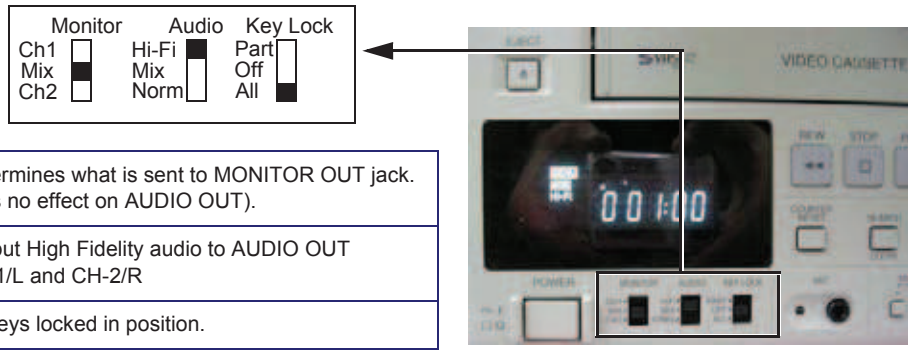
7.) Skip the **<Elapsed Time>** (Figure 8-124) by pressing the *Enter* button.



Figure 8-124 Elapsed Time Menu

8.) Connect the RS-232C cable and the Audio IN and Audio OUT cables between the appropriate connections on the Vivid 3 rear panel and the Mitsubishi VCR rear panel (refer to Figure 8-115 on page 8-130).

9.) On the VCR front panel, verify that the *Monitor* and *Audio* switches are in the positions shown in Figure 8-125 below (if necessary, adjust accordingly) - then move the Key Lock switch to the **ALL** position to lock all keys.



Monitor	Mix	Determines what is sent to MONITOR OUT jack. (Has no effect on AUDIO OUT).
Audio	Hi-Fi	Output High Fidelity audio to AUDIO OUT CH-1/L and CH-2/R
Key Lock	ALL	All keys locked in position.

Figure 8-125 Mitsubishi VCR - Switches Settings (Front Panel)

10.)Perform the VCR Test, as described in the VCR Test on page 4 - 4.

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8-8-2-5 Mitsubishi VCR Removal Procedure

1.) Remove the Connectors Panels Cover as described in the Connector Panels Cover Removal Procedure on page 8 - 8.

2.) If optional shelf (P/N H45011CN) is present, refer to the Color Video Printer Removal - Procedure 1 on page 8 - 161.

3.) Disconnect the RS-232C cable, the Audio and S-Video IN and OUT cables, and Power cord from VCR's rear as shown in Figure 8-115 on page 8-130.

4.) Remove the VCR from the *left* side of the Vivid™ 3 ultrasound unit (taking it out from below the control console and from beside the B/W printer, if present) - refer to Figure 8-113 on page 8-129.

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8-8-3 Sony VCR Replacement Procedure

NOTE: This section describes the installation and removal procedure of the SONY SVO-9500MDP2 and SVO-9500MD2.

The SVO-9500MDP2 (PAL) and SVO-9500MD2 (NTSC) are alike, except for the Color Signal system.

The installation procedure is the same for both models.



Figure 8-126 SONY Video Cassette Recorder (VCR)

8-8-3-1 Tools

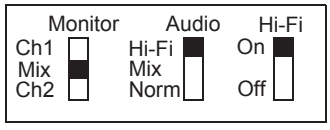
No special tools needed.

8-8-3-2 Manpower

One person - 30 mins.

8-8-3-3 Preparations

1) Shut down the Vivid™ 3 ultrasound unit, as described in *Chapter 3 - Installation*.
2.) Remove the Connectors Panels Cover as described in the Connector Panels Cover Removal Procedure on page 8 - 8.
3.) Unpack the VCR.
4.) Check that the VCR AC voltage corresponds to that of your local voltage.
5.) Verify that the switches on the VCR front panel are as shown in Figure 8-127 below. If necessary, adjust accordingly.



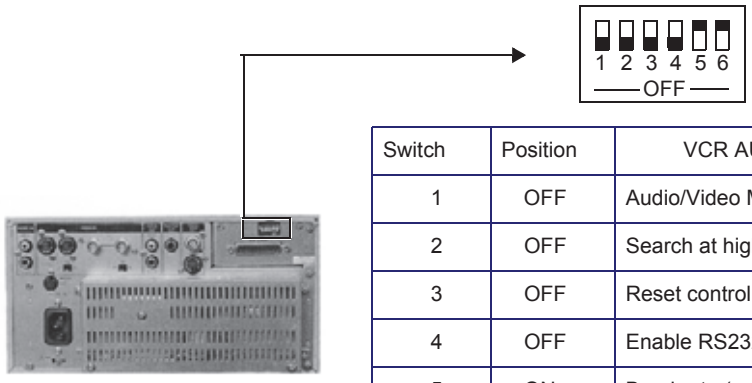
Monitor	Mix	Not important. (Determines what is sent to MONITOR OUT jack. Has no effect on AUDIO OUT).
Audio	Hi-Fi	Output High Fidelity audio to AUDIO OUT CH-1/L and CH-2/R
Hi-Fi	ON	Record High Fidelity audio, if present



Figure 8-127 Sony VCR - Switches Setting (Front Panel)

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6.) Verify that the switches on the VCR rear panel are as shown in Figure 8-128 below. If necessary, adjust accordingly.



Switch	Position	VCR AUDIO SWITCHES (on Rear)
1	OFF	Audio/Video Mute during search
2	OFF	Search at high speed using FF/REW
3	OFF	Reset control counter when cassette is ejected
4	OFF	Enable RS232 remote
5	ON	Baud rate (see below)
6	ON	Baud rate (see below)

Switch 5	Switch 6	Baud rate
OFF	OFF	2400
OFF	ON	4800
ON	OFF	9500
ON	ON	10200

Figure 8-128 Sony VCR - Switches Setting (Rear Panel)

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8-8-3-4 Sony VCR Installation Procedure

1.) Place the VCR on the *left* side of the Vivid™ 3 ultrasound unit's top surface (below the control console - as shown in Figure 8-129 below) and next to the B/W Printer, if present, allowing sufficient room to access the cables at the rear of the VCR.



Figure 8-129 Video Cassette Recorder (VCR) Installed in the Vivid™ 3 Ultrasound Unit Configuration with UP2950 Printer



Figure 8-130 Video Cassette Recorder (VCR) Installed in the Vivid™ 3 Ultrasound Unit (Configuration with UP21MD Color Printer and Shelf)

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2.) Connect the RS-232C cable, the Audio and S-Video IN and OUT cables, and the Power cord, as shown in Figure 8-131.

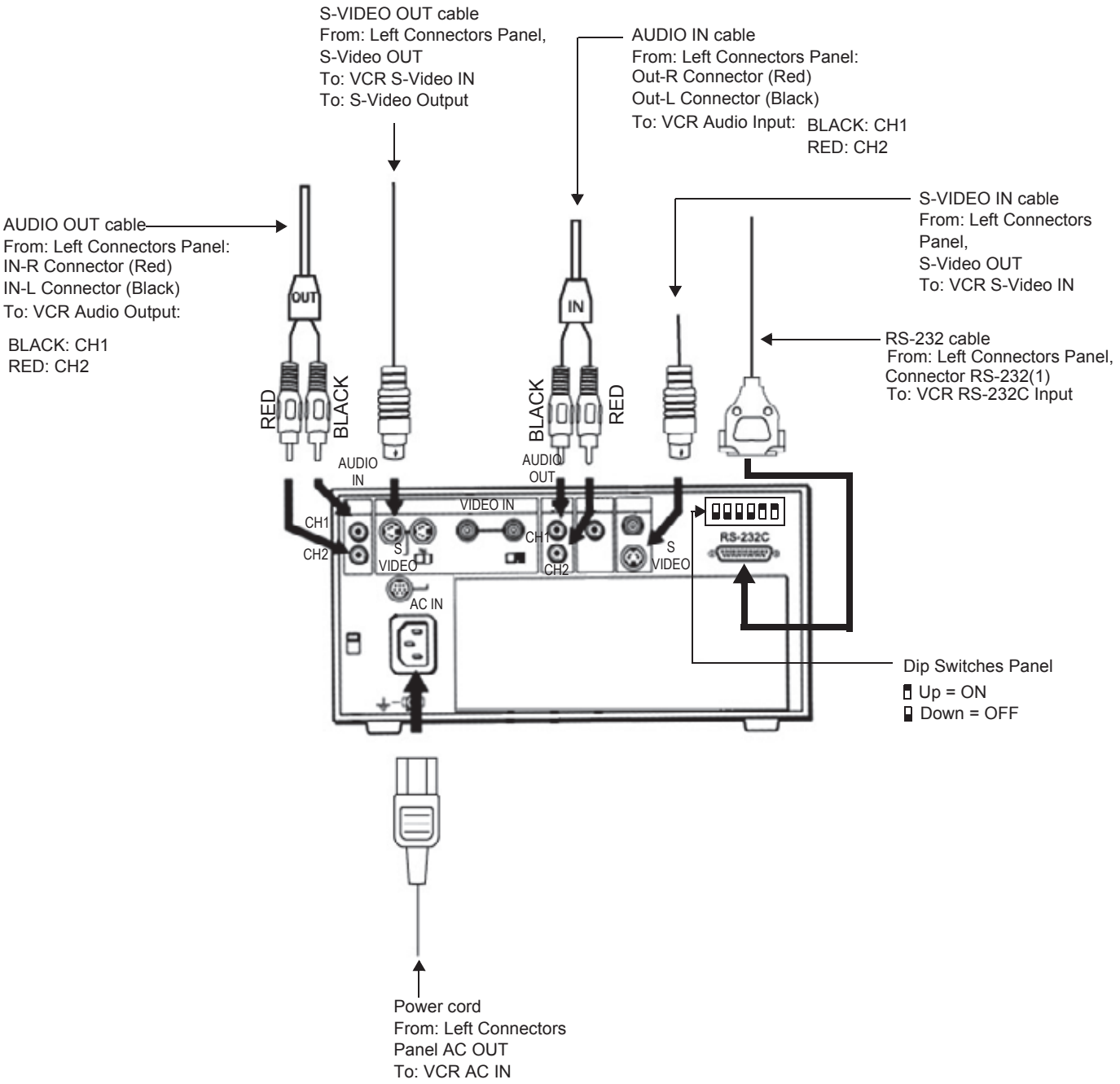


Figure 8-131 Sony VCR Connection Cables

3.) Place the VCR in its correct final position.

4.) Secure the VCR by fastening the belt around it, or together with the B/W Printer (if present).

5.) If more secure fastening is desired, install the optional shelf (P/N H45011CN), which can be ordered separately if the Color Printer option is not installed.

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NOTE: For shelf installation instructions refer to the Color Video Printer Installation - Procedure1 on page 8 - 157.

6.) Re-install the Connectors Panels Cover as described in the Connector Panels Cover Installation Procedure on page 8 - 8.

7) Reconnect the mains AC power cable from the wall outlet.

8) Turn ON the main circuit breaker located on rear of the Vivid™ 3.

9) Turn ON the Vivid™ 3 by pressing the ON/OFF button on the Control Console.

10.) Under System Configuration, VCR/ECG Tab, select the appropriate VCR mode options. For more information, see VCR/ECG Tab on page 3 - 45.

Note: Sony VCR - Reset Counter:
If the Reset Counter button is activated while the VCR is in the *Stop*, *Pause*, or *Record* state, the counter display is reset to *zero* (0:00:00).

8-8-3-5 Sony VCR Removal Procedure

1.) Remove the Connectors Panels Cover as described in the Connector Panels Cover Removal Procedure on page 8 - 8.

2.) If optional shelf (P/N H45011CN) is present, refer to the Color Video Printer Removal - Procedure 1 on page 8 - 161.

3.) Release the B/W printer by undoing the fastening belt around it (together with the VCR, if present).

4.) Disconnect the RS-232C cable, the Audio and S-Video IN and OUT cables, and Power cord from VCR's rear as shown in Figure 8-131 on page 8-139.

5.) Remove the VCR from the *left* side of the Vivid™ 3 ultrasound unit (taking it out from below the control console and from beside the B/W printer, if present) - refer to Figure 8-129 on page 8-138.

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8-8-4 JVC VCR Replacement Procedure

NOTE: This section describes the installation and removal procedure of the JVC Video Casette Recorder.

The SR-S388E (PAL) and SR-S365U (NTSC) models are alike, except for the Color Signal system.

The installation procedure is the same for both models.

Note: When installing the JVC VCR, use the cables supplied with the VCR and ***not*** those supplied with the **Vivid 3** system.



Figure 8-132 JVC Video Cassette Recorder (VCR)

8-8-4-1 Tools

No special tools needed.

8-8-4-2 Manpower

One person - 30 mins.

8-8-4-3 Preparations

1) Shut down the Vivid™ 3 ultrasound unit, as described in *Chapter 3 - Installation*.
2.) Remove the Connectors Panel cover as shown in the Connector Panels Cover Removal Procedure on page 8 - 8.
3.) Unpack the VCR and place it on a table (or firm surface).
4.) Check that the VCR AC voltage corresponds to that of your local voltage.
5.) Proceed to the JVC VCR Setup Procedures on the next page.

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8-8-4-4 JVC VCR Setup Procedures

8-8-4-4-1 Front Panel Setup

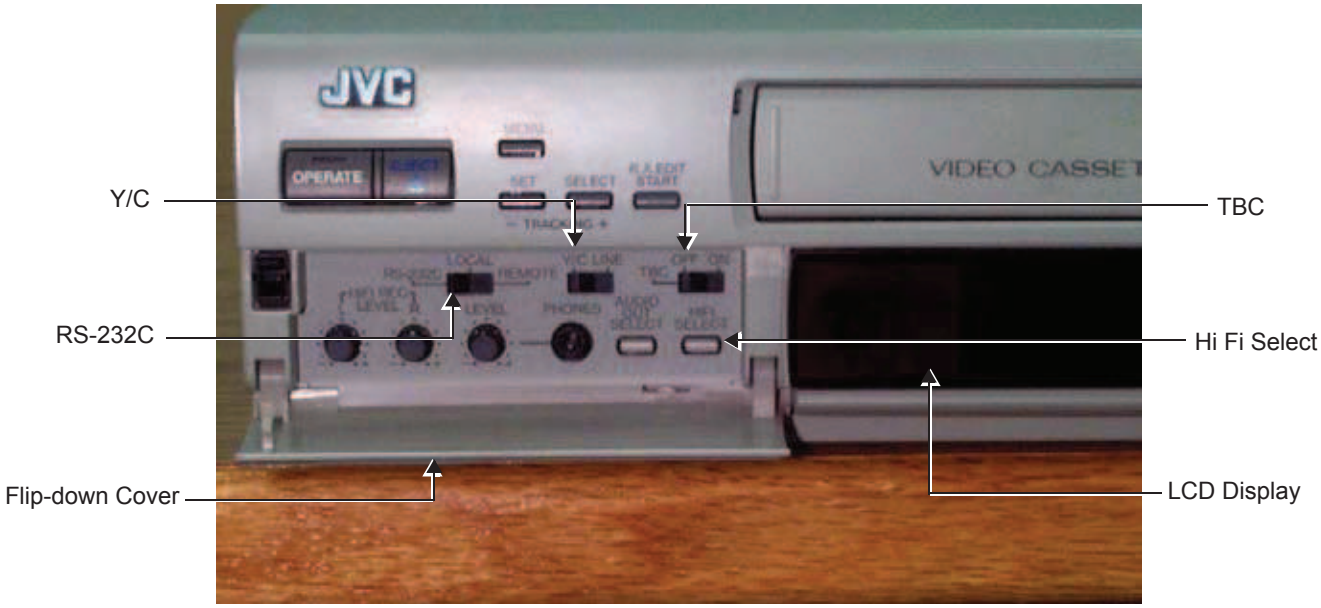


Figure 8-133 JVC VCR Front Panel - Switch Settings

1) Open the flip-down switch cover on the lower *left* side of the JVC front panel (by pulling *downwards*), as seen in Figure 8-133, above.

2.) Check that the switch settings for each of the following switches is correct (as shown below). If necessary, adjust accordingly:

TBC	-	Set to **OFF**
Hi Fi Select	-	Set to **Hi-Fi L + R** If setting incorrect, press the Hi Fi Select button repeatedly until Hi-Fi L + R is selected (and visible at the bottom of the LCD display).
Y/C Line (video input)	-	Set to **Y/C**
RS-232C/Local/Remote	-	Set to **RS-232C**

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8-8-4-4-2 BIOS Setup

NOTE: If you have an external monitor, you can connect it to the Monitor Out - Video socket on the VCR rear panel (see Figure 8-134 below), which will enable you to view the different menus as they are being edited for the BIOS setup. ***For best image quality during recording and playback, this is the recommended setup procedure****.*



Figure 8-134 JVC VCR - Rear Panel - External Monitor Connection

1.) Connect the AC power cable to the AC Input socket on the VCR rear panel (upper *left* corner) and plug the other end of the cable into the mains power wall outlet.
2.) Turn ON power to the VCR.
3.) If an external monitor is connected to the VCR, make sure power to the monitor is also ON.
4.) Press the **Menu** button on the JVC Front Panel - see Figure 8-135 below.

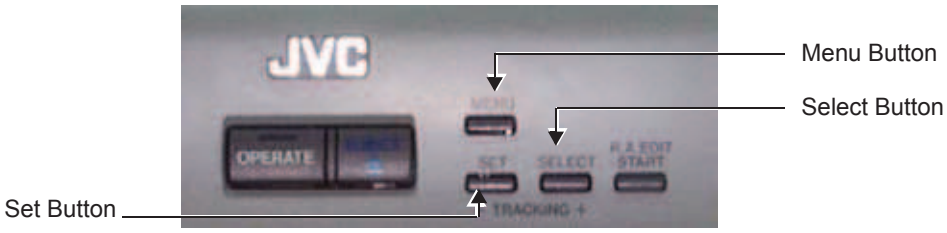


Figure 8-135 JVC VCR Front Panel Controls

The LCD Display panel (refer to Figure 8-133 on page 8-142) becomes illuminated.

NOTE: If an external monitor is connected (see Note above), the Menu Switch Setting Screen is displayed (on the external monitor). While making changes to the Menu Switch settings, these may be monitored in this display.
If an external monitor is not connected, the Menu # and currently-selected value is only visible in the LCD Display on the JVC VCR front panel.

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5.) Use the **Select** button (see Figure 8-135) to select *MEMORY SW* and then press the **Set** button.

6.) Using the **Select** and **Set** buttons, scroll through the various Menus and set the values for each of the relevant Menus, in accordance with those shown in Table 8-6 below.

NOTE: Work in the same order as that given in Table 8-6 and do not change any settings other than those listed.

Table 8-6 JVC VCR Menu Switch Settings

Menu No.	Name	Set Value
100	S-VHS SELECT	**[AUTO] (1)**
101	EDIT SELECT	**ENHANCED (2)**
200	Hi-Fi AUDIO REC.	**[ON] (1)**
213	A.DUB SELECT	**[A.DUB] (0)**
335	RECORDING MODE	**[SP] (0)**
338	MENU SW 2	**OPEN (1)**
352	COUNTER MODE	**CTL (1)**
500	ON SCREEN DISPLAY	**OFF (0)**
005	AUTO TRACKING	**[ON] (1)**
204	Hi-Fi OUT AT SEARCH	**[MUTE] (0)**
212	NORM OUT AT SEARCH	**OFF (0)**
300	DIRECT EJECT	**[ENABLE] (1)**
312	MODE AT TAPE END	**STOP (0**
354	BAUDRATE SELECT	**[9600] (3)**
359	16: 9 REC	**OFF (0)**
504	INFORMATION SELECT	**TIME (0)**

NOTE: In Table 8-6, square brackets [ ] indicate factory presets. The numbers in parenthesis ( ) are seen on the LCD display.

7.) When all the above-mentioned settings are correct, press the **Menu** button, select *CLOCK ADJUST* and press the **Set** button. Using the Select and Set buttons, adjust the settings to the correct time. When the correct time is visible in the LCD display, press the **Menu** button, to quit *CLOCK ADJUST*.

8.) Turn OFF power to the VCR. Remove the AC power cable from the mains power wall outlet and disconnect the cable from the VCR rear panel.

If an external monitor was used for the BIOS setup procedure, turn OFF power to the external monitor and disconnect the power cable (connected to the VCR rear panel Monitor Out - Video socket - refer to Figure 8-134 on page 8-143).

NOTE: All settings are now stored in the VCR memory and the JVC VCR is ready for installation.

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8-8-4-5 JVC VCR Installation Procedure

1.) Remove the white metal shelf from inside the side compartment (located on the *left* side of the control console) as described on page 8-17.

2.) Discard the shelf.

3.) Raise the control console to its *maximum* height and remove the console bottom cover (upper section) as described on *Control Console Bottom Cover (Upper Section) Removal Procedure* on page 8-17.

4.) Connect the VCR cables (listed below) to the appropriate sockets on the VCR rear panel (as shown in Figure 8-136):

- Audio Input
- Audio Output
- Video Input (YC IN)
- Video Output (YC OUT)
- RS-232C

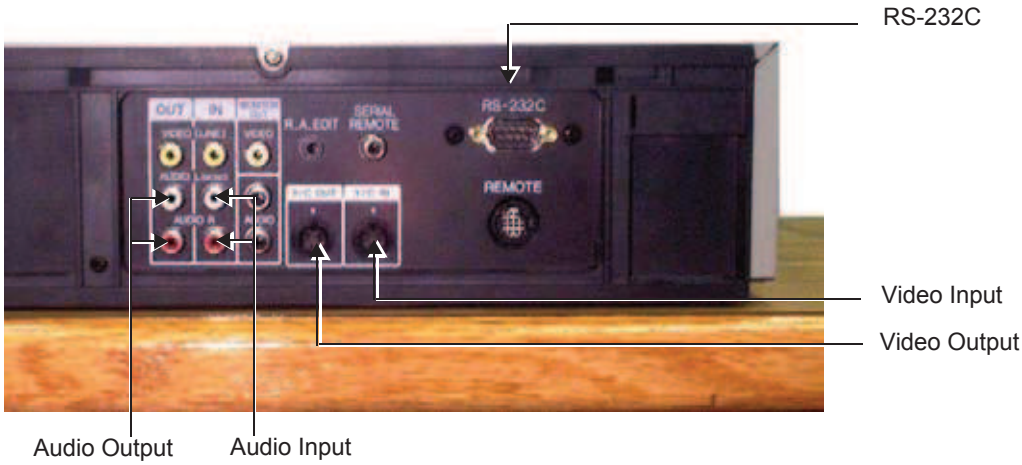


Figure 8-136 JVC VCR - Rear Connectors Panel

5.) Connect one end of the cable extender supplied with the VCR (see Figure 8-137 below) to the AC power cable (already attached to the VCR).

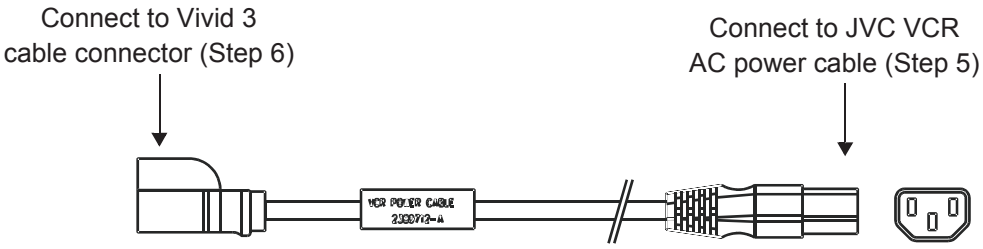


Figure 8-137 JVC VCR Cable Extender

NOTE: When connecting the VCR AC Power cable, always use the cable extender supplied with the VCR.

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6.) Connect the other end of the cable extender to the cable connector on the Vivid™ 3, as shown in Figure 8-138 below (refer also to Figure 8-137, above).

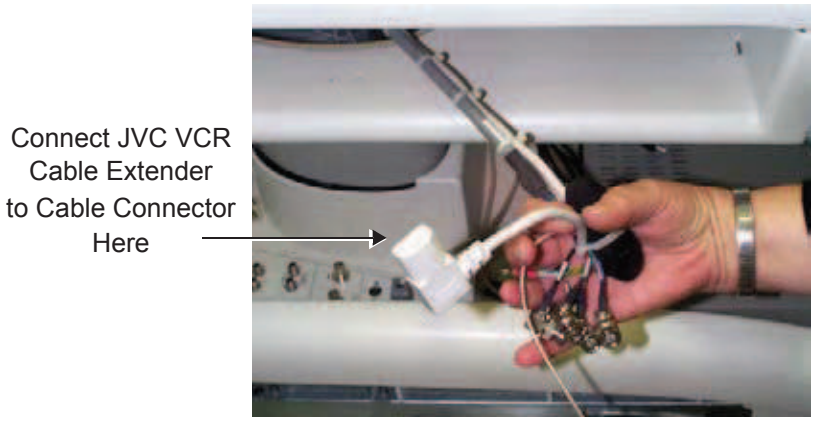


Figure 8-138 Cable Connector on Vivid™ 3

7.) Carefully slide the VCR into the side compartment, and at the same time, route all the cables through the gap between the compartment base and the *right* side of the compartment (as shown in Figure 8-139 below) while gently pulling them in a *downwards* direction.

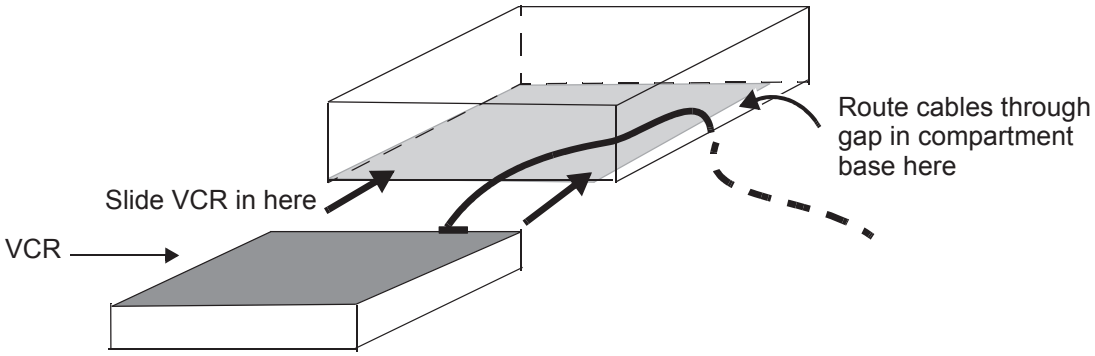


Figure 8-139 Sliding JVC VCR into Side Compartment

8.) Continue sliding the VCR all the way back into the final position with one hand, while gently pulling the cables in a *downwards* direction. The VCR and attached cables are now positioned as shown in Figure 8-140 below.

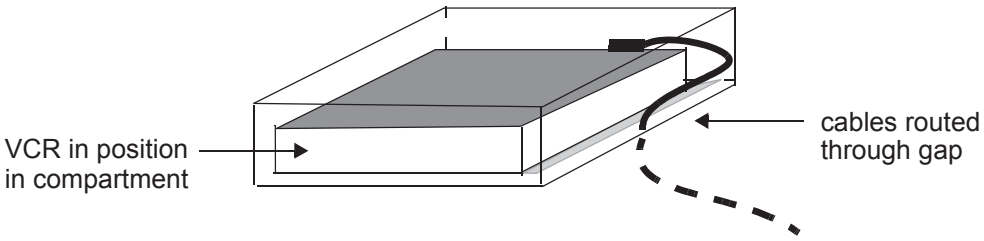


Figure 8-140 JVC VCR in Position in Side Compartment

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9.) Check that the VCR fits properly in position and does not extend beyond the edge of the side compartment - see Figure 8-141 below.



Figure 8-141 JVC VCR Installed in Compartment

*NOTE: In order to eliminate the risk of the JVC VCR moving or falling out of the compartment whenever the **Vivid 3** ultrasound unit is moved, a removable L-shaped aluminium stopper (Part No. 2401662) is fitted to the floor of the side compartment, as described below. This serves to secure the VCR firmly in position.*

10.) Make sure the surface of the side compartment is thoroughly clean and dry.

11.) Check that the outer sides of the L-shaped aluminium VCR stopper strip are clean and dry.

12.) Cut two pieces of self-adhesive velcro strip (supplied with the VCR), each approximately 8 cm (3 in) in length.

13.) Holding one the velcro strips, remove the protective sheet from the self-adhesive side (*hook* section) and carefully apply the strip to the outer side of the aluminium VCR stopper, placing it close to the edge as shown in Figure 8-142 below. Press down to secure firmly in position.

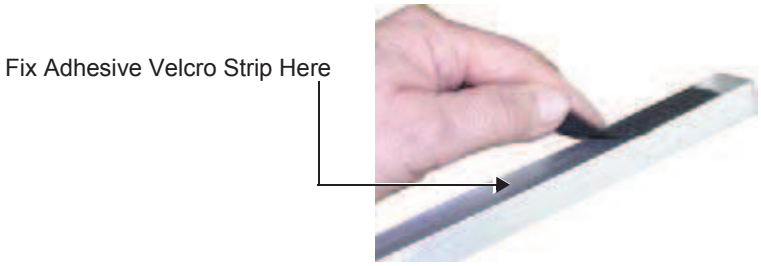


Figure 8-142 Applying Velcro Strip to Outer Side of Aluminium Stopper

14.) Repeat step 13 to apply the second velcro strip to the other the end of the aluminium VCR stopper, placing it close to the edge (with the two strips evenly spaced apart).

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15.) Separate the upper (loop) section from each of the velcro strips and repeat step 13 to apply each section to the floor of the side compartment, parallel to the lower edge of the VCR as shown in Figure 8-143 below. Press down firmly to ensure the two sections are securely attached.



Figure 8-143 Velcro Strips Fastened to Floor of Side Compartment

16.) Holding the aluminium VCR stopper with the velcro hook side facing *downwards*, fix it in position in front of the VCR, taking care to properly align the velcro strips. Press down firmly to ensure the stopper is securely fastened - refer to Figure 8-144 below.

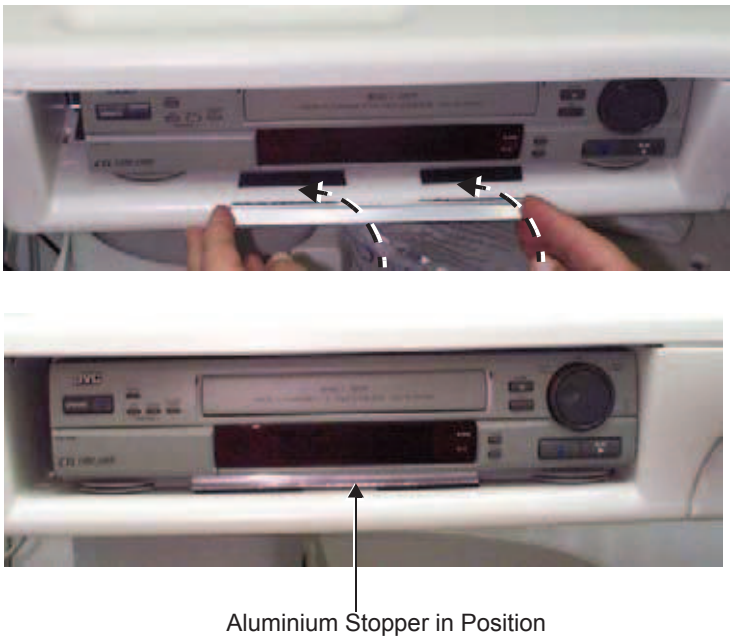


Figure 8-144 Aluminium Stopper In Front of VCR

17.) Bundle all the VCR cables together into a single loom and bind together with cable ties.

18.) With the control console still at the *maximum* height, route the cable loom down to the ***left*** rear connectors panel (at the rear of the **Vivid 3** unit).

19.) Fasten the loom to the Vivid™ 3 bottom cover using the square adhesive cable fastener (supplied).

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20.) Connect the RS-232C cable, the Audio and S-Video IN and OUT cables, and the Power cable to the appropriate sockets on the Vivid™ 3 rear connectors panel - see Figure 8-145.

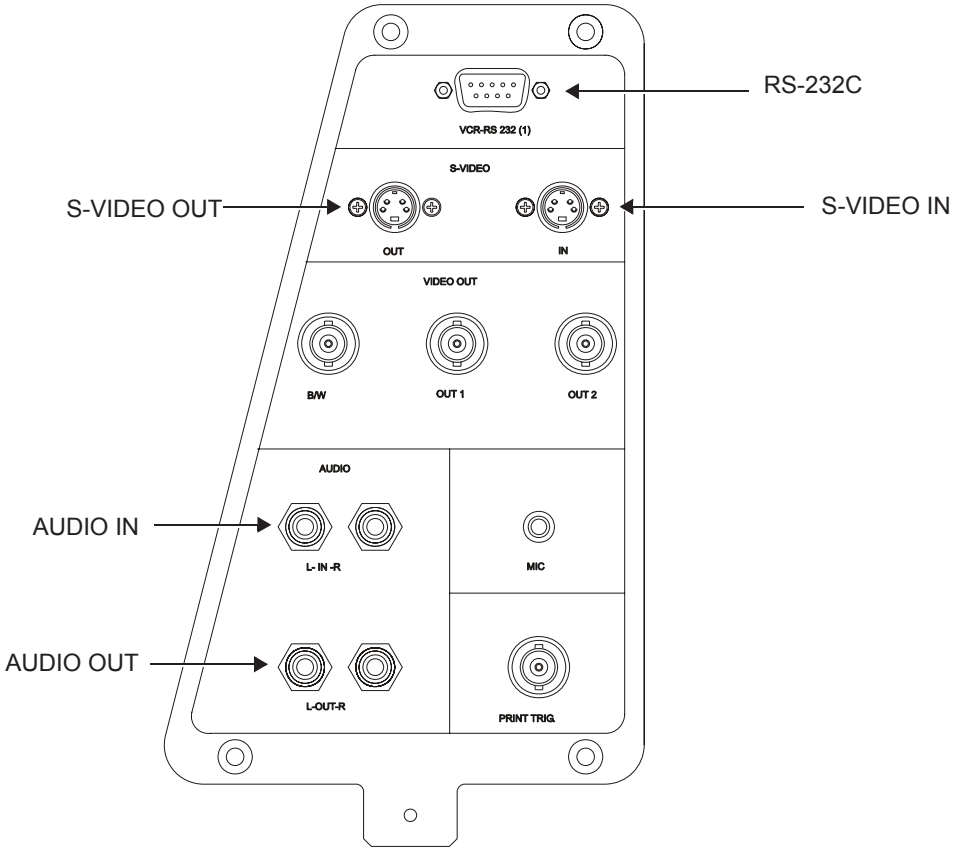


Figure 8-145 Vivid™ 3 Left Rear Panel Connectors

21.) Return the console bottom metal cover (upper section) (removed in step 3). Make sure the VCR cable loom is properly aligned to pass through the slot in the cover (as shown in Figure 8-146 below) and that there is no kinking or pinching of the cables.

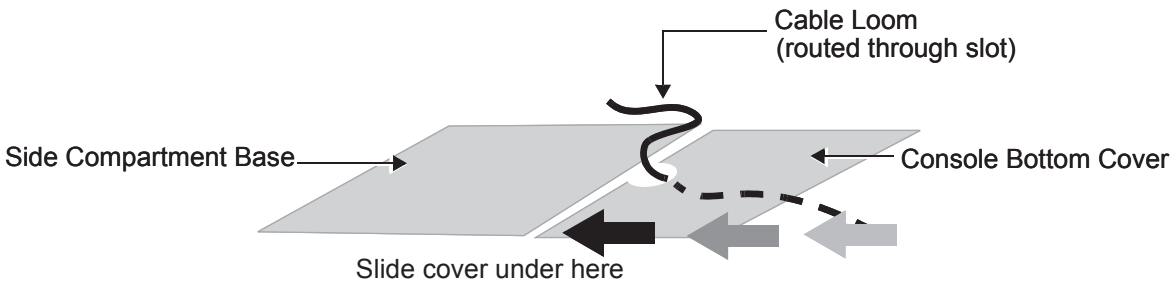


Figure 8-146 Routing Cable Loom through Slot in Console Bottom Cover (upper section)

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22.) Screw the cover firmly in position as described in the *Control Console Bottom Cover (Upper Section) Installation Procedure* on page 8-19.

23.) Re-install the Connectors Panel Cover as described in the *Connector Panels Cover Installation Procedure* on page 8-8.

24) Reconnect the mains AC power cable from the wall outlet.

25) Turn ON the main circuit breaker located on rear of the Vivid™ 3.

26) Turn ON the Vivid™ 3 by pressing the ON/OFF button on the Control Console.

27.) Under System Configuration, VCR/ECG Tab, select the JVC VCR option. For more information, see *VCR/ECG Tab* on page 3-45.

28.) Insert a blank video casette tape into the VCR and perform a test recording to check correct operation.

Note: JVC VCR - Reset Counter:
If the Reset Counter button is activated while the VCR is in the *Stop*, *Pause*, or *Record* state, the counter display is reset to *zero* (0:00:00).

8-8-4-6 JVC VCR Removal Procedure

1.) Remove the Connectors Panel cover as shown in the Connector Panels Cover Removal Procedure on page 8 - 8.

2.) Disconnect the RS-232C cable, the Audio and S-Video IN and OUT cables, and the Power cable from the Vivid™ 3 rear connectors panel - see Figure 8-145 on page 8-149.

3.) Remove the aluminium VCR stopper from the edge of the side compartment on the *left* side of the Vivid™ 3 ultrasound unit (refer to Figure 8-141 on page 8-147).

4.) Slide the VCR partially out of the compartment, carefully easing the attached cables with it.

5.) Disconnect the RS-232C cable, the Audio and S-Video IN and OUT cables from VCR rear connectors panel (refer to Figure 8-136 on page 8-145).

6.) Disconnect the JVC VCR AC power cable extender from the power cable connector on the Vivid™ 3 (refer to Figure 8-138 on page 8-146).

7.) When all cables are disconnected, remove the VCR completely from the Vivid™ 3 ultrasound unit.

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8-8-5 Panasonic VCR Replacement Procedure

NOTE: This section describes the installation and removal procedure of the Panasonic AG-MD-835E (PAL) and AG-MD-835P (NTSC) video cassette recorders.

The installation and removal procedures are the same for both models.

NOTE: ***IMPORTANT - Before installation of either Panasonic VCR model, it is necessary to order the Panasonic VCR RS-232 Adaptor (Part No. 066E8200).***



Figure 8-147 Panasonic Video Cassette Recorder (VCR)

8-8-5-1 Tools

No special tools needed.

8-8-5-2 Manpower

One person - 30 mins.

8-8-5-3 Preparations

1) Shut down the Vivid™ 3 ultrasound unit, as described in *Chapter 3 - Installation*.
2.) Remove the Connectors Panels Cover as described in the Connector Panels Cover Removal Procedure on page 8 - 8.
3.) Unpack the VCR.
4.) Check that the VCR AC voltage corresponds to that of your local voltage.
5.) Verify that the switches on the VCR front switch panel are as shown in Figure 8-148 on page 8-152. If necessary, adjust accordingly.

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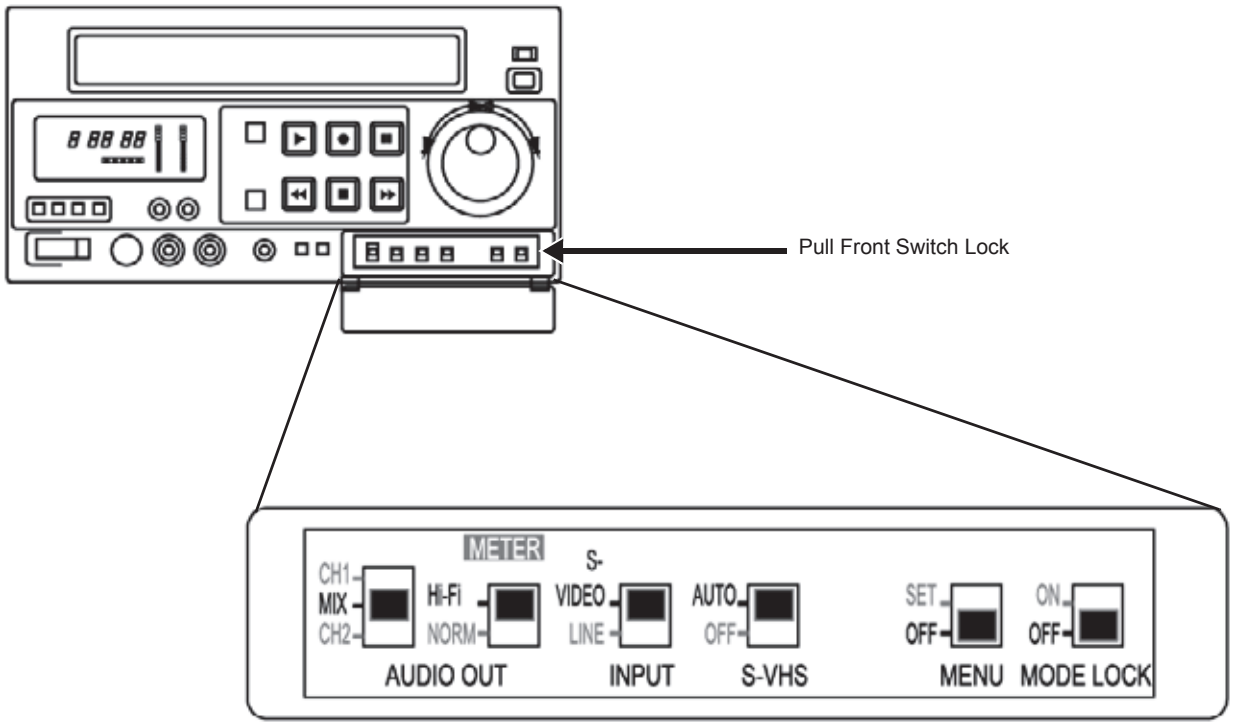


Figure 8-148 Panasonic VCR Switches Setting

8-8-5-4 Panasonic VCR Installation Procedure

1.) Raise the control console to *maximum* height.

2.) Place the VCR on the Vivid™ 3 ultrasound unit's top surface (*left* side, below the control console, as shown in Figure 8-129 below), allowing sufficient room to access the cables at the rear of the VCR.



Figure 8-149 Panasonic Video Cassette Recorder (VCR) Installed in the Vivid™ 3 Ultrasound Unit

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3.) Connect the Panasonic VCR RS-323 adaptor (Part No. 066E8200) to the RS-232C cable, and then to the RS-323 socket on the rear of the VCR, as shown in Figure 8-131 below.

4.) Connect the Audio and S-Video IN and OUT cables, and the Power cable (also shown in Figure 8-131).

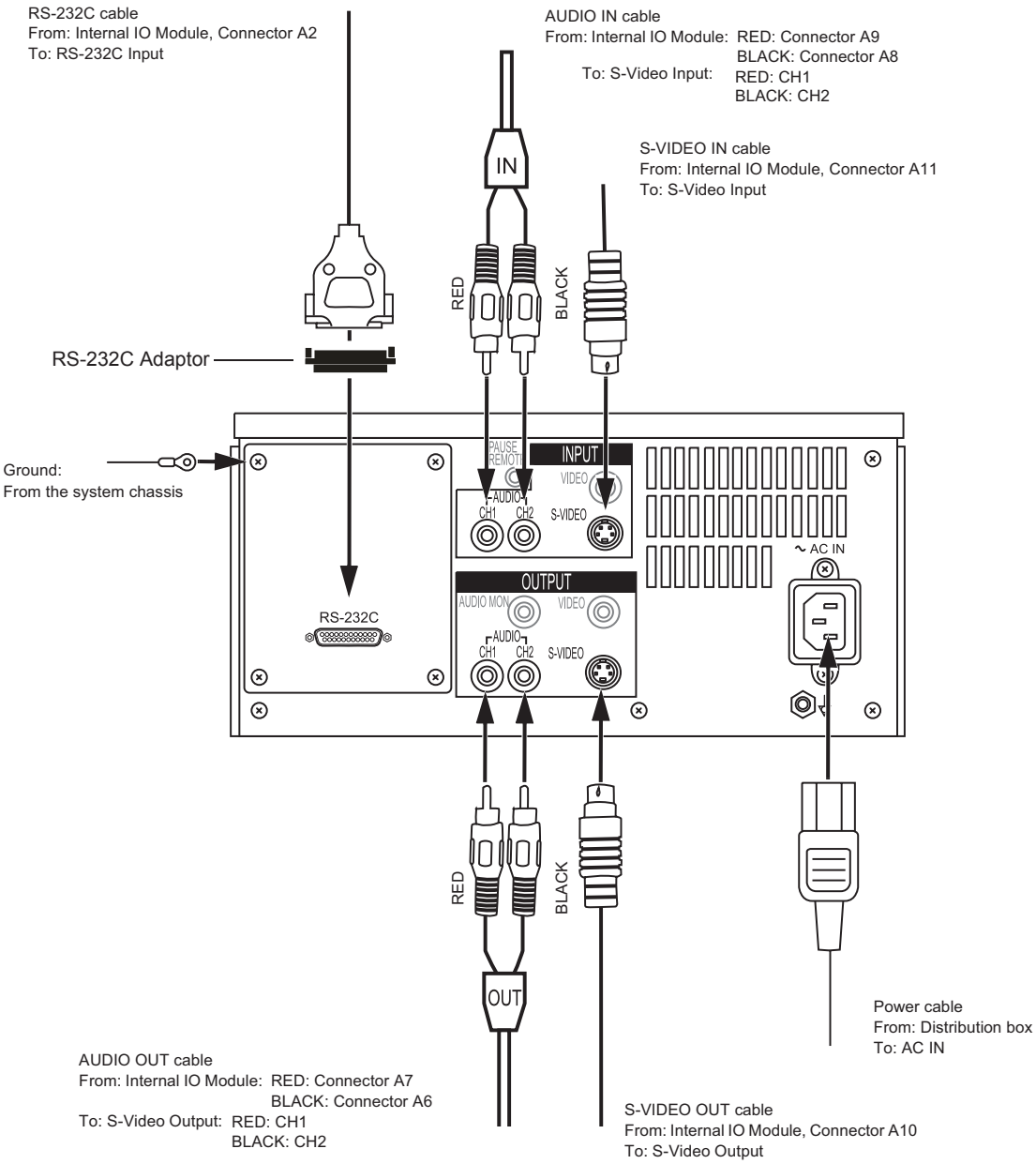


Figure 8-150 Panasonic VCR Connection Cables

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5.) Place the VCR in its correct final position.

6.) Secure the VCR by fastening the belt around it, or together with the B/W Printer (if present).

7.) If more secure fastening is desired, install the optional shelf (P/N H45011CN), which can be ordered separately if the Color Printer option is not installed.

NOTE: For shelf installation instructions, see Color Video Printer Installation - Procedure1 on page 8 - 157.

8.) Re-install the Connectors Panels Cover as described in the Connector Panels Cover Installation Procedure on page 8 - 8.

9) Reconnect the mains AC power cable from the wall outlet.

10) Turn ON the main circuit breaker located on rear of the Vivid™ 3.

11) Turn ON the Vivid™ 3 by pressing the ON/OFF button on the Control Console.

12.)Under System Configuration, VCR/ECG Tab, select the Panasonic VCR option, as shown in Figure 8-151 below. For more information, see VCR/ECG Tab on page 3 - 45.

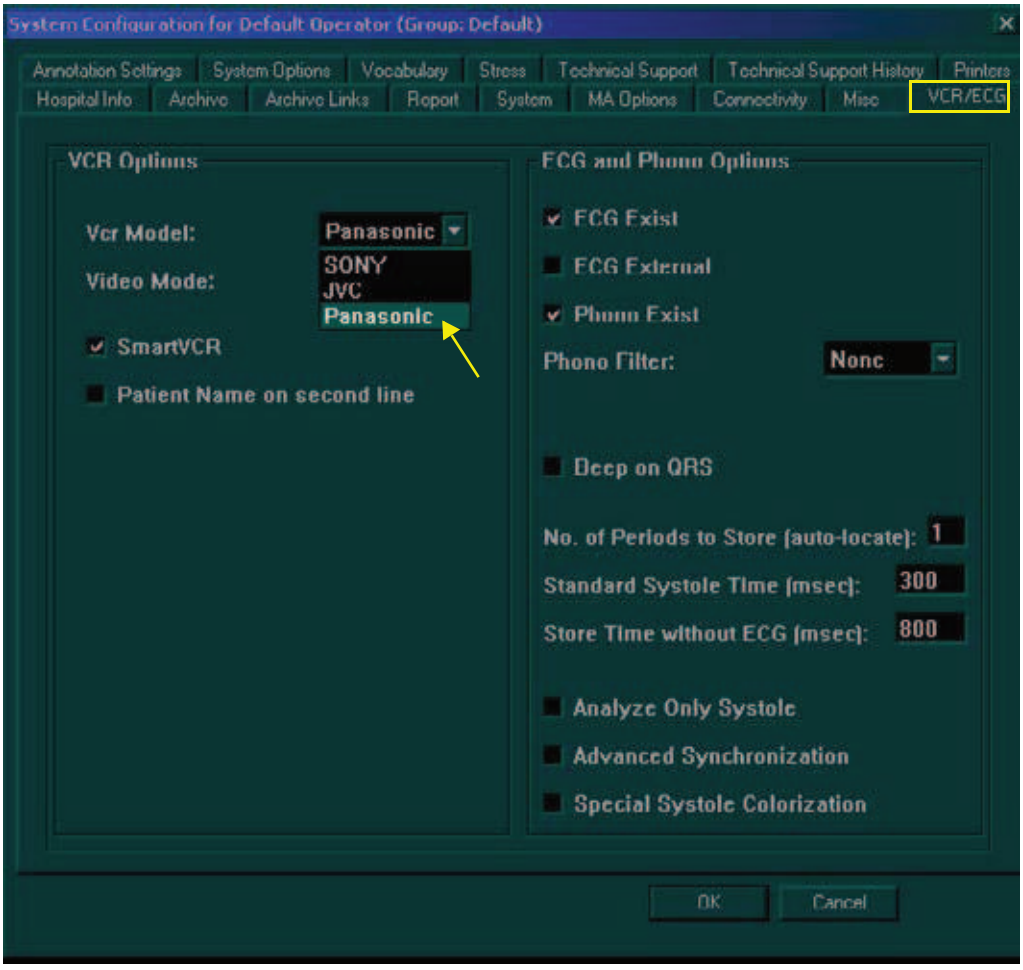


Figure 8-151 Panasonic VCR Option

Note: Panasonic VCR - Reset Counter:
If the Reset Counter button is activated while the VCR is in the *Stop* state, the counter display is reset to *zero* (0:00:00).
If activated in either the *Pause* or *Record* state, the display continues running (counter does not zero).

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8-8-5-5 Panasonic VCR Removal Procedure

1.) Remove the Connectors Panels Cover as described in the Connector Panels Cover Removal Procedure on page 8 - 8.

2.) If optional shelf (P/N H45011CN) is present, refer to the Color Video Printer Removal - Procedure 1 on page 8 - 161.

3.) Release the B/W printer by undoing the fastening belt around it (together with the VCR, if present).

4.) Disconnect the RS-232C cable (with adaptor), the Audio and S-Video IN and OUT cables, and the Power cable from the rear of the VCR as shown in Figure 8-150 on page 8-153.

5.) Remove the VCR from the Vivid™ 3 ultrasound unit (taking it out from below the control console and from beside the B/W printer, if present) - refer to Figure 8-129 on page 8-138.

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8-8-6 Sony UP 2950 MD & 2800P Color Video Printer Replacement Procedure

NOTE: This section describes the installation and removal procedures of the Sony UP-2800P and UP/2950MD Color Video Printers.

The Sony UP-2950MD Color Video Printer has a NTSC/PAL Selector on the rear panel while the Sony UP-2800P Color Video Printer is PAL only.



Figure 8-152 SONY Color Video Printer

In this section, two types of replacement procedures are described, as follows:

- For units that are equipped with a previously-installed B/W printer and/or VCR

  (see Color Video Printer Installation - Procedure1 on page 8 - 157, and Color Video Printer Removal - Procedure 1 on page 8 - 161).

- For units that are not equipped with a previously-installed B/W printer and/or VCR

  (refer to Color Video Printer Installation - Procedure 2 on page 8 - 162, and Color Video Printer Removal - Procedure 2 on page 8 - 162).

8-8-6-1 Tools

Use the appropriate flat and Phillips-type screw drivers.

8-8-6-2 Manpower

One person - 30 mins.

8-8-6-3 Preparations

1) Shut down the Vivid™ 3 ultrasound unit, as described in *Chapter 3 - Installation*.
2.) Remove the Connectors Panels Cover as described in the Connector Panels Cover Removal Procedure on page 8 - 8.
3.) Unpack the Color Video Printer.
4.) Check that the Color Video Printer AC voltage corresponds to that of your local voltage.
5.) Set the NTSC/PAL selector switch to NTSC (this applies only to Model UP-2950MD) as shown in Figure 8-158 on page 8-160.
6.) Install the Color Video Printer accessories, as described in the Operating Instructions supplied with the printer.

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8-8-6-4 Color Video Printer Installation - Procedure1

NOTE: The Installation Procedure is for units that are equipped with a previously-installed B/W printer and/or VCR. The color printer option includes a shelf with fastening belt, on which the printer is placed.

NOTE: If a B/W Printer and VCR are not installed, then the Color Video Printer can be placed on the top surface of the Vivid™ 3 ultrasound unit (below the keyboard) and secured with the belt.

1.) Raise the control console to its *maximum* height.
2.) If a B/W Printer and/or a VCR are installed, disconnect all the cables and remove the units.
3.) Remove the Metal Bottom Cover, beneath the front part of the control console, as described in the Control Console Bottom Cover (Upper Section) Replacement Procedure on page 8 - 17.
4.) Remove the Compartment Tray as described in the Gas Spring Removal Procedure on page 8 - 111
5.) Remove the Compartment Base as described in the Control Console Bottom Cover (Upper Section) Removal Procedure on page 8 - 17
6.) Route the Color Printer cables, found in the compartment, and let them drop down through the opening left after the Metal Bottom Cover was removed (see step 3, above).
7.) Re-install the Metal Bottom Cover, as described in the Control Console Bottom Cover (Upper Section) Installation Procedure on page 8 - 19.

Note: Make sure that all the cables are fitted through the slot in the far end of the Metal Bottom Cover, as shown in Figure 8-153 below.



Figure 8-153 Color Printer Cables through Metal Bottom Cover Slot

8) Remove the *right* and *left* screws located at the front of the lower section top cover, as shown in Figure 8-154 on page 8-158.

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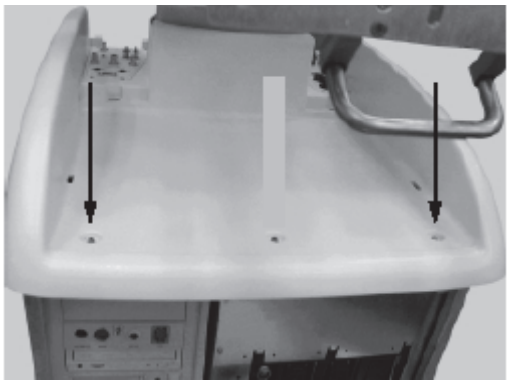


Figure 8-154 Top Cover Screws

9) Place the shelf on the top surface, with its two legs facing the front, and the stoppers (located on top of the shelf) facing the far end. Fasten the shelf to the top surface, using the screws removed in step 8, as shown in Figure 8-155.

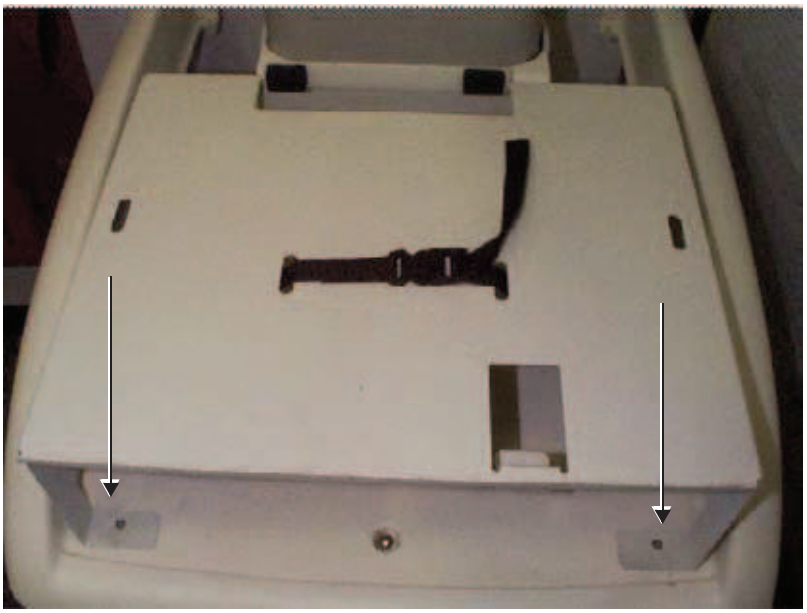


Figure 8-155 Shelf Fastened to Top Cover

10) Route the *left* end of the top surface belt through the narrow *left* slot in the shelf (closest to the front), working from below the shelf, *upwards*.

11) Route the *right* end of the top surface belt through the narrow *right* slot in the shelf (closest to the front), working from below the shelf, *upwards*.

12) Route the two sections of the additional belt (supplied with the Color Printer Shelf), through the second pair of (outer) *right* and *left* slots, as shown in Figure 8-155, above.

13) Return the B/W printer and VCR to their original positions, between the left and right sections of the belt.

14) Lock the belt buckles to tighten the shelf to the top surface. Verify that the B/W printer and VCR are secure.

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15.) Re-connect the previously-disconnected B/W Printer and VCR cables.

16) Place the Color Video Printer on top of the shelf, allowing sufficient room to access the cables at the rear of the printer, as shown in Figure 8-156 below.



Figure 8-156 Color Video Printer and Shelf Installed on the Vivid™ 3

17.) Connect the Ground cable (hanging out of the Bottom Metal Cover) to the Ground screw at the rear of the Color Video Printer, as shown in Figure 8-157 below

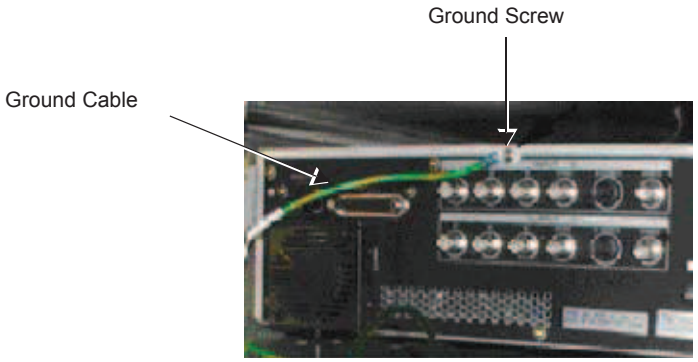


Figure 8-157 Color Video Printer Ground Cable Connection

18) Connect the RGB and SYNC cables, Color Printer Remote cable, and AC power cable (hanging out of the Bottom Metal Cover slot - see Figure 8-153 on page 8-157), to the Color Video Printer, as shown in the diagram in Figure 8-158 on page 8-160.

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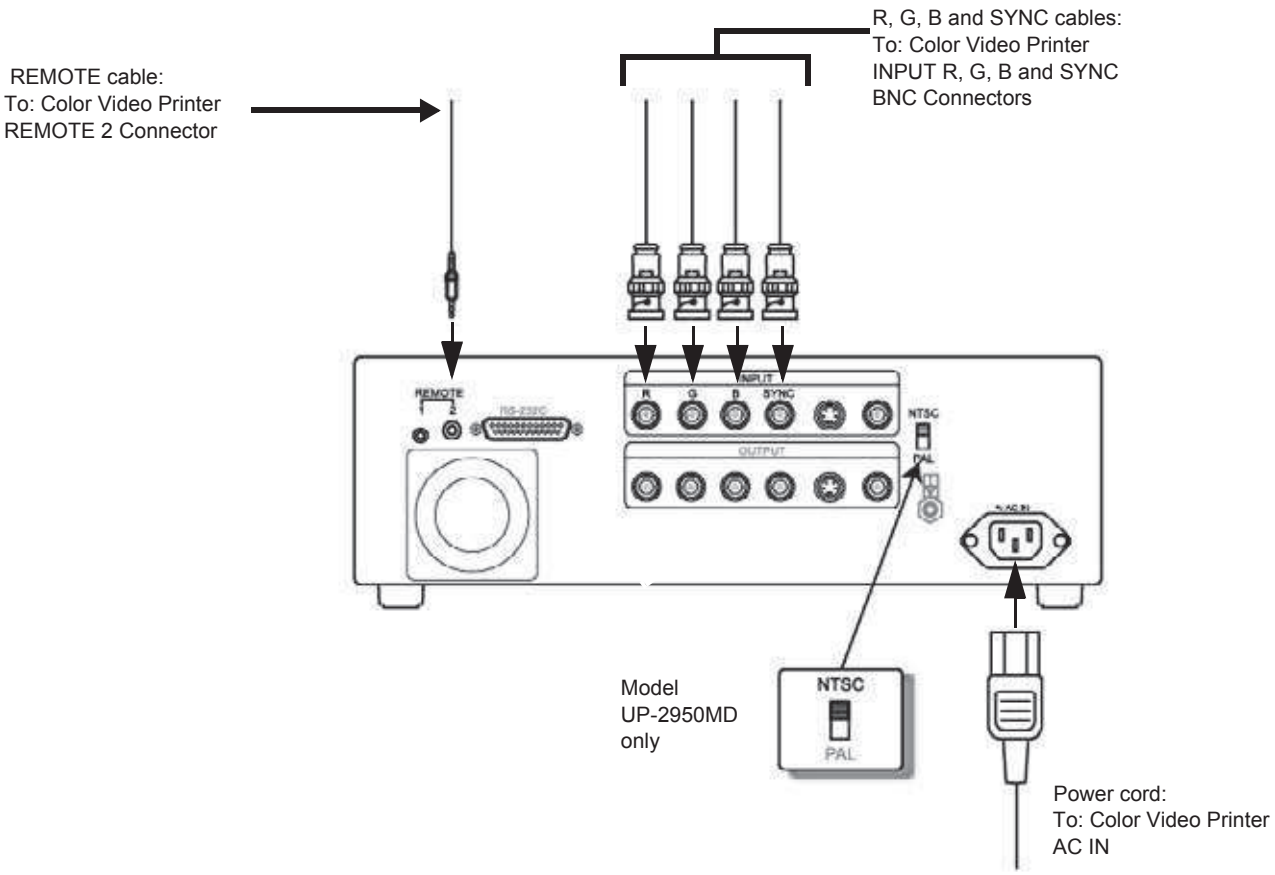


Figure 8-158 Color Video Printer Connection Cables

19.)Position the Color Video Printer against the rubber stoppers at the rear of the shelf.

20.)Connect the buckles and tighten the belt. Verify that the Color Video Printer is secure.

21.)Re-install the Connectors Panels Cover as described in the Connector Panels Cover Installation Procedure on page 8 - 8.

22) Reconnect the mains AC power cable from the wall outlet.

23) Turn ON the main circuit breaker located on rear of the Vivid™ 3.

24) Turn ON the Vivid™ 3 by pressing the ON/OFF button on the Control Console.

25.)Select the activation key under System Configuration, VCR/ECG Tab, A/B Swap.
By default, Print B key will be B&W Video printer and Print A key will be Color Video printer. For more information on switching printer settings, see VCR/ECG Tab on page 3 - 45.

See also the *Color Video Printer Settings* section, page 8-163.

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8-8-6-5 Color Video Printer Removal - Procedure 1

NOTE: This procedure (Procedure 1) is for units that are equipped with a previously-installed B&W printer and a VCR. The color printer option includes a metal shelf and fastening belt on which the color printer is placed.

1) Unlock the belt buckles located on either side of the color printer.



Figure 8-159 Belt Buckles Securing Printer

2) Move the color printer forwards, to gain access to the rear panel.
3) Open the *lower middle* screw from the color printer's rear panel and remove the Ground cable lug.
4) Unplug the AC cable.
5) Unplug the BNC connectors R-G-B and SYNC from the color printer.
6) Remove the color printer from the top shelf.

Note: Perform the following steps *only* if the metal shelf must be removed.

7) Remove the *right* and *left* screws located in the legs on either side of the shelf, and remove the shelf.

Note: Do not perform the following step if the metal shelf will later be replaced.

8) Return and fasten the two screws (removed in step 7) to either side of the top cover.

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8-8-6-6 Color Video Printer Installation - Procedure 2

NOTE: This procedure (Installation Procedure 2) is for units that are not equipped with a previously-installed B&W printer and VCR. It describes all steps required to install a color printer. The color printer is placed on the top cover of the unit's lower section and the additional shelf and belt supplied with the color printer are not required.

1) Unlock the belt buckles located on the lower section of the unit's top cover, and move the belt parts to the sides.
2) Place the color printer on the lower section of the top cover.
3) Connect the cable's BNC connectors R-G-B and SYNC to the color printer R-G-B and SYNC Input connectors.
4) Plug the color printer remote cable to the color printer Remote 2 Input.
5) Plug the AC cable to the color printer AC IN socket.
6) Screw the Ground cable lug to the lower middle screw on the color printer's rear panel.
7) Set the NTSC/PAL switch in accordance with your local color system.
8) Lock the belt buckles over the color printer, and tighten the belt by pulling the remaining length of the belt to fasten the printer securely in position.
9) Reconnect the mains AC power cable from the wall outlet.
10) Turn ON the main circuit breaker located on rear of the Vivid™ 3.
11) Turn ON the Vivid™ 3 by pressing the ON/OFF button on the Control Console.
12.) Select the activation key under System Configuration, VCR/ECG Tab, A/B Swap.
By default, Print B key will be B&W Video printer and Print A key will be Color Video printer. For more information on switching printer settings, see VCR/ECG Tab on page 3 - 45.

See also the *Color Video Printer Settings* section, page 8-163.

8-8-6-7 Color Video Printer Removal - Procedure 2

NOTE: This procedure (Removal Procedure 2) is for units that are not equipped with a previously-installed B&W printer and a VCR.

1) Unlock the belt buckles located on either side of the color printer, as shown in Figure 8-159 on page 8-161.
2) Move the color printer forward to access its rear panel.
3) Open the lower middle screw on the color printer's rear panel and remove the Ground cable lug.
4) Unplug the AC cable.
5) Unplug the cable's BNC connectors R-G-B and SYNC from the color printer RGB and SYNC Input connectors.
6) Remove the color printer.

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8-8-6-8 Color Video Printer Settings

NOTE: The settings for the Sony UP-2800P and UP2950MD Color Video Printers are regulated using the Video Printer Control Panel, as described below.

8-8-6-8-1 Preparations

1.) Turn ON the main circuit breaker located on rear of the Vivid™ 3.

2) Turn ON the Vivid™ 3 by pressing the ON/OFF button on the Control Console.

3.) Open the front door of the Color Video Printer.

4.) Press MENU.
The Preset menu is displayed (see Figure 8-160 below).
There are five setup categories: COLOR (c), LAYOUT (l), PRINTER (p), INPUT (i) and OUTPUT (o). Each setup category can be selected from the Top menu of each category.

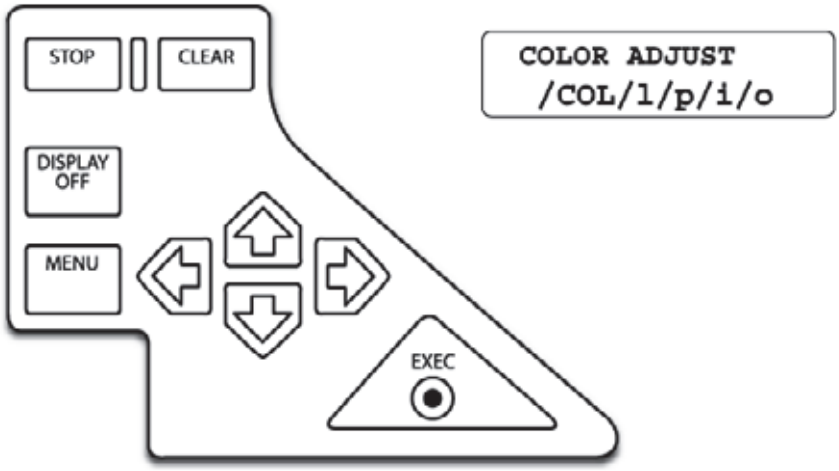


Figure 8-160 Color Video Printer Control Panel and Printer Window Display

8-8-6-8-2 Color Setup

1.) Select COL using the ◁ or ▷ button (see Figure 8-160, above). The COLOR ADJUST top menu is displayed on the Printer Window display (Figure 8-161 below).

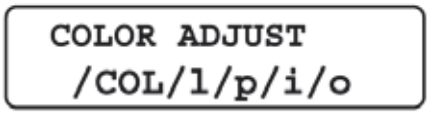


Figure 8-161 Color Video Printer Window Display (COLOR ADJUST top menu displayed)

2.) In the COLOR ADJUST menu, adjust the required parameters (according to those shown in Table 8-8 on page 8-164) by selecting the parameters one-by-one, using the ▽ or △ button; for each selected parameter, adjust the value using the ◁ or ▷ button.

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Table 8-7 COLOR SETUP Parameters

Parameter	Setting for PAL	Setting for NTSC
DARK	-2	-5
LIGHT	0	+2

3.) Press EXEC on the Printer Control Panel to save the Color settings.

8-8-6-8-3 Layout Setup

1.) Return to the COLOR ADJUST top menu (Figure 8-161 on page 8-163)), using the button.

2.) Select LAY by pressing the or button. The LAYOUT SETUP top menu is displayed (Figure 8-162 below).

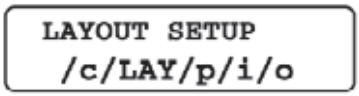


Figure 8-162 Color Video Printer Window Display (LAYOUT SETUP top menu displayed)

3.) In the LAYOUT SETUP menu, select WINDOW by pressing the or button.

4.) Press the button to display the WINDOW SETUP menu (Figure 8-163 below).

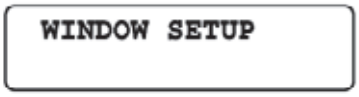


Figure 8-163 Color Video Printer Window Display (WINDOW SETUP top menu displayed)

5.) In the WINDOW SETUP menu, adjust the required parameters (in accordance with those shown in Table 8-8 below) by selecting the parameters one-by-one using the or button; for each selected parameter, adjust the value using the or button.

Table 8-8 WINDOW SETUP Parameters

Parameter	Setting for PAL	Setting for NTSC
H START	-8	-16
V START	-8	-8
H WIDTH	816	832
V WIDTH	568	480

8-8-6-8-4 Printer Setup

1.) Return to the WINDOW SETUP top menu using the button (Figure 8-163, above).

2.) Press the button to display the LAYOUT SETUP menu (Figure 8-162).

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3.) Select PRN by using the or button. The PRINTER SETUP top menu is displayed:

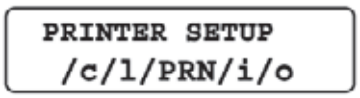


Figure 8-164 Color Video Printer Window Display (PRINTER SETUP top menu displayed)

4.) In the PRINTER SETUP menu, select FUNCTION using the or button.

5.) Press the button to display the FUNCTION SETUP menu:

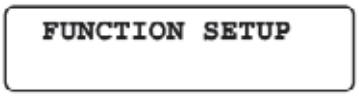


Figure 8-165 Color Video Printer Window Display (FUNCTION SETUP top menu displayed)

6.) In the FUNCTION SETUP menu, adjust the parameters in accordance with those shown in Table 8-9 below, by selecting the parameters one-by-one using the or button; for each selected parameter, adjust the value using the or button.

Table 8-9 FUNCTION SETUP Parameters

Parameter	Setting (PAL and NTSC)
AUTO LIVE	ON
RM2 FUNC	C&PRINT

8-8-6-8-5 Input Setup

1.) Return to the PRINTER SETUP top menu using the button (Figure 8-164, above).

2.) Select IN by using the or button. The INPUT SETUP top menu is displayed:



Figure 8-166 Color Video Printer Window Display (INPUT SETUP top menu displayed)

3.) In the INPUT SETUP menu, select INPUT SEL using the button.

4.) Adjust INPUT SEL to RGB by using the or button.
This setting applies to both PAL and NTSC models.

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8-8-6-8-6 Output Setup

1.) Return to the INPUT SETUP top menu using the button (Figure 8-166).

2.) Select OUT by using the or button. The OUTPUT SETUP top menu is displayed:

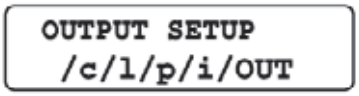


Figure 8-167 Color Video Printer Window Display (OUTPUT SETUP top menu displayed)

3.) In the OUTPUT SETUP menu, adjust the parameters in accordance with those shown in Table 8-10 below, by selecting the parameters one-by-one using the or button; for each selected parameter, adjust the value using the or button.

Table 8-10 OUTPUT SETUP Parameters

Parameter	Setting (PAL and NTSC)
DISPLAY	ON
SYNC ON G	ON
SOURCE	EE

4.) Press EXEC on the control panel of the printer to save the settings.

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8-8-7 Sony UP-21MD Color Video Printer Replacement Procedure

NOTE: This section describes the installation and removal procedures of the Sony UP-21MD Color Video Printer.

The Sony UP-21MD Color Video Printer has an NTSC/PAL Selector on the rear panel.



Figure 8-168 SONY UP-21MD Color Video Printer

In this section, two types of replacement procedures are described, as follows:

- *For units that are equipped with a previously-installed B/W printer and/or VCR*

  (see Color Video Printer Installation - Procedure1 on page 8 - 157, and Color Video Printer Removal - Procedure 1 on page 8 - 161).

- *For units that are not equipped with a previously-installed B/W printer and/or VCR*

  (refer to Color Video Printer Installation - Procedure 2 on page 8 - 162, and Color Video Printer Removal - Procedure 2 on page 8 - 162).

8-8-7-1 Tools

Use the appropriate flat and Phillips-type screw drivers.

8-8-7-2 Manpower

One person - 30 mins.

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8-8-7-3 Preparations

1) Shut down the Vivid™ 3 ultrasound unit, as described in *Chapter 3 - Installation*.
2.) Remove the Connectors Panels Cover as described in the Connector Panels Cover Removal Procedure on page 8 - 8.
3.) Unpack the Color Video Printer.
4.) Set the NTSC/PAL selector switch to PAL or NTSC as shown in Figure 8-166 on page 8-165.
5.) Install the Color Video Printer accessories, as described in the Operating Instructions supplied with the printer.

8-8-7-4 Sony UP-21MD Color Video Printer Installation - Procedure1

NOTE: The Installation Procedure is for units that are equipped with a previously-installed B/W printer and/or VCR. The color printer option includes a shelf with fastening belt, on which the printer is placed.

NOTE: If a B/W Printer and VCR are not installed, then the Color Video Printer can be placed on the top surface of the Vivid™ 3 ultrasound unit (below the keyboard) and secured with the belt.

1.) Raise the control console to its *maximum* height.
2.) If a B/W Printer and/or a VCR are installed, disconnect all the cables and remove the units.
3.) Remove the Metal Bottom Cover, beneath the front part of the control console, as described in *the* Control Console Bottom Cover (Upper Section) Removal Procedure on page 8 - 17.
4.) Remove the Compartment Tray as described in the Gas Spring Removal Procedure on page 8 - 111.
5.) Remove the Compartment Base as described in the Control Console Bottom Cover (Upper Section) Removal Procedure on page 8 - 17.
6.) Route the Color Printer cables, found in the compartment, and let them drop down through the opening left after the Metal Bottom Cover was removed (see step 3, above).
7.) Re-install the Metal Bottom Cover, as described in the Control Console Bottom Cover (Upper Section) Installation Procedure on page 8 - 19.

Note: Make sure that all the cables are fitted through the slot in the far end of the Metal Bottom Cover, as shown in Figure 8-169 below.



Figure 8-169 Color Printer Cables through Metal Bottom Cover Slot

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8.) Remove the *right* and *left* screws located at the front of the lower section top cover, as shown in Figure 8-170.

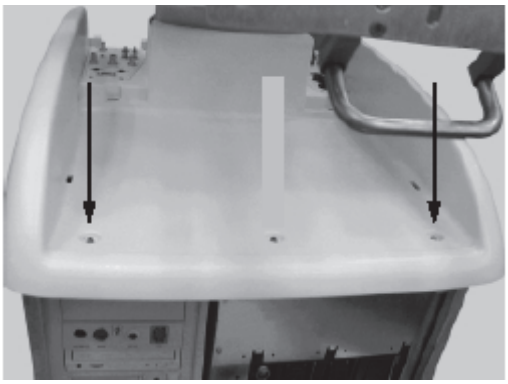


Figure 8-170 Top Cover Screws

9) Place the protective metal cover on top of the printer shelf (either on the *right* or *left* side, as preferred by the customer) and fasten securely into position to protect the connectors, using the two screws provided - see Figure 8-171 below:

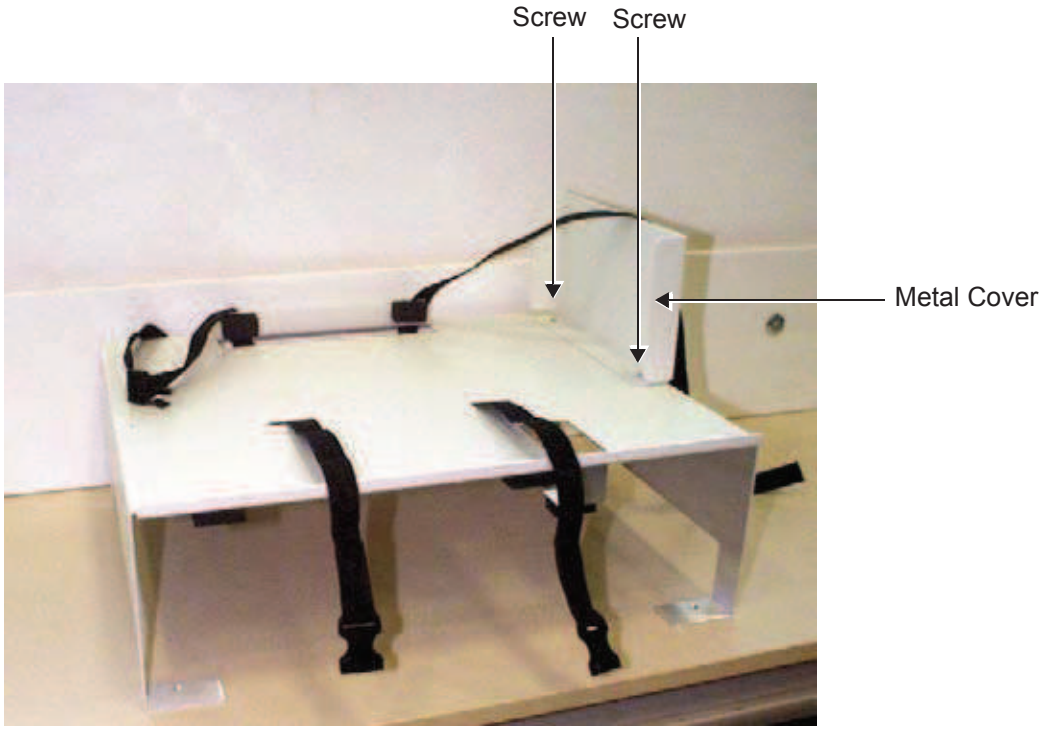


Figure 8-171 Printer Shelf with Protective Metal Cover Secured in Position

10) Place the shelf on the top surface, with its two legs facing the front, and the stoppers (located on top of the shelf) facing the far end. Fasten the shelf to the top surface, using the screws removed in step 8, as shown in Figure 8-172 below.

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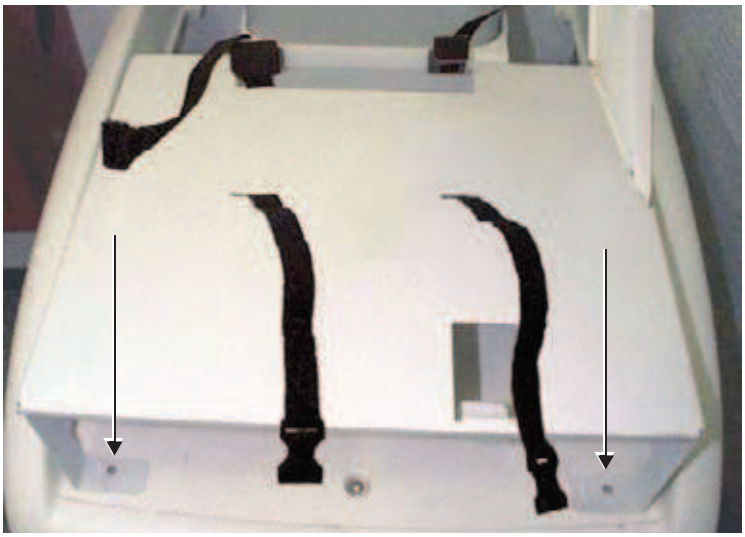


Figure 8-172 Shelf Fastened to Top Cover

11.) Route the end of one of the top surface securing belts down through the narrow *left* slot in the shelf (closest to the front), then thread it below the shelf, *backwards* and *upwards* through the slot at the rear of the shelf. Leave the opposite end of the belt (with the plastic buckle [female end] attached) dangling towards the front, as shown in Figure 8-171 and Figure 8-172 on page 8-170.

12) Repeat step 11 to thread the second belt in position through the slot on the *right*.

13) Attach the male end of the two plastic buckles to each of the belt ends protruding from the rear *right* and *left* slots.

14) Return the color printer and VCR to their original positions, between the left and right sections of the belt.

15) Lock the belt buckles to tighten the shelf to the top surface. Verify that the printer and VCR are secure.

16.) Re-connect the previously-disconnected Color Printer and VCR cables.

17) Place the UP-21MD Color Video Printer on top of the shelf, as shown in Figure 8-173 below.

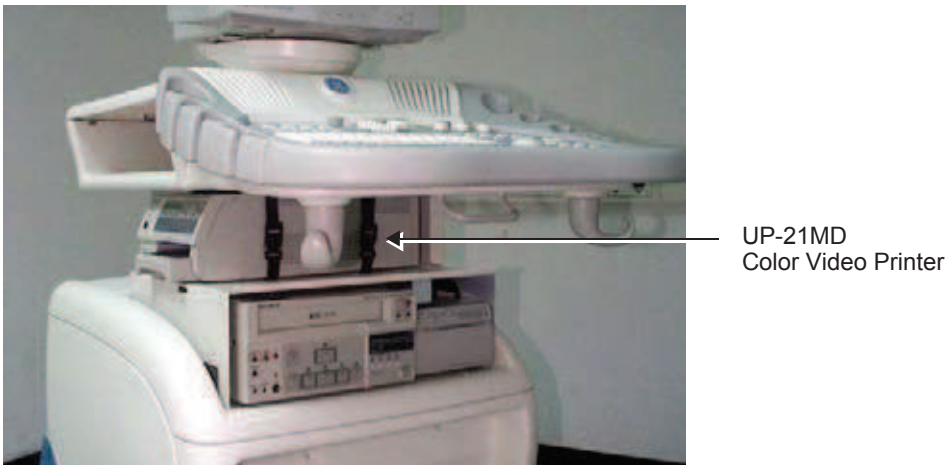


Figure 8-173 Sony UP-21MD Color Video Printer and Shelf Installed on the Vivid™ 3

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18.) Connect the Ground cable (hanging out of the Bottom Metal Cover) to the Ground screw at the rear of the UP-21MD Color Video Printer, as shown in Figure 1-17 below

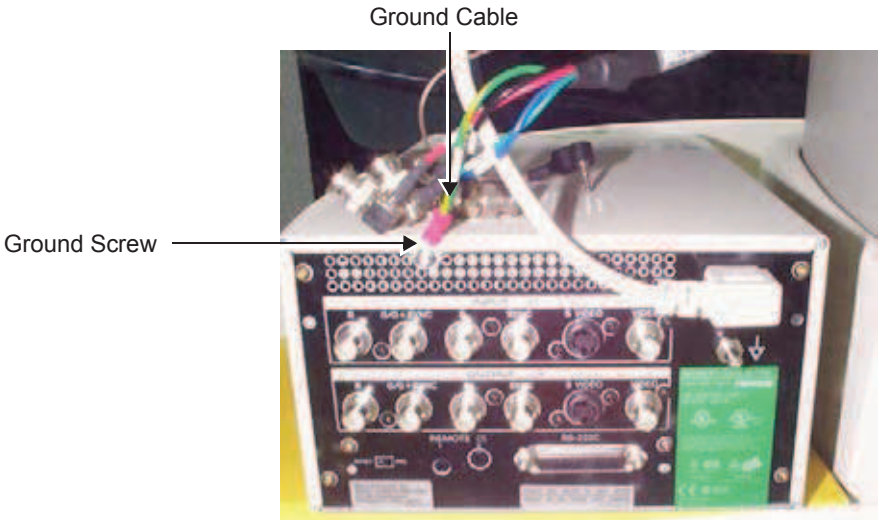


Figure 8-174 UP-21MD Color Video Printer Ground Cable Connection

19) Connect the RGB and SYNC cables, Color Printer Remote cable, and AC power cable (hanging out of the Bottom Metal Cover slot - see Figure 8-169 on page 8-168), to the UP-21MD Color Video Printer, as shown in the diagram in Figure 8-175 on page 8-172.

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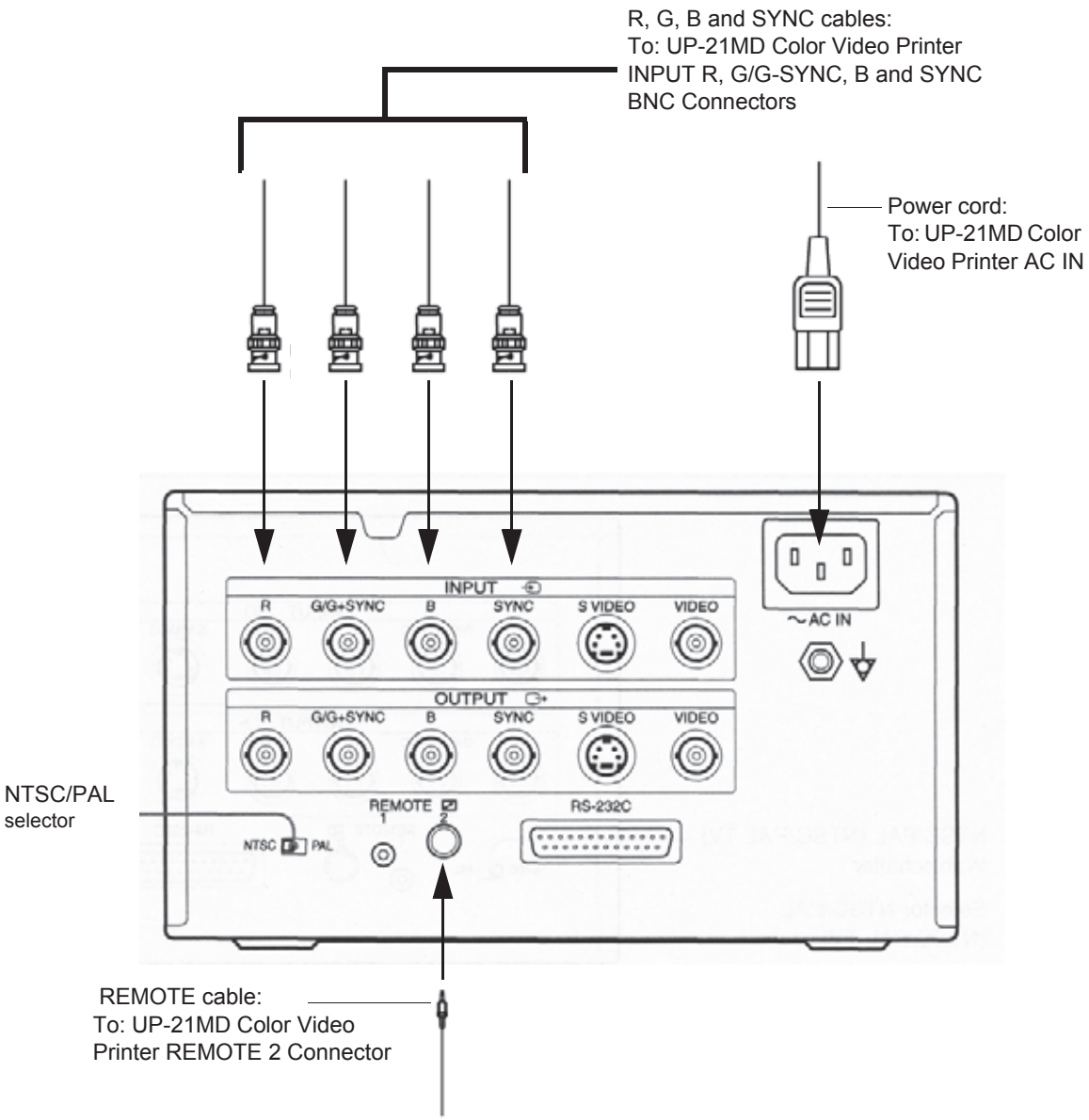


Figure 8-175 Sony UP-21MD Color Video Printer Connection Cables

20.) Position the Color Video Printer against the rubber stoppers at the rear of the shelf, and against the metal protective cover on the side (making sure that the connectors are not exposed).

21.) Connect the two plastic buckles and tighten the belts. Verify that the UP-21MD Color Video Printer is secure.

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22.) Re-install the Connectors Panels Cover as described in the Connector Panels Cover Installation Procedure on page 8 - 8.

23) Reconnect the mains AC power cable from the wall outlet.

24) Turn ON the main circuit breaker located on rear of the Vivid™ 3.

25) Turn ON the Vivid™ 3 by pressing the ON/OFF button on the Control Console.

26.) Select the activation key under System Configuration, VCR/ECG Tab, A/B Swap. By default, Print B key will be B&W Video printer and Print A key will be Color Video printer. For more information on switching printer settings, see VCR/ECG Tab on page 3 - 45.

8-8-7-5 Sony UP 21MD Color Video Printer Removal - Procedure 1

NOTE: This procedure (Procedure 1) is for units that are equipped with a previously-installed B&W printer and a VCR. The color printer option includes a metal shelf and fastening belt on which the color printer is placed.

1.) Unlock the belt buckles securing the color printer.



Figure 8-176 Belt Buckles Securing Printer

2.) Move the color printer *sideways*, to gain access to the rear panel.

3.) Open the *lower middle* screw from the color printer's rear panel and remove the Ground cable lug.

4.) Unplug the AC cable.

5.) Unplug the BNC connectors R-G-B and SYNC from the color printer.

6.) Remove the color printer from the top shelf.

Note: Perform the following steps *only* if the metal shelf must be removed.

7.) Remove the *right* and *left* screws located in the legs on either side of the shelf, and remove the shelf.

Note: Do not perform the following step if the metal shelf will later be replaced.

8.) Return and fasten the two screws (removed in step 7) to either side of the top cover.

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8-8-7-6 Sony UP-21MD Color Video Printer Installation - Procedure 2

NOTE: This procedure (Installation Procedure 2) is for units that are not equipped with a previously-installed B&W printer and VCR. It describes all steps required to install a color printer. The color printer is placed on the top cover of the unit's lower section and the additional shelf and belt supplied with the color printer are not required.

1) Unlock the belt buckles located on the lower section of the unit's top cover, and move the belt parts to the sides.
2) Place the color printer on the lower section of the top cover.
3) Connect the cable's BNC connectors R-G-B and SYNC to the color printer R-G-B and SYNC Input connectors.
4) Plug the color printer remote cable to the color printer Remote 2 Input.
5) Plug the AC cable to the color printer AC IN socket.
6) Screw the Ground cable lug to the lower middle screw on the color printer's rear panel.
7) Set the NTSC/PAL switch in accordance with your local color system.
8) Lock the belt buckles over the color printer, and tighten each belt by pulling the remaining length of the belt to fasten the printer securely in position.
9) Reconnect the mains AC power cable from the wall outlet.
10) Turn ON the main circuit breaker located on rear of the Vivid™ 3.
11) Turn ON the Vivid™ 3 by pressing the ON/OFF button on the Control Console.
12.) Select the activation key under System Configuration, VCR/ECG Tab, A/B Swap.
By default, Print B key will be B&W Video printer and Print A key will be Color Video printer. For more information on switching printer settings, see VCR/ECG Tab on page 3 - 45.

8-8-7-7 Sony UP 21MD Color Video Printer Removal - Procedure 2

NOTE: This procedure (Removal Procedure 2) is for units that are not equipped with a previously-installed B&W printer and a VCR.

1) Unlock the belt buckles located on either side of the color printer, as shown in Figure 8-176 on page 8-173.
2) Move the color printer sideways to access its rear panel.
3) Open the lower middle screw on the color printer's rear panel and remove the Ground cable lug.
4) Unplug the AC cable.
5) Unplug the cable's BNC connectors R-G-B and SYNC from the color printer RGB and SYNC Input connectors.
6) Remove the color printer.

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8-8-8 HP 6540/3 USB Deskjet Color Printer Replacement Procedure for Vivid™ 3 BT03 Systems

NOTE: IMPORTANT - Whether the Vivid 3 system is currently using 3.3, 4.3, 3.6 or 4.6 software, it is necessary to install the printer driver, as described in the HP 6540/3 USB Deskjet Color Printer Installation Procedure below.



Figure 8-177 HP 6540/3 USB Deskjet Color Printer

The HP6540/3 Printer Kit (P/N: 2415435) contains the following items:

Item Part No.	Description
2415380	HP6540 Printer
2415381-2	CD installation for HP-6540/3 Printer
2300847-3	Printer Power Cable
2415481-2	Installation Instructions

8-8-8-1 Tools

Use the appropriate flat and Phillips-type screw drivers.

8-8-8-2 Manpower

One person - 15 mins.

8-8-8-3 Preparations

1) Shut down the Vivid™ 3 ultrasound unit, as described in *Chapter 3 - Installation*.
2.) Remove the Connectors Panels Cover as described in the Connector Panels Cover Removal Procedure on page 8 - 8.
3.) Carefully unpack the HP 6540/3 USB Printer.
4.) Check that the HP 6540/3 USB Printer AC voltage corresponds to that of your local voltage.

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8-8-8-4 HP 6540/3 USB Deskjet Color Printer Installation Procedure

1.) Place the HP6540/3 USB Deskjet Color Printer on the Vivid 3 bottom shelf allowing sufficient room to access the cables at the rear of the printer, or on a stable surface located not far from the Vivid 3 scanner.

2.) Connect one end of the Printer power cable to the Vivid 3 rear connectors panel and the other end (via the transformer [supplied]) to the Low Voltage Power-IN socket on the rear of the printer, as shown in Figure 8-178 below.

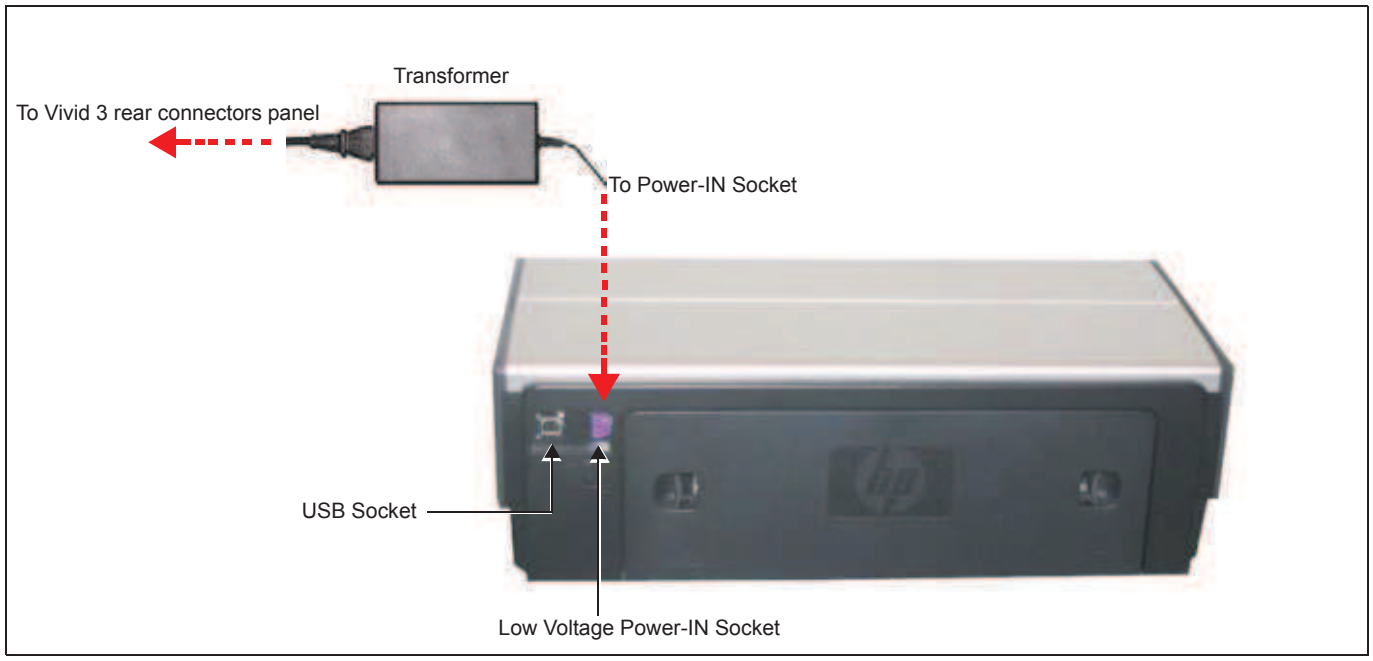


Figure 8-178 HP 6540/3 Deskjet Color Printer- Rear View

WARNING: To avoid electrical hazards, the HP 6540/3 USB Deskjet Color Printer must be connected to the AC Supply of the Vivid™ 3 Ultrasound Unit and never directly to the local AC wall outlet.

3.) Use the USB cable (shipped with the printer) to connect the Vivid 3 system to the USB socket on the HP6540/3 rear panel (see Figure 8-178).

4.) Turn ON power to the system and the printer and boot up the system in *User* mode.

5.) Wait until the application finishes loading and then press <**Alt**> +<**Tab**> simultaneously.

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6.) When the *Found New Hardware Wizard* opens, click ***Cancel***, see Figure 8-179 below.

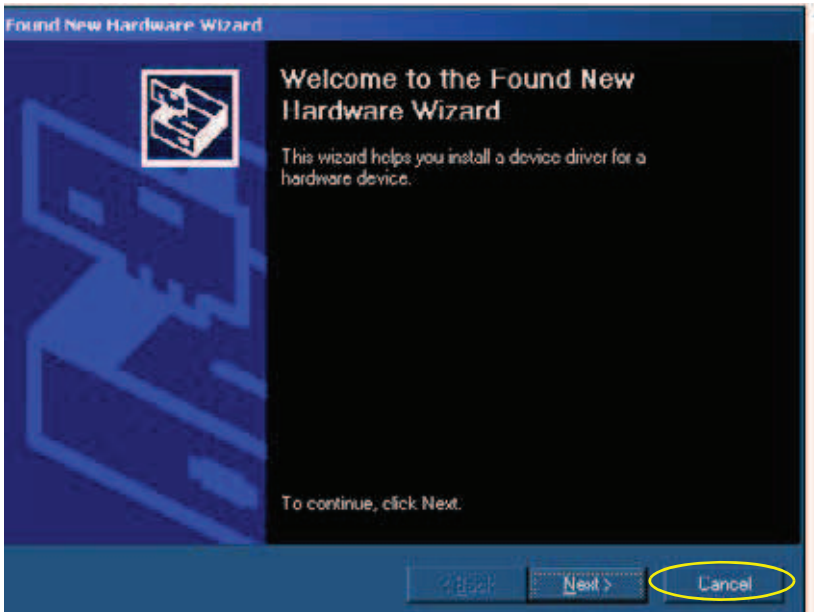


Figure 8-179 Found New Hardware Wizard

7.) Insert the HP6540/3 driver installation CD (P/N:2415381) provided with the printer into the CD-ROM drive.

8.) Browse the CD (Drive H:) and double-click on the ***InstallPrinter.bat*** file (Figure 8-180)

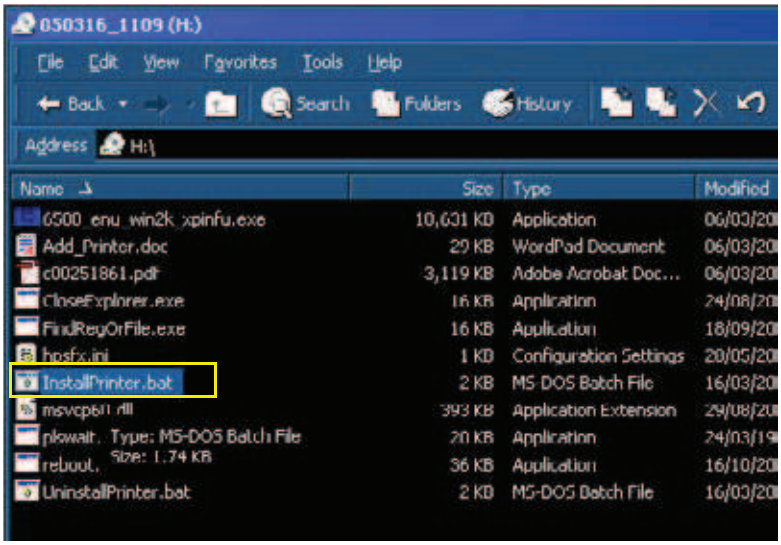


Figure 8-180 Install Printer

The printer installation process will begin - see Figure 8-181.

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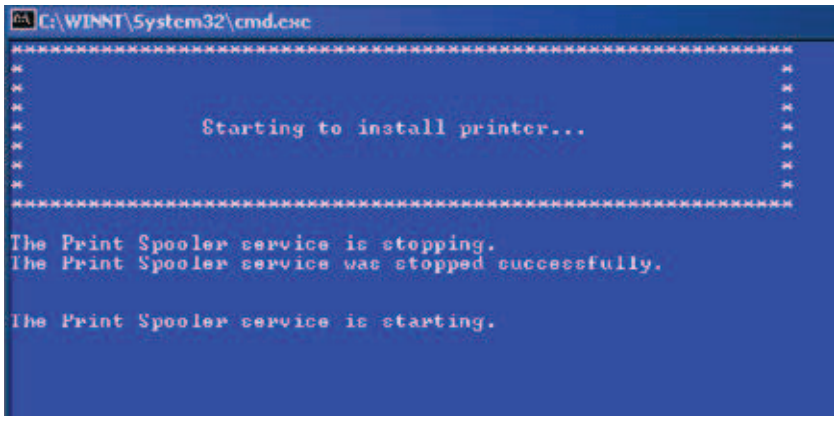


Figure 8-181 Printer Installation Process Commences

9.) When the *Add Printer Wizard* opens, click ***Next -*** see Figure 8-182.

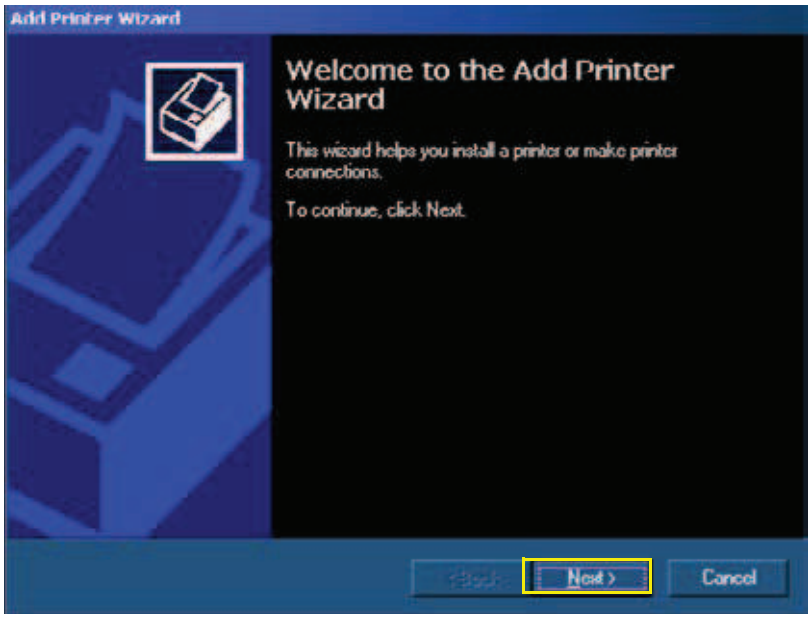


Figure 8-182 Add Printer Wizard

10.)When prompted, verify that *Local Printer* is selected. If not, activate the **Local printer** radio button as shown in Figure 8-183.

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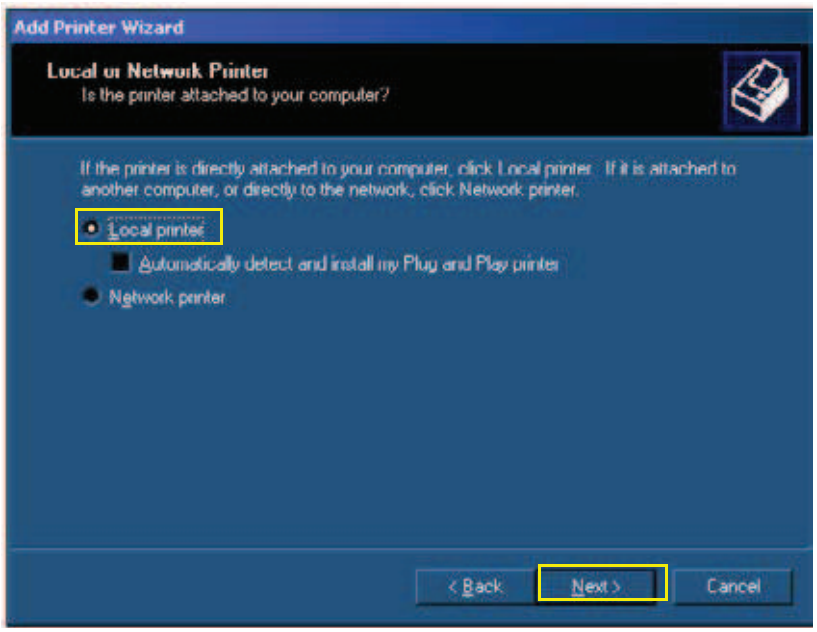


Figure 8-183 Verify Local Printer

11.)Click **Next**.

12.)From the displayed list of available ports, choose one of the available USB ports, as shown in Figure 8-184.

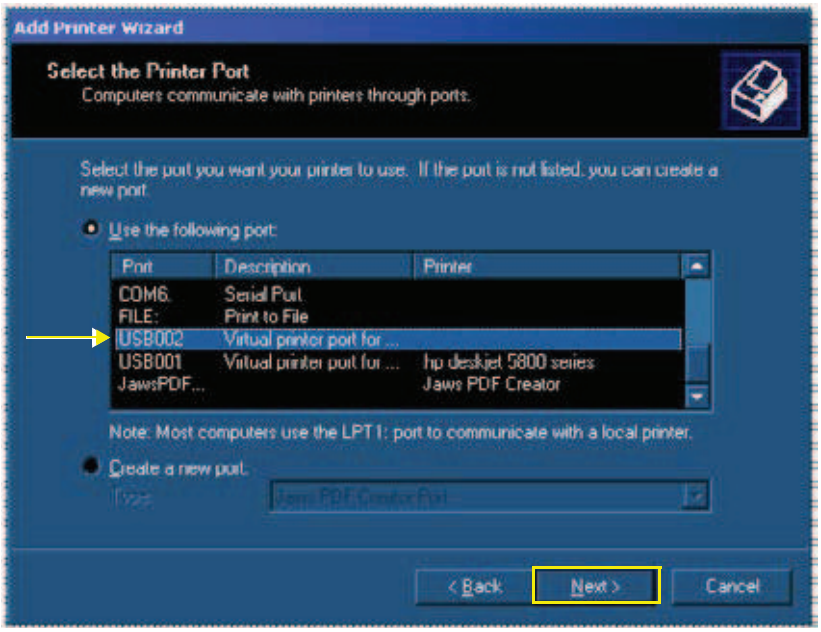


Figure 8-184 Choosing Available USB Port

13.)Click **Next.**

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14.)From the list of Printers, highlight the **HP Deskjet 6500 Series** - see Figure 8-185.

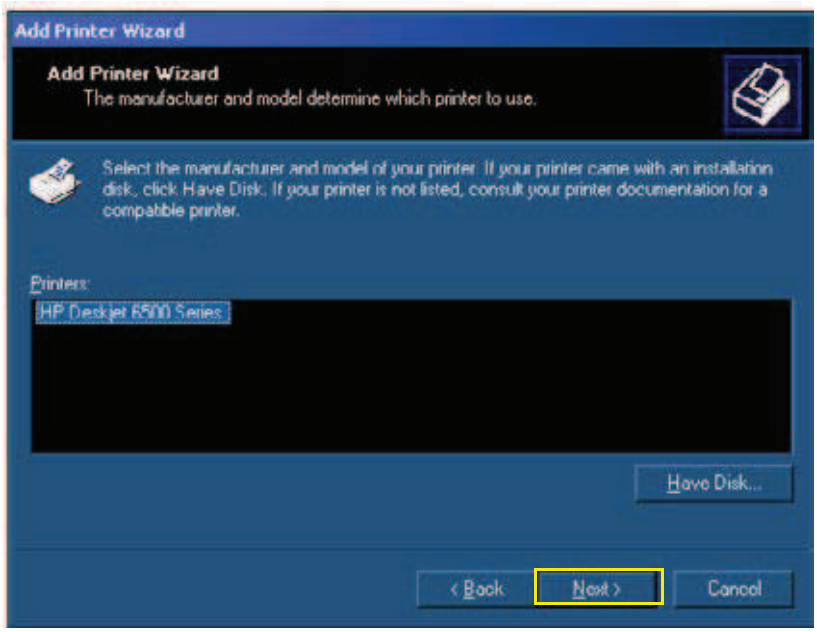


Figure 8-185 Printer Manufacturer and Model

15.)Click **Next**.

16.)When prompted, choose **Yes** if you want this printer to be the default printer - see Figure 8-186.

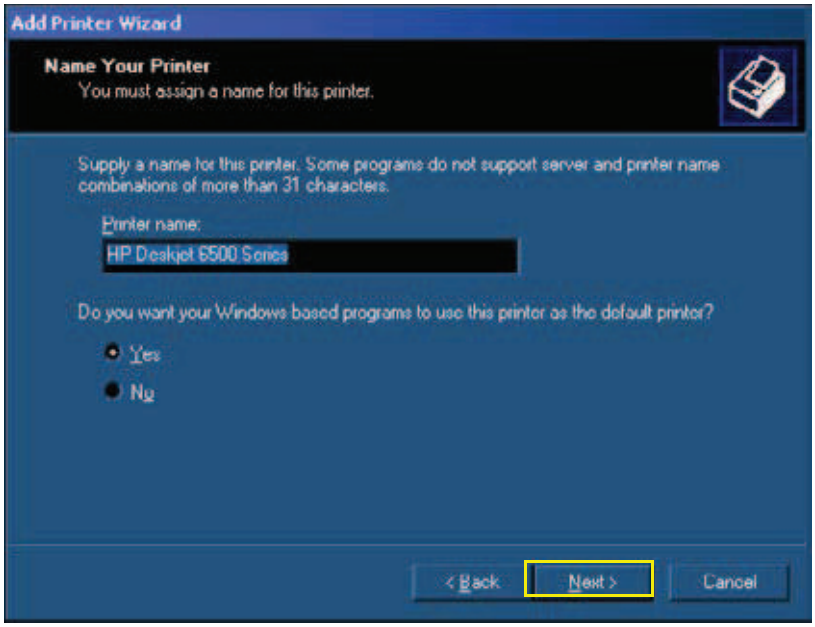


Figure 8-186 Choosing Default Printer

17.)Click **Next**.

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18.)When the following message appears, verify that **Do not share this printer** is selected, as shown in Figure 8-187.

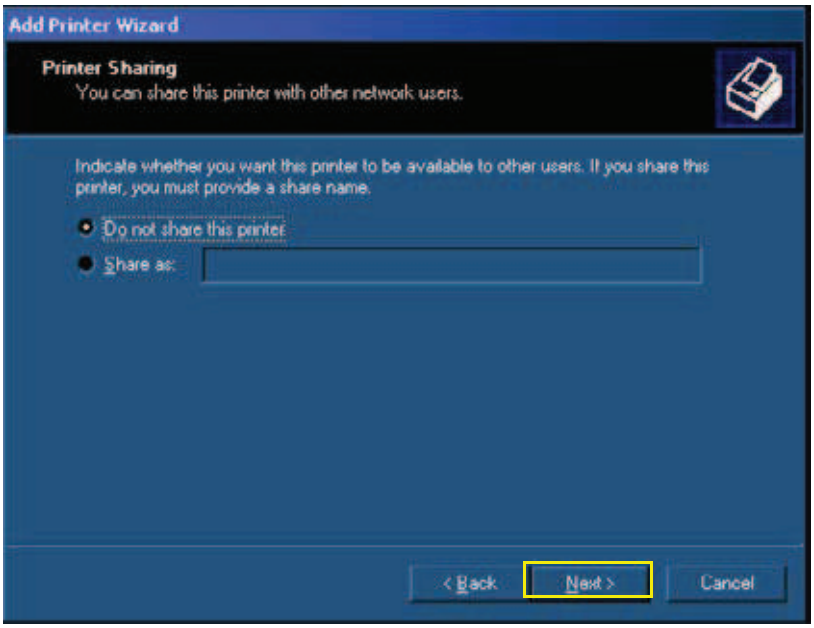


Figure 8-187 Printer Sharing Message

19.)Click **Next**.

20.)In response to the *Print a test page?* message, choose **No** and then click **Next** - see Figure 8-188.

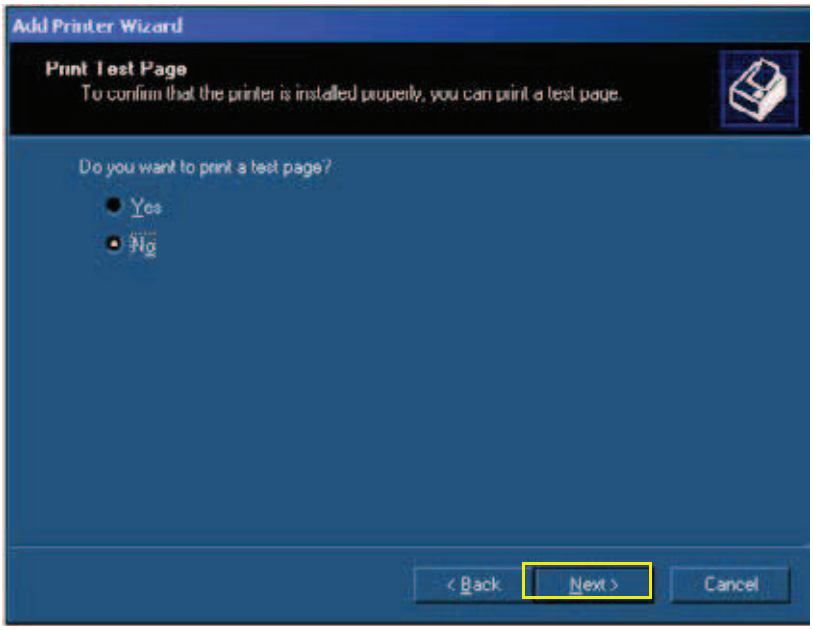


Figure 8-188 Print Test Page Message

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The *Add Printer Wizard* displays the following message:



Figure 8-189 New Printer Added

21.)Click **Finish** to close the Wizard.

The Printer Properties Dialog opens with the *General Tab* activated, as shown in Figure 8-190.

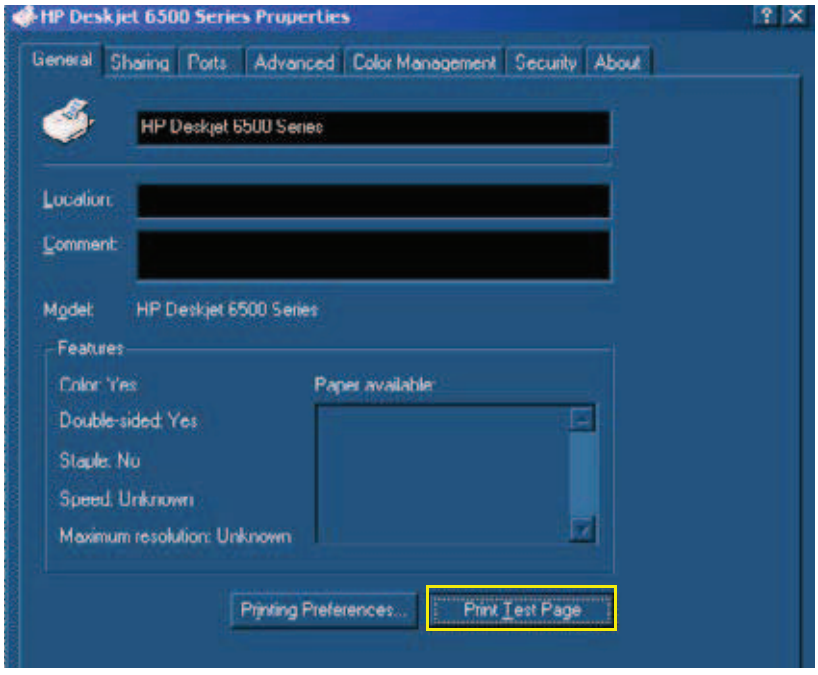


Figure 8-190 Printer Properties Dialog Box - General Tab

22.)Click on **Print Test Page**.

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The following message is displayed:

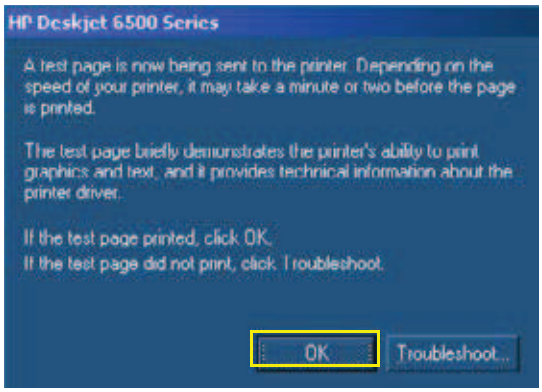


Figure 8-191 Test Page Printing

23.)Confirm that test page was printed properly, then click **OK**.

The Printer Properties Dialog opens with the *Ports Tab* activated, as shown in Figure 8-192.

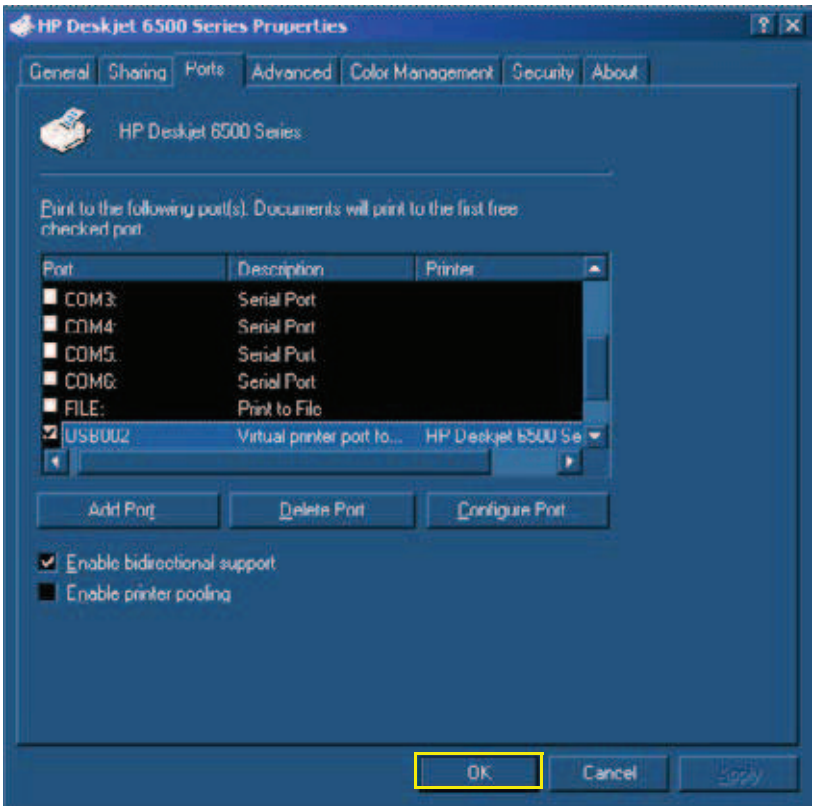


Figure 8-192 Printer Properties Dialog Box - Ports Tab

24.)Confirm that a USB port is selected for the printer, then click **OK**.

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The Printer Properties Dialog opens with the *Advanced Tab* activated, as shown in Figure 8-193.

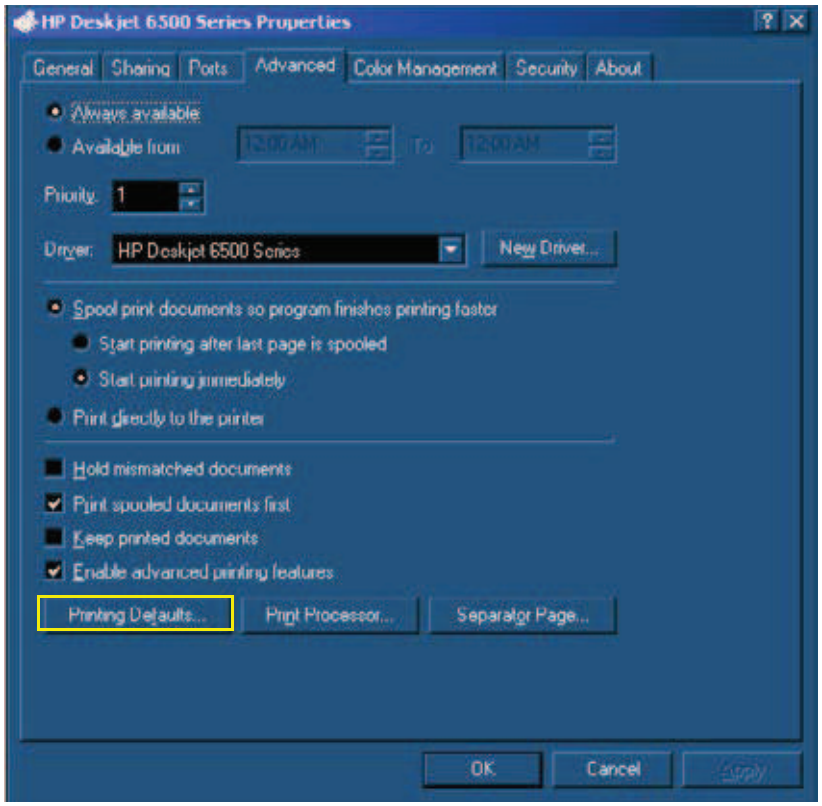


Figure 8-193 Printer Properties Dialog Box - Advanced Tab

25.)Click on **Printing Defaults**.

The Printing Defaults dialog box opens with the *Printing Shortcuts* tab activated, as shown in Figure 8-194.

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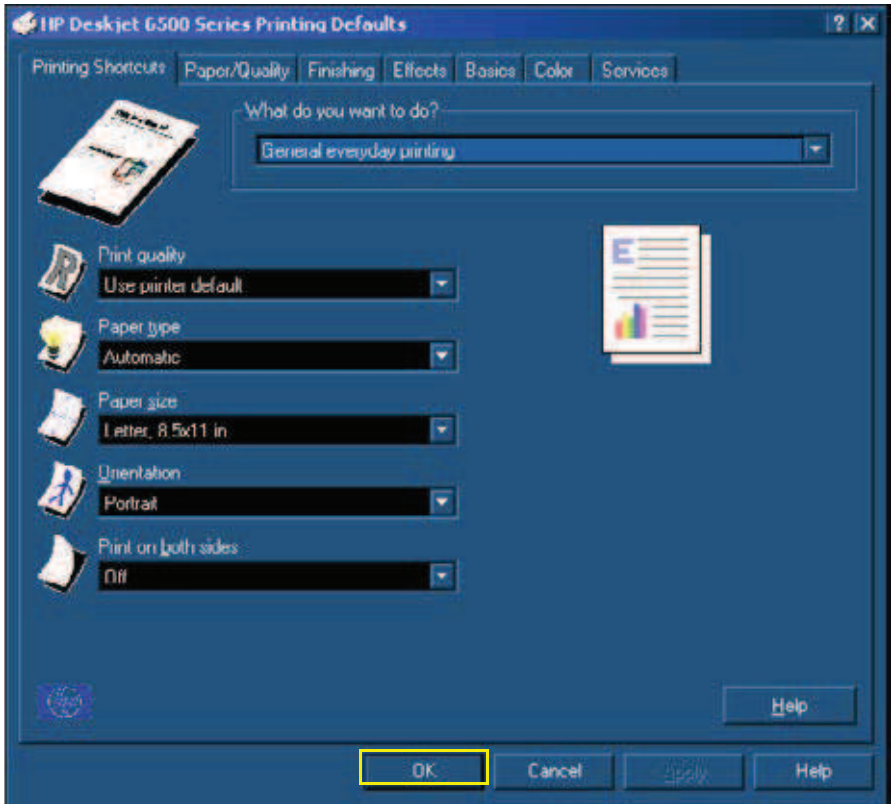


Figure 8-194 Printing Defaults Dialog Box

26.)Set up the printing defaults (Paper size, Paper type *etc*....) to your liking, then click **OK.**

The following message is displayed:

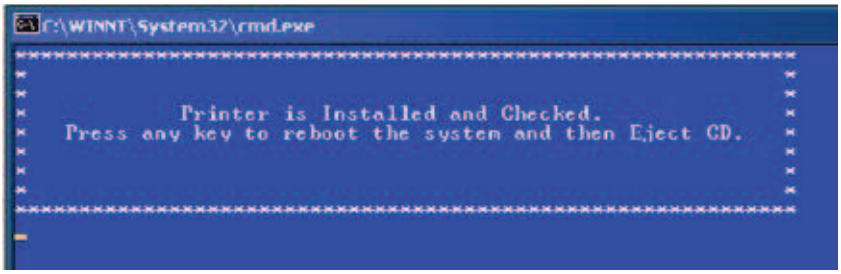


Figure 8-195 Printer Installed and Checked Message

27.)Press any key to reboot the system and then eject the CD from the CD tray.

28.)Press the ***Config*** button on control console and from the System Configuration window, activate the Printers tab -see Figure 8-196.

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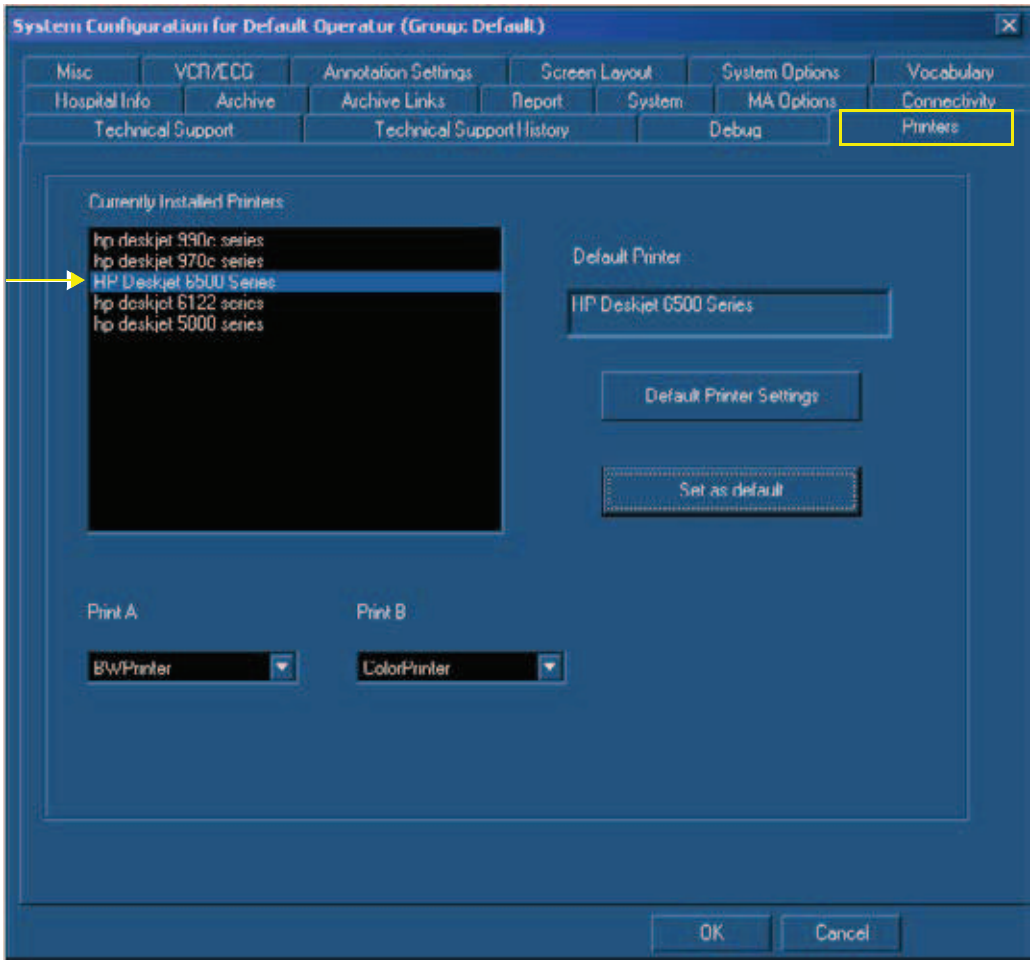


Figure 8-196 System Configuration Window - Printers Tab

29.) Confirm that **HP Deskjet 6500 Series** has been added to *Currently Installed Printers* list, then click **OK**.

8-8-8-5 HP 6540/3 USB Deskjet Color Printer Removal Procedure

1) Turn OFF power to the USB printer.
2) Unplug the AC power cable from the Power IN socket at the rear of the printer.
3) Unplug the USB cable from the USB socket at the rear of the printer.
4) Remove the USB printer.

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8-8-8-6 HP 5652 Deskjet Color Printer Installation Procedure - Vivid 3 BT00 Systems

NOTE: Since Vivid3 BT00 systems are based on the Windows NT operating system, they do not support the Plug & Play feature.
Therefore, the HP990c driver (already installed on the system) can also be used for the HP 5652 Deskjet Color Printer, without requiring the installation of any additional printer drivers. All that is necessary is to set the HP990c as the default printer, as described in the procedure below.

1.) Place the HP 5652 Deskjet Color Printer on the Vivid 3 bottom shelf allowing sufficient room to access the cables at the rear of the printer, or on a stable surface located not far from the Vivid 3 scanner.

2.) Connect one end of the Printer power cable to the Vivid 3 rear connectors panel and the other end (via the transformer [supplied]) to the Low Voltage Power-IN socket on the rear of the printer, as shown in Figure 8-178 below.

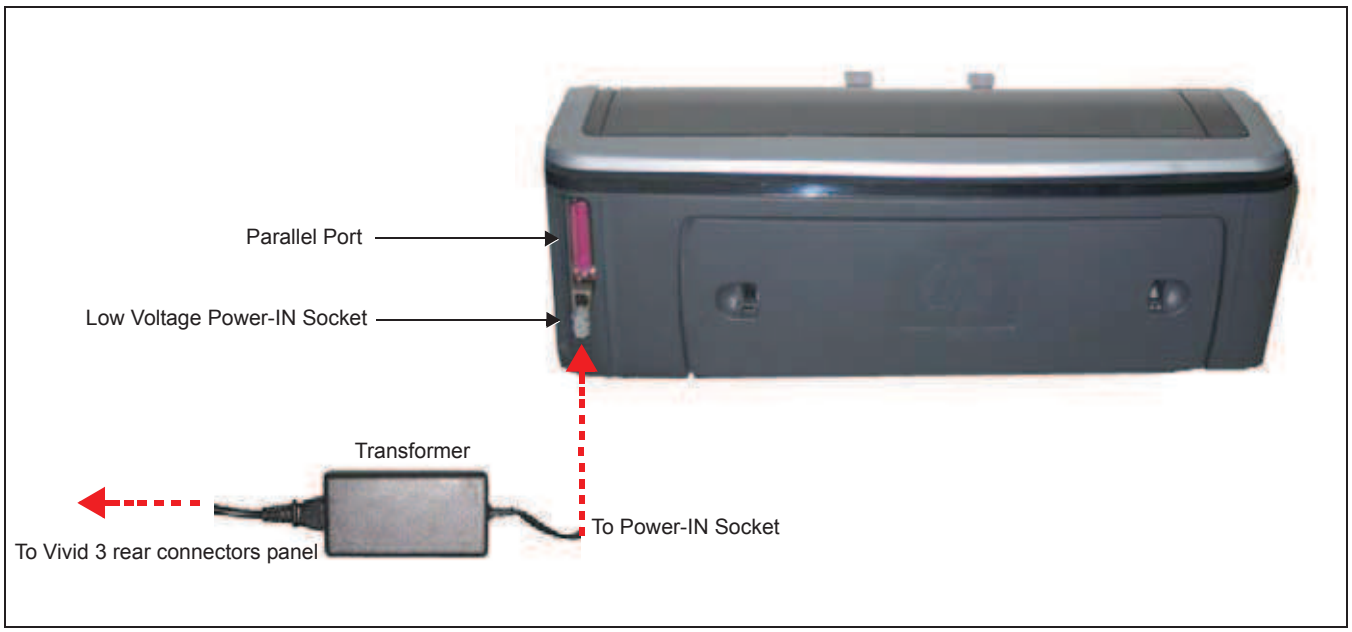


Figure 8-197 HP 5652 Deskjet Color Printer- Rear View

WARNING: To avoid electrical hazards , the 5652 HP Deskjet Color Printer must be connected to the AC Supply of the Vivid™ 3 Ultrasound Unit and never directly to the local AC wall outlet.

3.) Turn ON power to the system and the printer and boot up the system in *User* mode.

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4.) Press the **Config** button on the control console, then from the System Configuration window, activate the **System** tab (Figure 8-198).

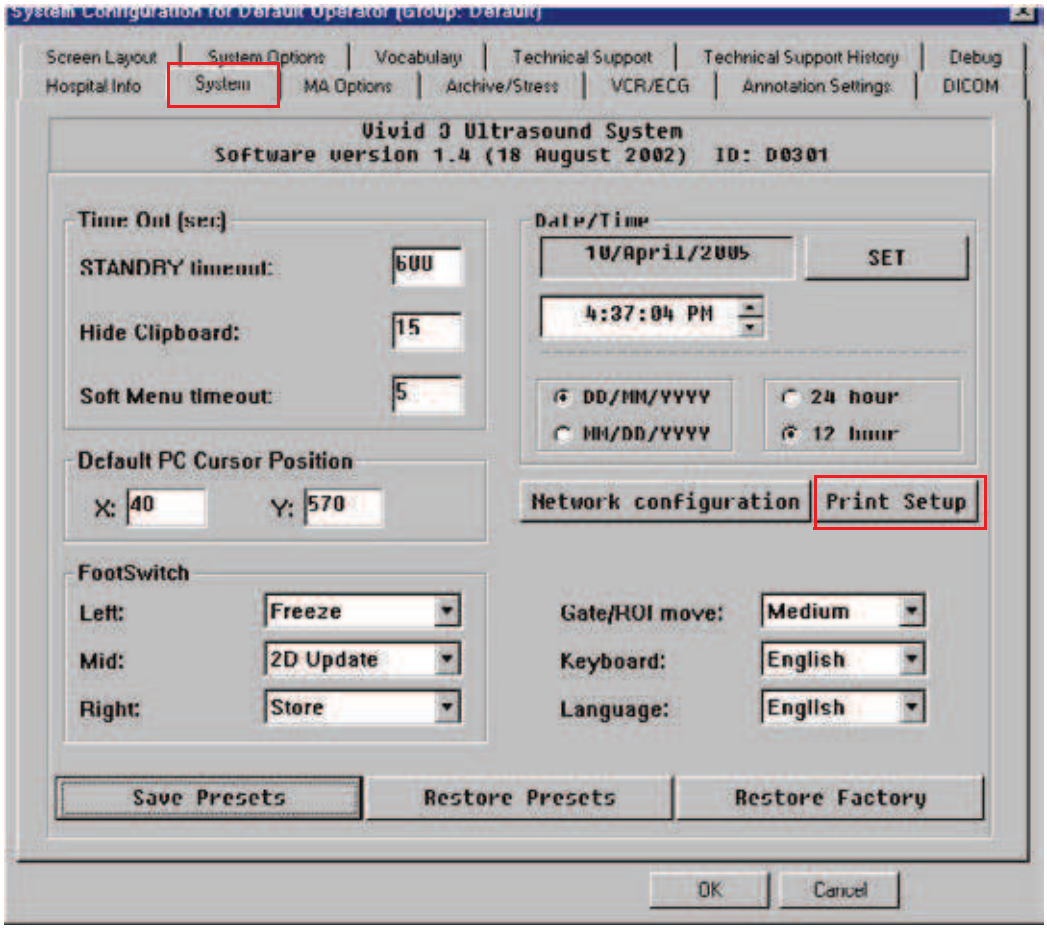


Figure 8-198 System Configuration Window - System Tab

5.) Click on the **Print Setup** button.

The following window opens, listing the currently-installed printers:

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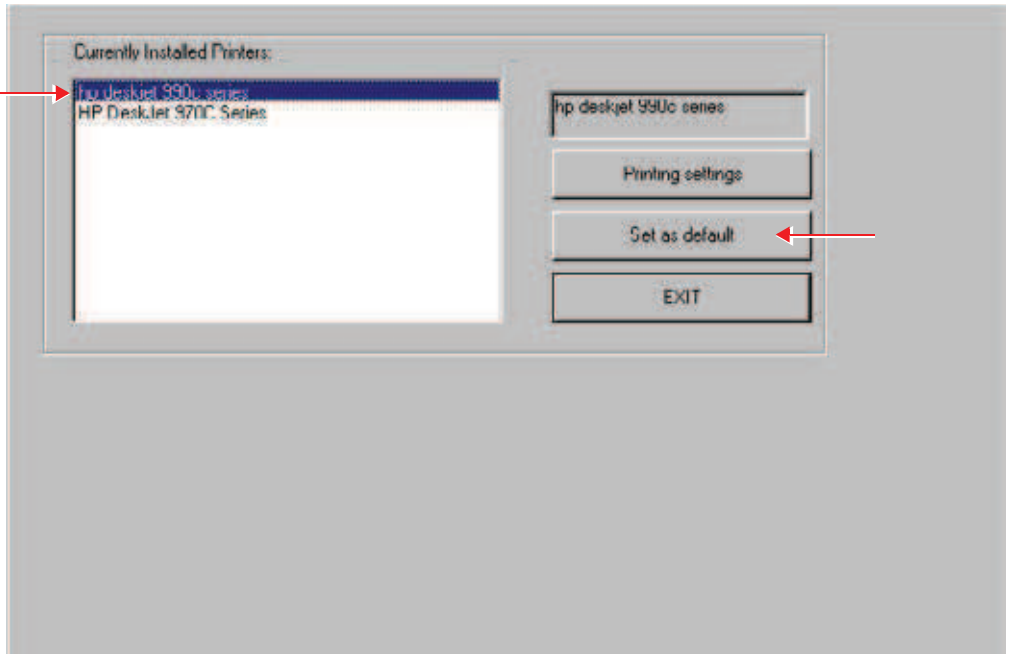


Figure 8-199 Currently Installed Printers Window

6.) Highlight ***hp deskjet 990c series*** as shown above, then click on the **Set as default** button.

7.) Click on the **Printing settings** button to access the Printer Properties dialog box:

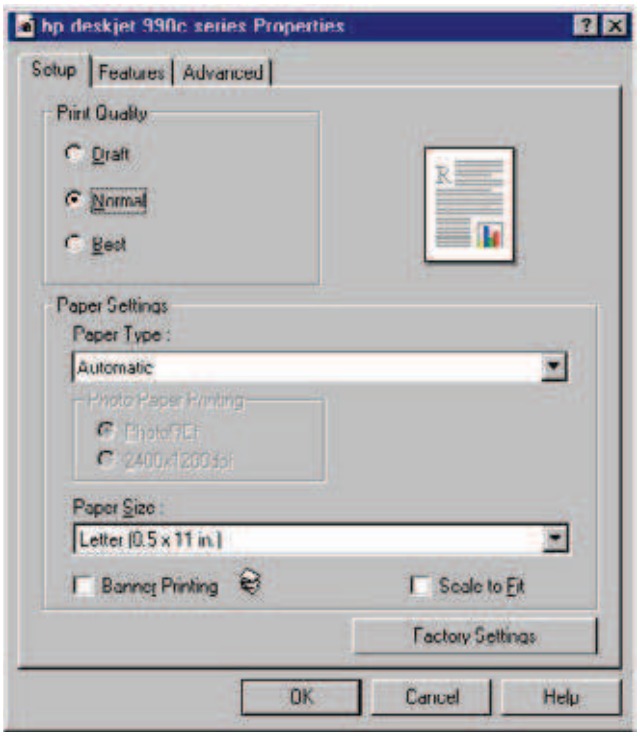


Figure 8-200 Printer Properties Dialog Box

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8.) Set up the printing defaults (Paper size, Paper type *etc*....) to your liking, then click **OK**.

The System Configuration window is re-displayed (refer to Figure 8-198 on page 8-188).

9.) Click **OK** to close the window.

8-8-8-7 HP 5652 Deskjet Color Printer Removal Procedure - Vivid 3 BT00 Systems

1) Turn OFF power to the HP 5652 printer.
2) Unplug the AC power cable from the Power IN socket at the rear of the printer.
3) Unplug the parallel cable from the parallel port at the rear of the printer.
4) Remove the HP 5652 printer.

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Chapter 9
Renewal Parts

Section 9-1
Overview

9-1-1 Purpose of Chapter 9

This chapter gives you an overview of replacement parts for the Vivid™ 3 ultrasound unit.

Table 9-1 Contents in Chapter 9

Section	Description	Page Number
9-1	Overview	9-1
9-2	List of Abbreviations	9-2
9-3	Renewal Parts Lists and Diagrams	9-3
9-4	Peripherals	9-35
9-5	Cabling Block Diagrams	9-36

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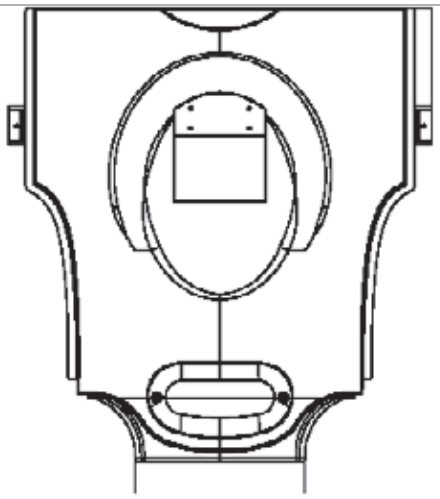
Section 9-2
List of Abbreviations

- **Assy** - Assembly
- **BEP** - Back End Processor
- **Ctrl** - Control
- **FEP** - Front End Processor
- **FRU 1** - Replacement part available in parts hub
- **FRU 2** - Replacement part available from the manufacturer (lead time involved)
- **LCD** - Liquid Crystal Display
- **Int** - Internal
- **I/O** - Input/Output
- **PWA** - Printed Wire Assembly
- **Recv** - Receive
- **XFRMR** - Transformer

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Section 9-3
Renewal Parts Lists and Diagrams

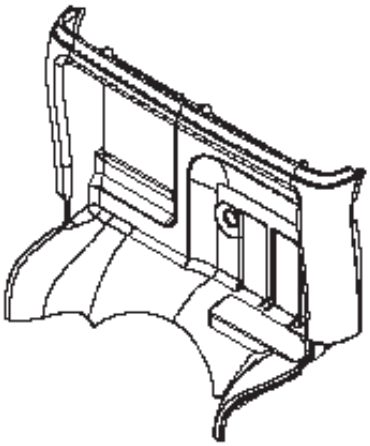
9-3-1 Mechanical Hardware Parts



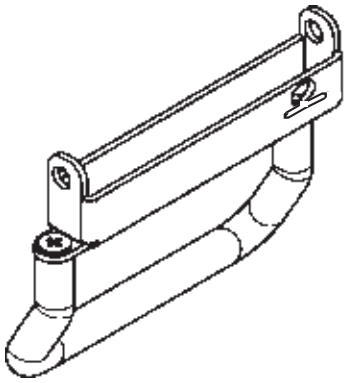
Part 2258594 - Cover Rear



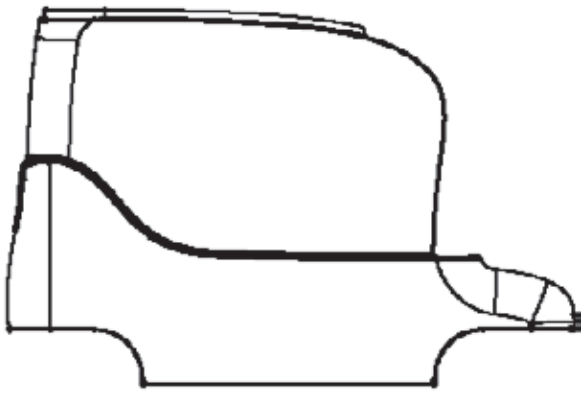
Part 2258596 - Cover Connector Panels



Part 2258597 - Cover Front



Part 2370002-2 - Up/Down Plastic Handle with Support



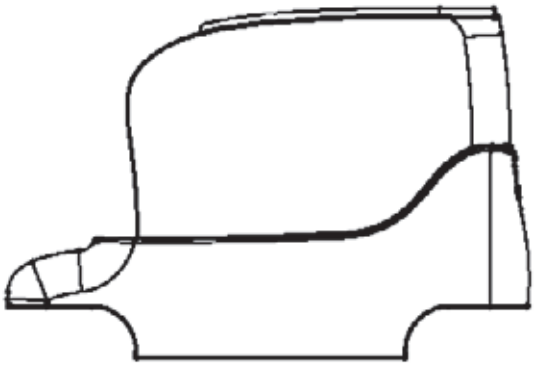
Part 2258599 - Cover Left Pro



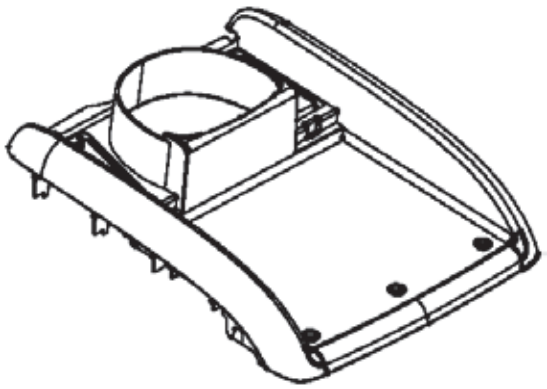
Part 225392-5 - Rear Handle

Figure 9-1 Mechanical Hardware Parts - Diagram 1

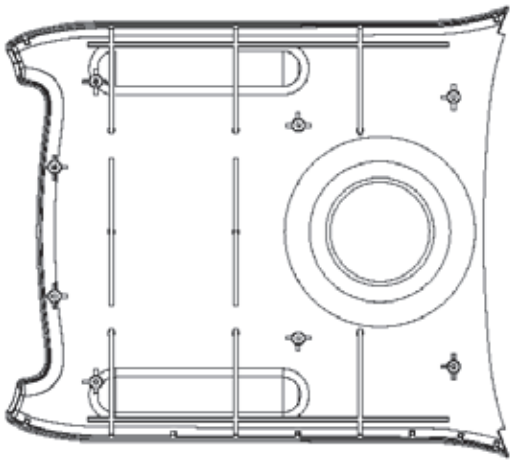
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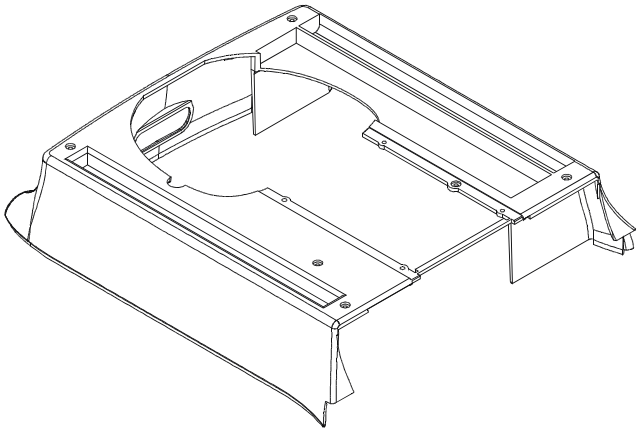
Part 2258600 - Cover Right Pro



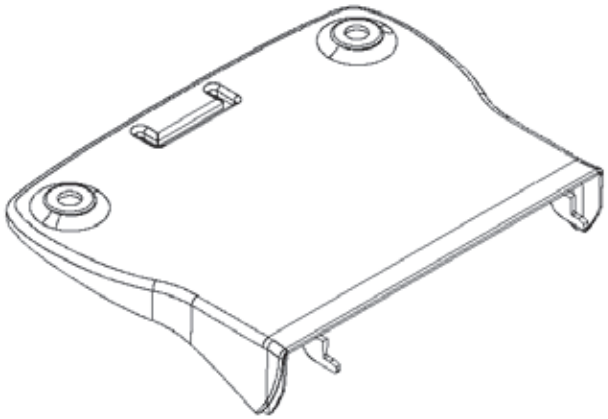
Part 2258602 - Cover Top (Lower Section)



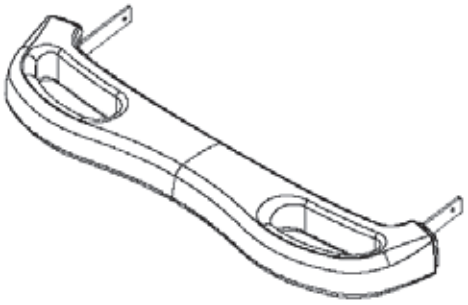
Part 2261572 - Cover Top (Upper Section)



Part 2261573 - Cover Bottom Rear (Upper Section)



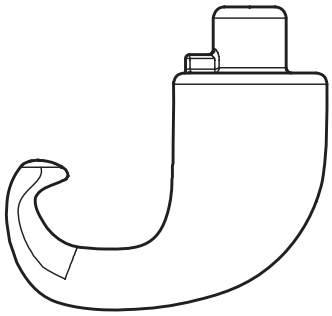
Part 2261574 - Cover Bottom Front (Upper Section)



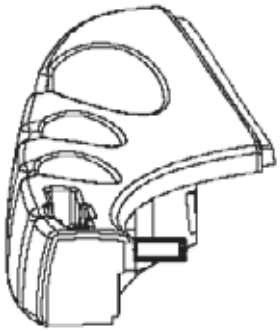
Part 2261578 - Front Handle

Figure 9-2 Mechanical Hardware Parts - Diagram 2

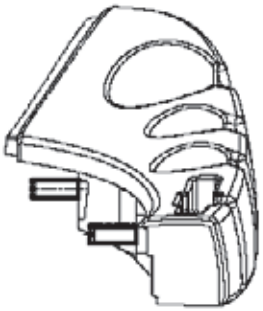
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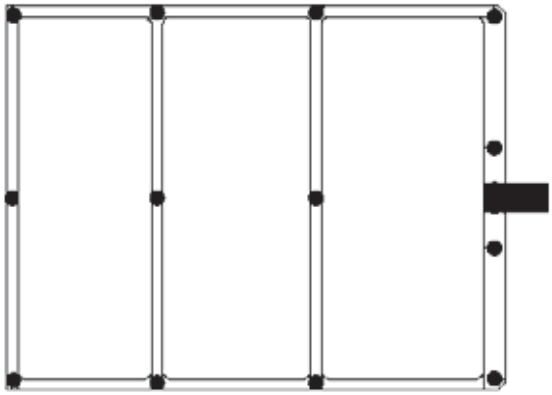
Part 2263841 - Probe Cable Holder



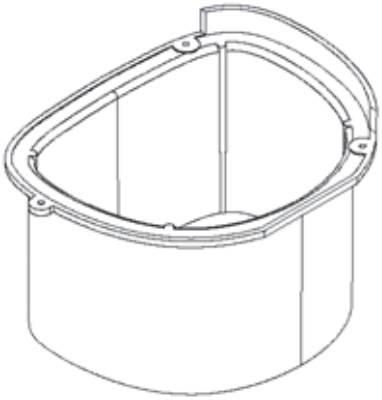
Part 2261576 - Probe Holder Left



Part 2261577 - Probe Holder Right



Part 2301690 - Filter (Air)



Part 2261575 - Cover Gas Spring



Part 2276027 - Gas Spring Assembly



Part 2268877 - Gas Spring Cable

Figure 9-3 Mechanical Hardware Parts - Diagram 3

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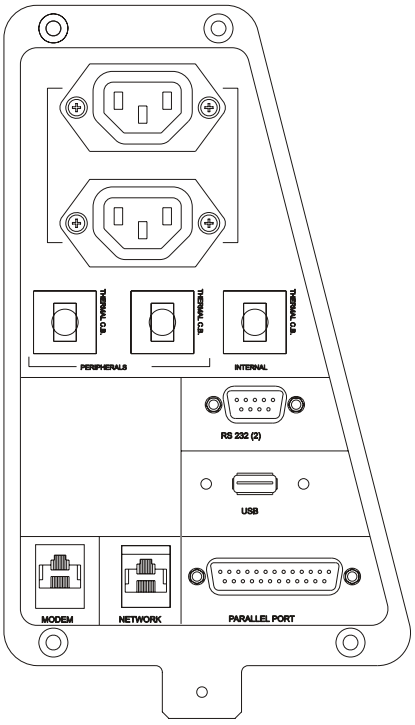
Part 2389102 - Caster Wheel (Rear)



Part 2392789 - Caster Wheel (Front) with brake



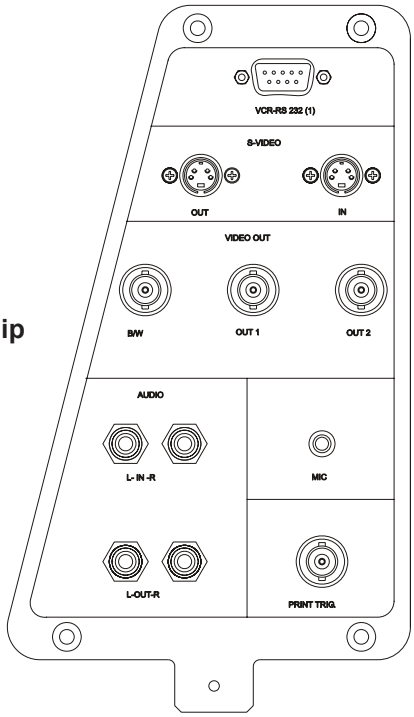
Part 2293820 - Cover Speakers with GE logo



Part 2253013 - Rear Connector Panel *Right*



Part 264C0001 - Cable Clip



Part 2253008 - Rear Connector Panel *Left*

Figure 9-4 Mechanical Hardware Parts - Diagram 4

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Table 9-2 Mechanical Hardware Parts

P/N	Part Name	FRU	Pro BT03	BT03	Refer to
2258594	Cover Rear	2	✔	✔	Figure 9-1 on page 9-3
2258596	Cover Connector Panels	2	✔	✔	Figure 9-1 on page 9-3
2258597	Cover Front	2	✔	✔	Figure 9-1 on page 9-3
2258599	Cover Left	1	✔	✔	Figure 9-1 on page 9-3
2258600	Cover Right	1	✔	✔	Figure 9-2 on page 9-4
2258602	Cover Top (Lower Section)	2	✔	✔	Figure 9-2 on page 9-4
2261572	Cover Top (Upper Section)	2	✔	✔	Figure 9-2 on page 9-4
2370002-2	Up/Down Handle (plastic, with support)	2	✔	✔	Figure 9-1 on page 9-3
225392-5	Rear Handle	2	✔	✔	Figure 9-1 on page 9-3
2261573	Cover Bottom Rear (Upper Section)	2	✔	✔	Figure 9-2 on page 9-4
2261574	Cover Bottom Front (Upper Section)	1	✔	✔	Figure 9-2 on page 9-4
2261575	Cover Gas Spring/Sleeve	2	✔	✔	Figure 9-3 on page 9-5
2261576	Probe Holder Left	2	✔	✔	Figure 9-3 on page 9-5
2261577	Probe Holder Right	2	✔	✔	Figure 9-3 on page 9-5
2261578	Front Handle	2	✔	✔	Figure 9-2 on page 9-4
2263841	Probe Cable Holder	2	✔	✔	Figure 9-3 on page 9-5
2276027	Gas Spring Assembly	2	✔	✔	Figure 9-3 on page 9-5
2268877	Gas Spring Cable	2	✔	✔	Figure 9-3 on page 9-5
2301690	Filter (Air)	2	✔	✔	Figure 9-3 on page 9-5
2389102	Wheel (Castor) - Rear	1	✔	✔	Figure 9-4 on page 9-6
2392789	Wheel (Castor) - Front (with brake)	1	✔	✔	Figure 9-4 on page 9-6
2293820	Cover Speakers with GE Logo	2	✔	✔	Figure 9-4 on page 9-6

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Table 9-2 Mechanical Hardware Parts

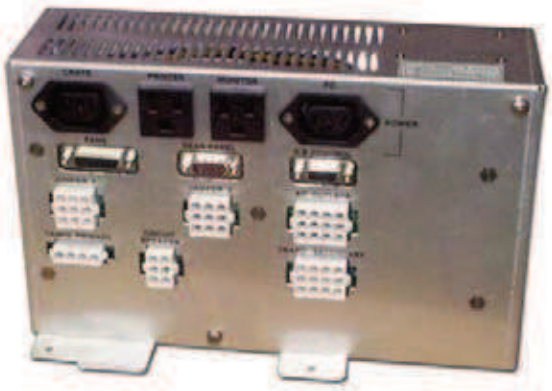
P/N	Part Name	FRU	Pro BT03	BT03	Refer to
2253013	Rear Connector Panel Right (with cables)	2	✔	✔	Figure 9-4 on page 9-6
2253008	Rear Connector Panel Left (with cables)	2	✔	✔	Figure 9-4 on page 9-6
264C0001	Cable Clip	2	✔	✔	Figure 9-4 on page 9-6
2253052	Screw Kit	1	✔	✔	
2394000	Keycap Kit	1	✔	✔	

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9-3-2 AC System Parts



Part 2252994 - Input AC Box and Circuit Breaker



Part 2399304 - AC Voltage Distribution Box



Part 2253054 - Connector AC Voltage Primary 100-120V



Part 2253057 - Connector AC Voltage Secondary 100V



Part 2253056 - Connector AC Voltage Primary 200-240V



Part 2253059 - Connector AC Voltage Secondary 220V



Part 2253058 - Connector AC Voltage Secondary 120V



Part 2253060-2 - Connector AC Voltage Secondary 220-240V

Figure 9-5 AC System Parts

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Table 9-4 AC System Parts

P/N	Part Name	FRU	Pro BT03	BT03	Refer to
2252994	Input AC Box and Circuit Breaker	1	✔	✔	Figure 9-5 on page 9-9
2399304	AC Voltage Distribution Box	1	✔	✔	Figure 9-5 on page 9-9
2253054	Connector AC Voltage Primary 100-120V	2	✔	✔	Figure 9-5 on page 9-9
2253056	Connector AC Voltage Primary 200-240V	2	✔	✔	Figure 9-5 on page 9-9
2253057	Connector AC Voltage Secondary 100V	2	✔	✔	Figure 9-5 on page 9-9
2253058	Connector AC Voltage Secondary 120V	2	✔	✔	Figure 9-5 on page 9-9
2253059	Connector AC Voltage Secondary 220V	2	✔	✔	Figure 9-5 on page 9-9
2253060-2	Connector AC Voltage Secondary 220-240V	2	✔	✔	Figure 9-5 on page 9-9

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9-3-3 Front End Parts



Part 2270068 - Low Voltage Power Supply



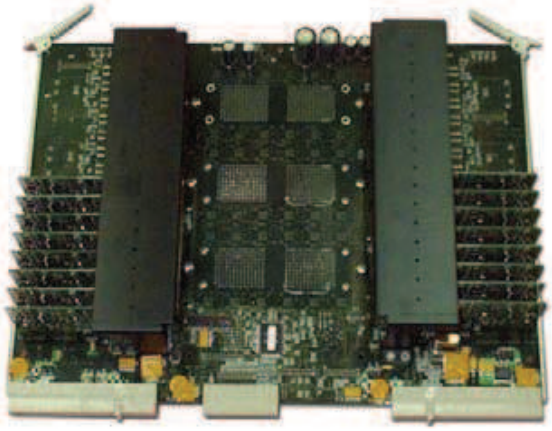
Part 2295971 - FAN 92x92 Crate Fan 12V



Part 2253030-3 - Front End Crate (RFI models only)



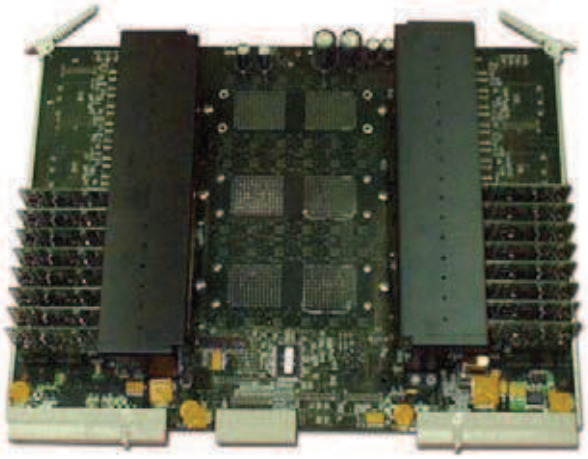
Part 2253030-2 - Front End Crate (including back plan MB)



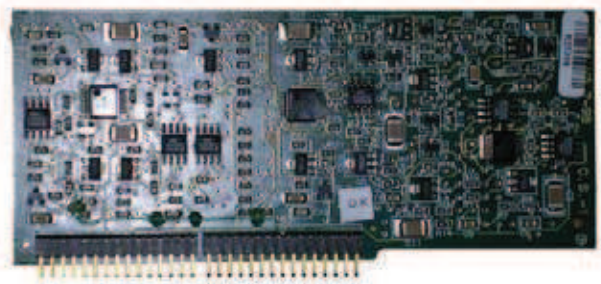
Part 2253033-2 - PCB Front Board and TR4 Assembly (FB, 2Con.,V7)

Figure 9-6 Front End Parts - Diagram 1

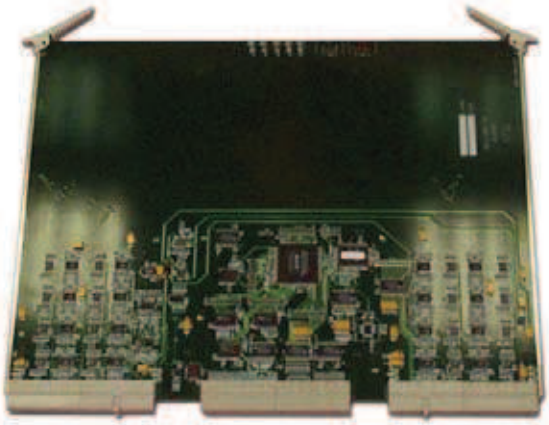
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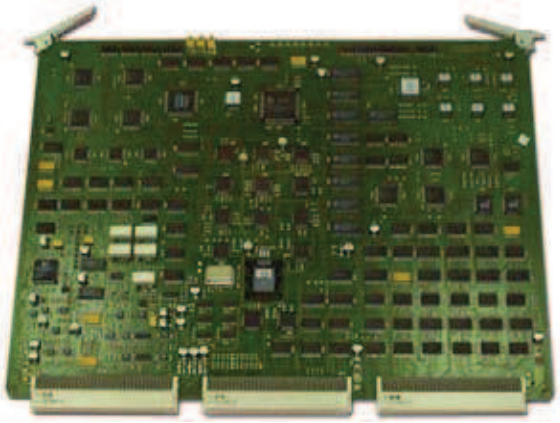
Part 2253033-3 - PCB Front Board and TR4 Assembly (FB, 3Con.,V7)



Part 2418129 - PCB TR4 Board



Part 2253038-3 - PCB Multiplexer (MUX)



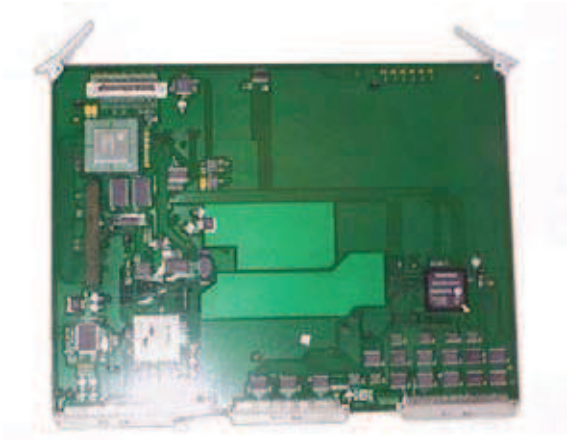
Part FA200764 - PCB Front End Controller



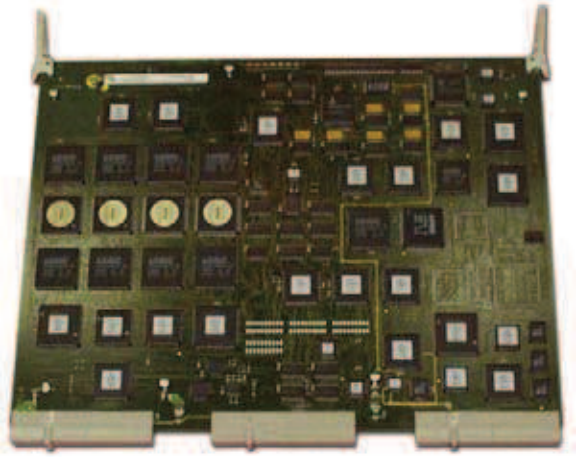
Part FA200114 - Tx Voltage Power Supply (TXPS), HV Power Supply

Figure 9-7 Front End Parts - Diagram 2

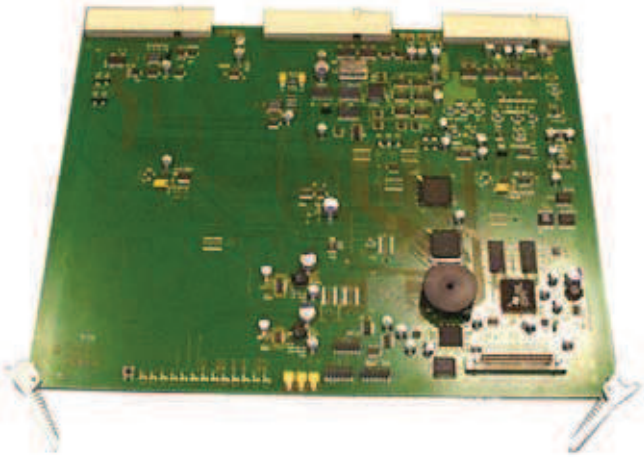
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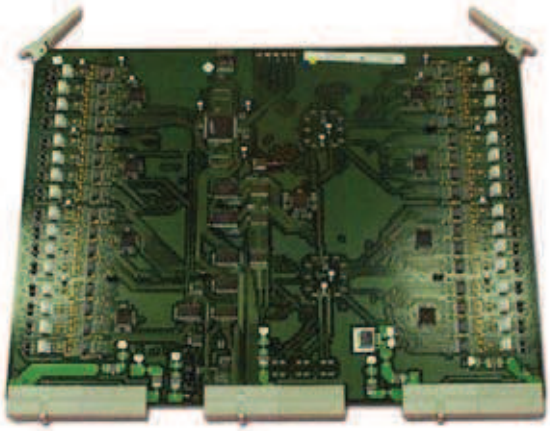
Part FC200120 - PCB Image Port 3 (IMP3)



Part FB200992 - PCB RF Tissue (RFT, MLA2)



Part FC200507 - PCB RFI (IMP, RFT, & FEC)



Part FB200900 - PCB Beamformer (BF) 64ch

Figure 9-8 Front End Parts - Diagram 3

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Table 9-6 Front End Parts

P/N	Part Name	FRU	Pro BT03	BT03	Refer to
2253030-2	Front End Crate (including back plan MB)	2	✔	✔	Figure 9-6 on page 9-11
2253030-3	Front End Crate	2	a	a	Figure 9-6 on page 9-11
2253033-2	PCB: Front Board and TR4 Assembly (FB, 2Con.,V7)	1	✔	✔	Figure 9-6 on page 9-11
2253033-3	PCB: Front Board and TR4 Assembly (FB, 3Con.,V7)	1	✔	✔	Figure 9-7 on page 9-12
2418129	PCB: TR4 Board	1	✔	✔	Figure 9-7 on page 9-12
2253038-3	PCB Multiplexer (MUX)	1	✔	✔	Figure 9-7 on page 9-12
2295971	FAN 92x92 Crate Fan 12V	1	✔	✔	Figure 9-6 on page 9-11
2270068	Low Voltage Power Supply (LVPS)	1	✔	✔	Figure 9-6 on page 9-11
FA200114	TX Voltage Power Supply (TXPS), HV Power Supply	1	✔	✔	Figure 9-7 on page 9-12
FC200507	PCB Radio Frequency Interface (RFI)	1	a	a	Figure 9-8 on page 9-13
FB200992	PCB RF Tissue (RFT, MLA2)	1	✔	✔	Figure 9-8 on page 9-13
FA200764	PCB Front End Controller (FEC)	1	✔	✔	Figure 9-7 on page 9-12
FB200900	PCB Beamformer (BF) 64ch	1	✔	✔	Figure 9-8 on page 9-13
FC200120	PCB Image Port 3 (IP3)	1	✔	✔	Figure 9-8 on page 9-13

a. Applicable to RFI-configured systems *only*

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9-3-4 Back End Parts



Part 2253043 Keyboard Matrix Assembly English



Part 2274623 Keyboard Trackball



Part 2256476 ECG Box Assembly (Patient I/O Module)

Figure 9-12 Back End Parts - Diagram 1

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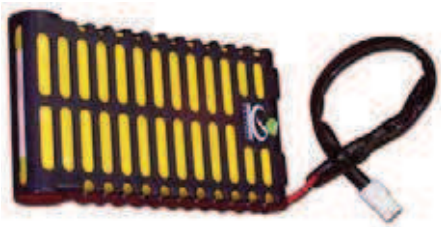
Part 2315842-7 BEP Basic



Part 2316279 PCB Plug & Scan Card



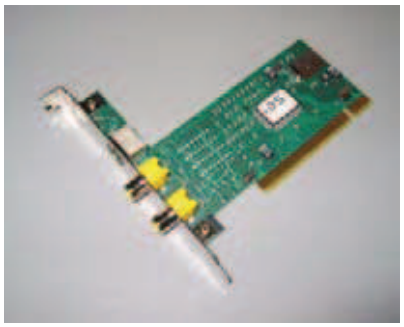
Part 2346011 BEP2 Power Supply



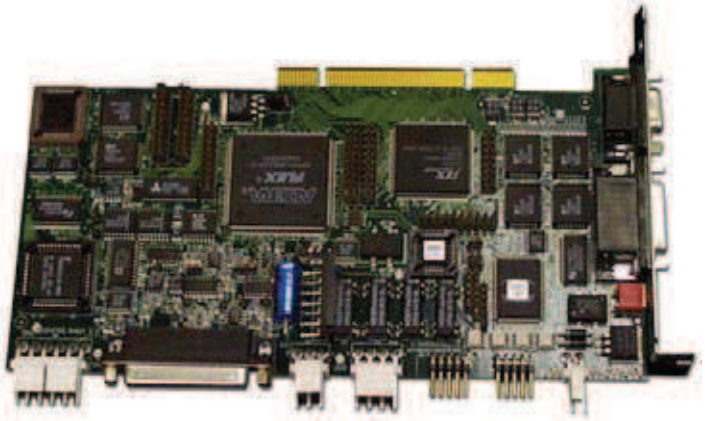
Part 2300858 Plug & Scan Battery



Part 2277189 MO Drive 5.25



Part 2399676 - Frame Grabber



Part 2253027-5 PCB Keyboard Control Card



Part 066E0007 Footswitch

Figure 9-13 Back End Parts - Diagram 2

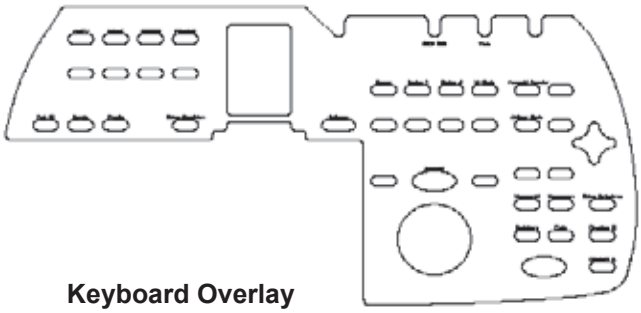
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Part 2336022-2 Samsung 15" Monitor (591-S) for Pro



Part 2306835-6 Monitor for Expert 17"



Keyboard Overlay

(see Table 9-8 on page 9-19 for Part Numbers and Languages)



Part EP200132 Isolation Box (network)



Part 2269309 Speakers (pair)

Figure 9-14 Back End Parts - Diagram 3

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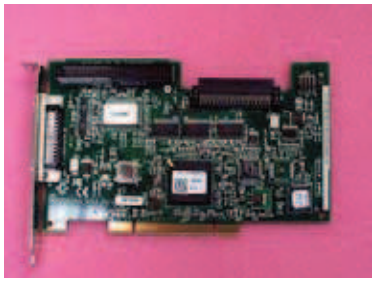
Part 2408479 Hard Disk Drive (HDD)



Part 2346034 Floppy Drive



Part 2413449 CD Drive RW



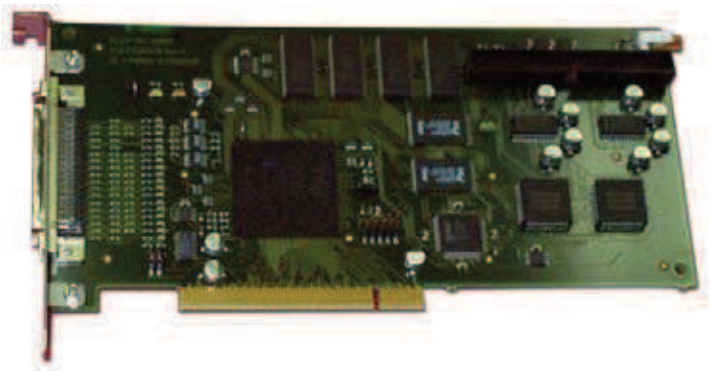
Part 2271149-2 PCB SCSI Card



Part 2340279 PC Video Encoder Control Assembly (PC-VIC)



Part FC200656 PC2IP2 Card



Part FB200973 PCB PC2IP Card

Figure 9-15 Back End Part - Diagram 4

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Table 9-8 Back End Parts

P/N	Part Name	FRU	Pro BT03	BT03	Refer to
2340279	PC Video Encoder Control Assembly (PC-VIC)	1	✓	✓	Figure 9-15 on page 9-18
2256476	ECG Box Assembly (Patient I/O Module)	1	✓	✓	Figure 9-12 on page 9-15
2336022-2	Monitor 15” with Base	1	✓	✓	Figure 9-14 on page 9-17
2306835-6	Monitor 17” with Base	1	a	a	Figure 9-14 on page 9-17
2408479	Hard Disk Drive (HDD)	1	✓	✓	Figure 9-15 on page 9-18
2346034	Floppy Drive	2	✓	✓	Figure 9-15 on page 9-18
2413449	CD Drive RW	1	✓	✓	Figure 9-15 on page 9-18
2300858	Plug & Scan Battery	1	b	b	Figure 9-13 on page 9-16
2316279	PCB Plug & Scan Card	1	b	b	Figure 9-13 on page 9-16
2271149-2	PCB SCSI Card	1	c	c	Figure 9-15 on page 9-18
2277189	MO Drive 5.25	1	c	c	Figure 9-13 on page 9-16
066E0007	Footswitch	2	✓	✓	Figure 9-13 on page 9-16
2269309	Speakers (pair)	2	✓	✓	Figure 9-14 on page 9-17
2274623	Keyboard Trackball	1	✓	✓	Figure 9-12 on page 9-15
2253043	Keyboard Matrix Assembly English	1	✓	✓	Figure 9-12 on page 9-15
2393953-2	Keyboard Overlay - German	2	✓	✓	Figure 9-14 on page 9-17
2393953-3	Keyboard Overlay Assembly - French	2	✓	✓	Figure 9-14 on page 9-17
2393953-4	Keyboard Overlay Assembly - Spanish	2	✓	✓	Figure 9-14 on page 9-17
2393953-5	Keyboard Overlay Assembly - Portuguese	2	✓	✓	Figure 9-14 on page 9-17
2393953-6	Keyboard Overlay Assembly - Italian	2	✓	✓	Figure 9-14 on page 9-17
2393953-8	Keyboard Overlay Assembly - Russian	2	✓	✓	Figure 9-14 on page 9-17
2393953-10	Keyboard Overlay Assembly - Danish	2	✓	✓	Figure 9-14 on page 9-17
2393953-11	Keyboard Overlay Assembly - Norwegian	2	✓	✓	Figure 9-14 on page 9-17
2393953-12	Keyboard Overlay Assembly - Swedish	2	✓	✓	Figure 9-14 on page 9-17
2393953-13	Keyboard Overlay Assembly - Finnish	2	✓	✓	Figure 9-14 on page 9-17
2393953-14	Keyboard Overlay Assembly - Dutch	2	✓	✓	Figure 9-14 on page 9-17

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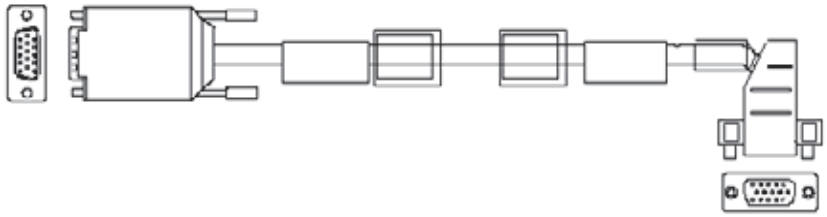
Table 9-8 Back End Parts (Continued)

P/N	Part Name	FRU	Pro BT03	BT03	Refer to
2393953-15	Keyboard Overlay Assembly - Greek	2	✔	✔	Figure 9-14 on page 9-17
2315842-7	BEP Vivid™ 3 Assy Basic	1	d	d	Figure 9-13 **on page 9-16**
2346011	BEP2 Power Supply	1	✔	✔	Figure 9-13 on page 9-16
EP200132	Isolation Box (network)	N	✔	✔	Figure 9-14 on page 9-17
2399676	Frame Grabber	1	e	e	Figure 9-13 on page 9-16
2253027-5	PCB Keyboard Control Card	1	✔	✔	Figure 9-13 on page 9-16
FC200656	PCB PC2IP2 Card	1	e	e	Figure 9-15 on page 9-18
FB200973	PCB PC2IP Card	1	✔	✔	Figure 9-15 on page 9-18

a. This is an option that should be ordered via Cat# H45011MK.
b. This hardware is an option that should be ordered via Cat# H45011AT.
c. This hardware is an option that should be ordered via Cat# H45011CF.
d. Note: Before ordering the new BEP, review to the Back End Processor Replacement Procedure on page 8 - 58 and check for any additional BEP components required as shown in Table 8-3 on page 8-55.
e. Applicable to RFI-configured systems *only*.

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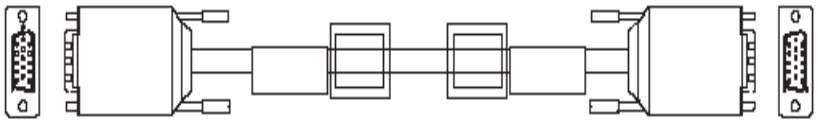
9-3-5 Cables



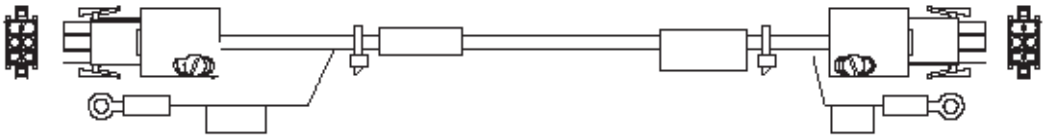
Part 2252964 VGA Out



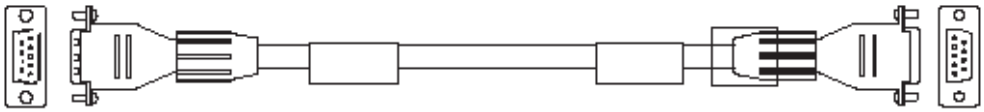
Part 2371429 YC to Frame Grabber



Part 2252965 VGA VIC/ PC



Part 2252966 Input Box / AC Distribution Box



Part 2252967 - Soft Shutdown



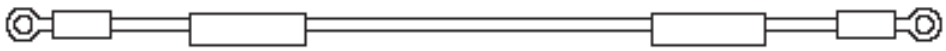
Part 2252968 Ground VIC



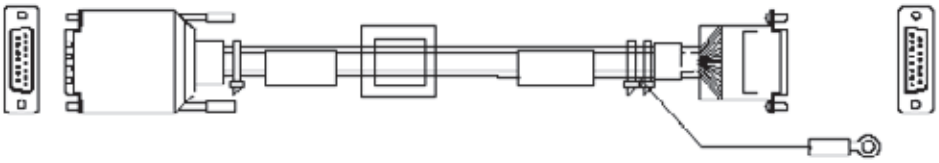
Part 2252969 - Ground / Back End

Figure 9-21 Cables - Diagram 1

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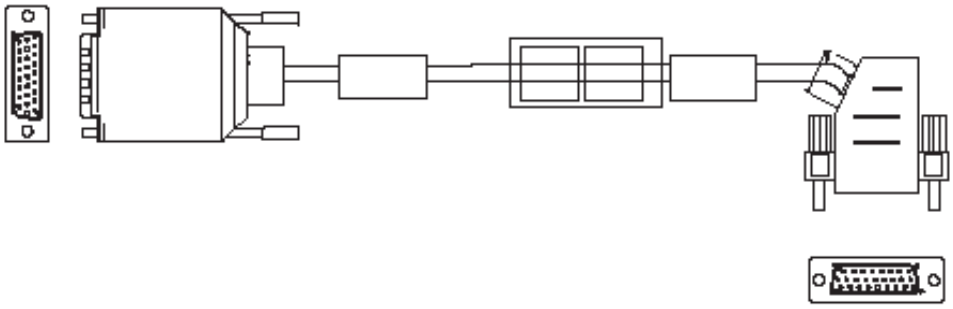
Part 2252970 - Ground / Front End



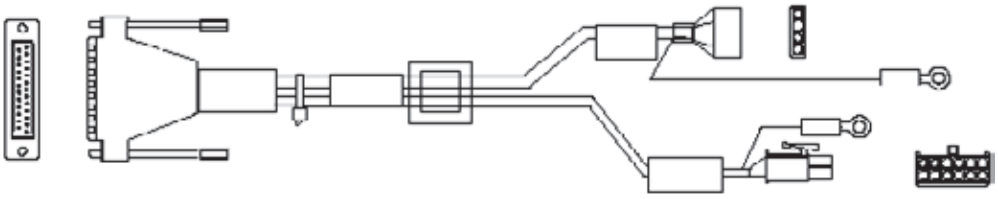
Part 2252972 - Fan (AC Distribution Box - Front End)



Part 2252973 - Ground / Keyboard



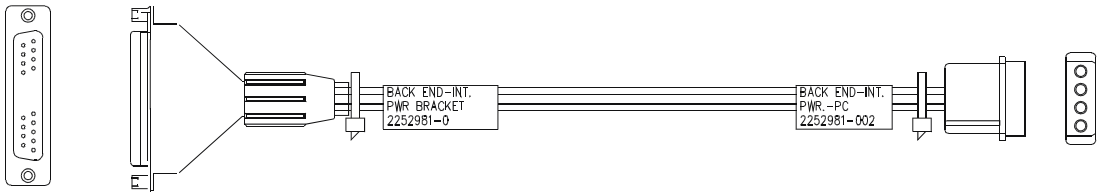
Part 2252975 - Keyboard Matrix/ Control



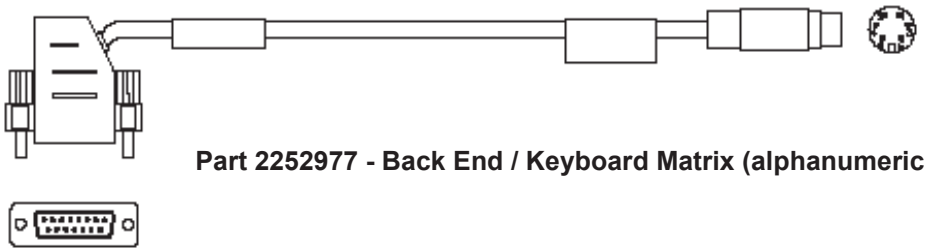
Part 2252976 - Keyboard / VIC External Power

Figure 9-22 Cables - Diagram 2

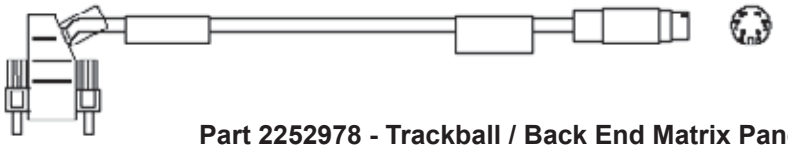
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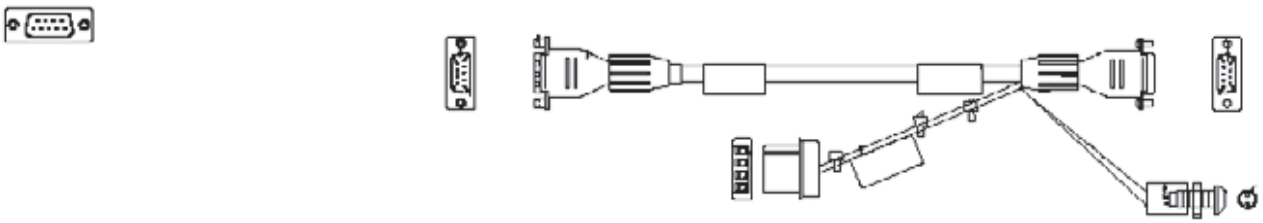
Part 2252981 - Keyboard/VIC Internal Power/Back-End



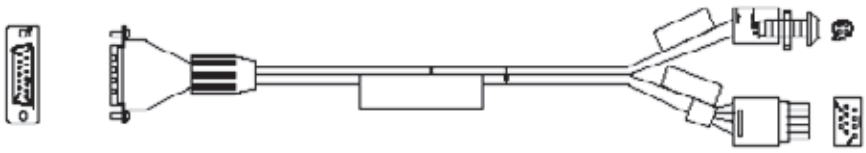
Part 2252977 - Back End / Keyboard Matrix (alphanumeric keyboard)



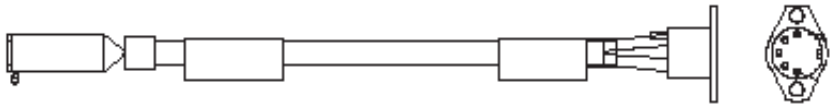
Part 2252978 - Trackball / Back End Matrix Panel



Part 2252979 - ECG / Back End Internal



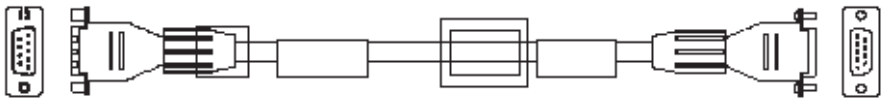
Part 2252980 - Patient I/O ECG / ECG/Phono



Part 2252982 - ECG Internal Footswitch / Keyboard Control

Figure 9-23 Cables - Diagram 3

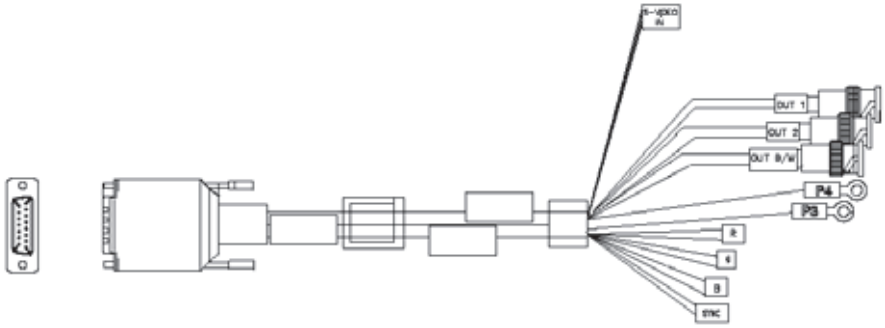
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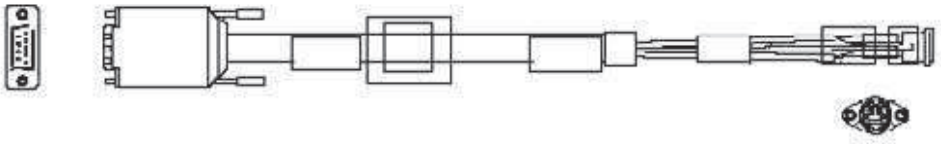
Part 2253009 - Com1: Back End / Rear Panel Left



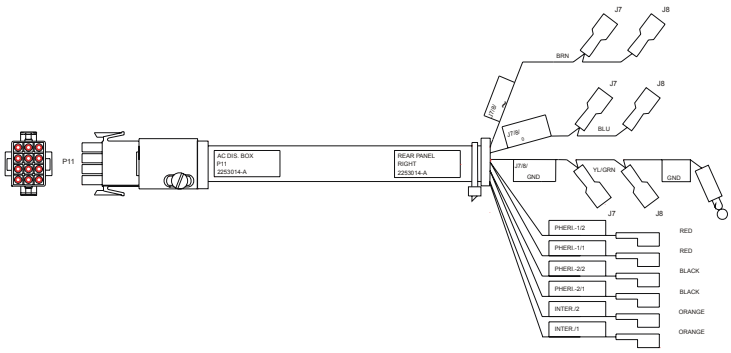
Part 2253010 - Ground / Rear Panel Left



Part 2253011 - VIC / Rear Panel Left Col. Pr.



Part 2253012 - Video / Rear Panel Left Ac Distribution (Video Grabbing)



Part 2253014 - AC Distribution / Rear Panel Right

Figure 9-24 Cables - Diagram 4

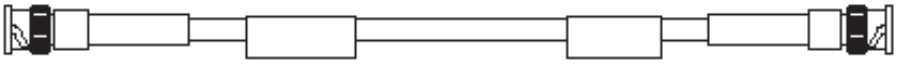
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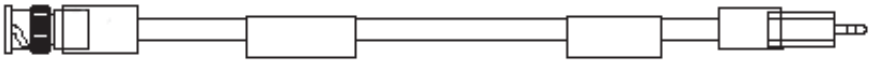
Part 2253016 - Parallel Port / Rear Panel



Part 2253019 - Ground / Rear Panel Right



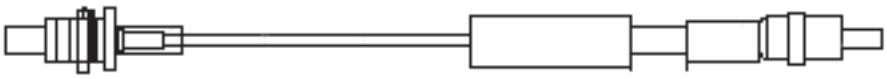
Part 2253079 - Rear Panel Left / B/W Printer



Part 2253080 - B/W Printer / Rear Panel Left (Print Trigger)



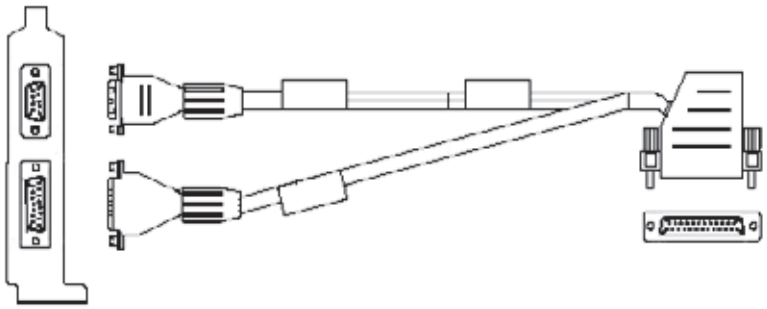
Part 2254089 Ground / AC Box



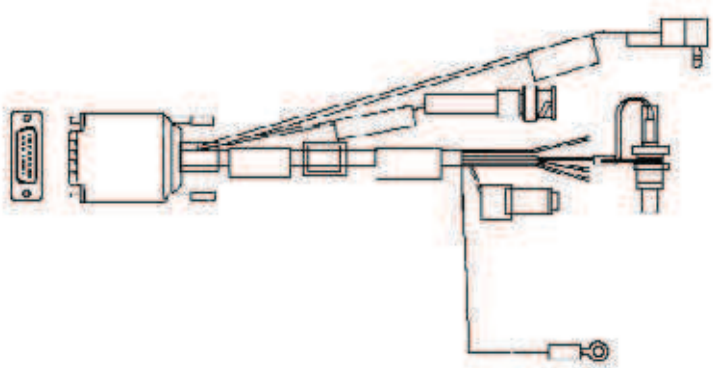
Part 2256685 External ECG with Echo Stress

Figure 9-25 Cables - Diagram 5

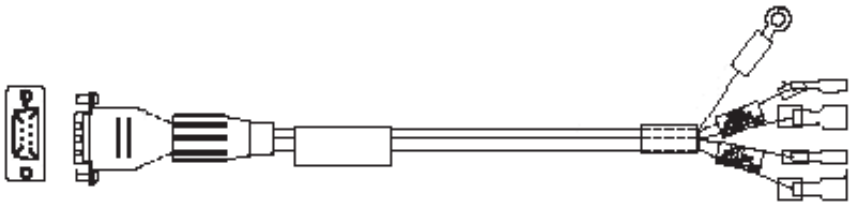
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Part 2258801 Internal Audio / Keyboard Control Back End



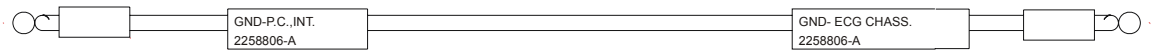
Part 2258803 External Audio Back End /Rear Panel



Part 2258804 Speakers / Back End



Part 2258805 On/OFF Motherboard / Keyboard Controller



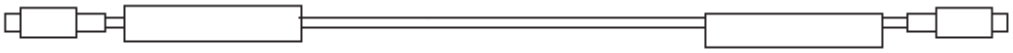
Part 2258806 Ground/ECG

Figure 9-26 Cables - Diagram 6

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Part 2266742 RS232 VCR / Rear Panel



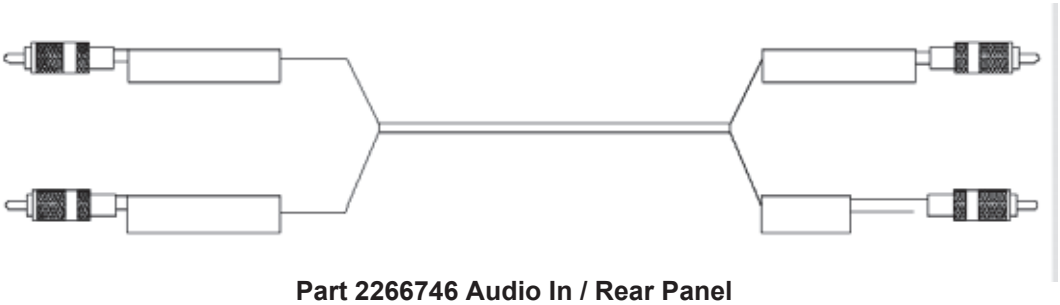
Part 2266743 Video In / Rear Panel



Part 2266744 Video Out / Rear Panel



Part 2266745 Audio Out / Rear Panel



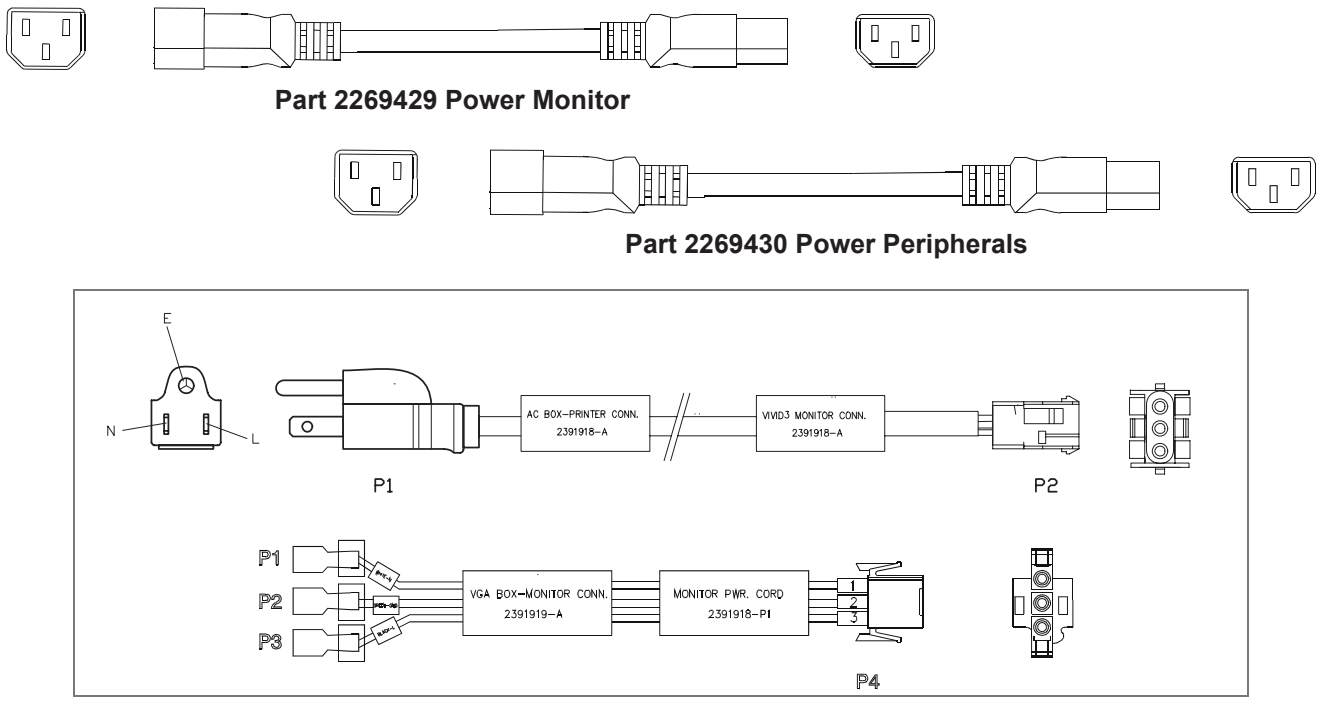
Part 2266746 Audio In / Rear Panel



Part 066E8200 Panasonic VCR RS-232 Adaptor

Figure 9-27 Cables - Diagram 7

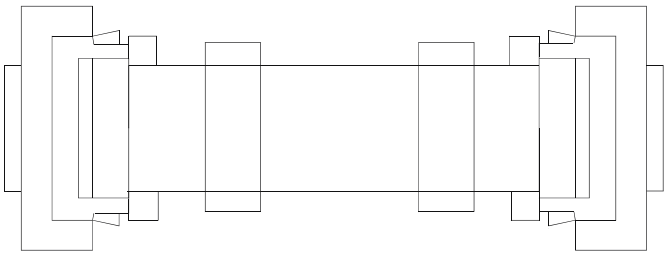
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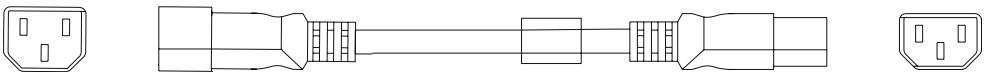
Part 2269429 Power Monitor

Part 2269430 Power Peripherals

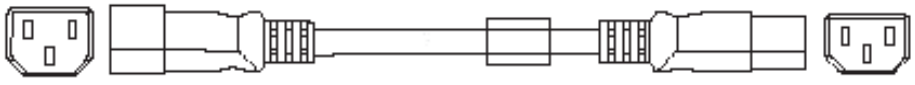
Part 2269432 Power Monitor Internal



Part 2276874 PC2IP (Data Front End to Back End)



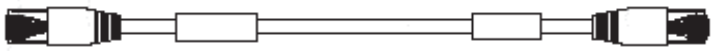
Part 2276875 Power Front End



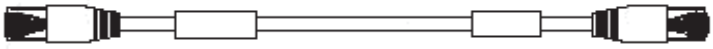
Part 2266876 Power Back End

Figure 9-28 Cables - Diagram 8

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Part 2283903 Network Rear Panel Right to Isolation Box



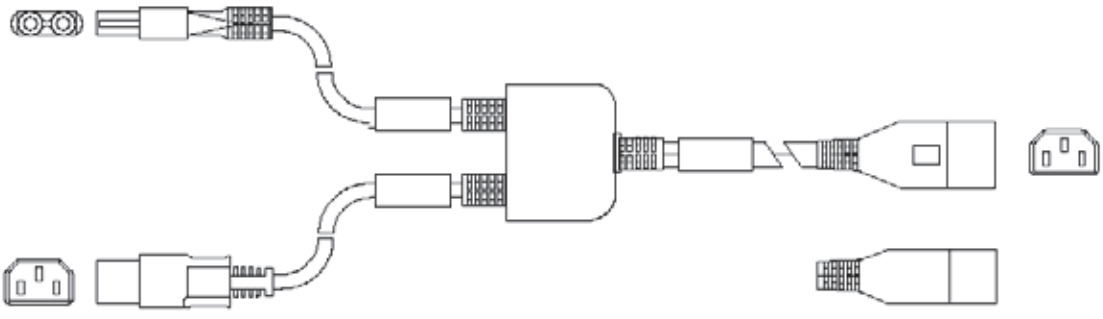
Part 2292972 Network Back End Rear Panel to Isolation Box (option)



Part 2297905 USB Cable



Part 2298089 ECG Internal Com2



Part 2300857 Power Peripherals and Printer

Figure 9-29 Cables - Diagram 9

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Table 9-10 Cables

P/N	Part Name	FRU	Pro BT03	BT03	Refer to
2252964	Cable: VGA Out	2	✔	✔	Figure 9-21 on page 9-21
2252965	Cable: VGA VIC/ PC	2	✔	✔	Figure 9-21 on page 9-21
2252966	Cable: Input Box / AC Distribution Box	2	✔	✔	Figure 9-21 on page 9-21
2252967	Cable: Soft Shutdown	2	✔	✔	Figure 9-21 on page 9-21
2252968	Cable: Ground / VIC	2	✔	✔	Figure 9-21 on page 9-21
2252969	Cable: Ground / Back-End	2	✔	✔	Figure 9-21 on page 9-21
2252970	Cable: Ground / Front End	2	✔	✔	Figure 9-22 on page 9-22
2252972	Cable: Fan (AC Dist. Box / Front End)	2	✔	✔	Figure 9-22 on page 9-22
2252973	Cable: Ground / Keyboard	2	✔	✔	Figure 9-22 on page 9-22
2252975	Cable: Keyboard Matrix / Control	2	✔	✔	Figure 9-22 on page 9-22
2252976	Cable: Keyboard/ VIC External Power	2	✔	✔	Figure 9-22 on page 9-22
2252981	Cable: Keyboard/ VIC Internal Power/ Back-End	2	✔	✔	Figure 9-23 on page 9-23
2252977	Cable: Back End / Keyboard Matrix (alphanumeric keyboard)	2	✔	✔	Figure 9-23 on page 9-23
2252978	Cable: Trackball / Back End Matrix Panel	2	✔	✔	Figure 9-23 on page 9-23
2252979	Cable: ECG - Back End Internal	2	✔	✔	Figure 9-23 on page 9-23
2252980	Cable: Patient I/O int. ECG - ECG/Phono	2	✔	✔	Figure 9-23 on page 9-23
2252982	Cable: ECG Int. Footswitch / Keyboard Control	2	✔	✔	Figure 9-23 on page 9-23
2253009	Cable: Com1: Back End / Rear Panel Left	2	✔	✔	Figure 9-24 on page 9-24
2253010	Cable: Ground / Rear Panel Left	2	✔	✔	Figure 9-24 on page 9-24
2253011	Cable: VIC / Rear Panel Left Col. Pr.	2	✔	✔	Figure 9-24 on page 9-24
2253012	Cable: Video / Rear Panel Left AC Dist. (Video Grabbing)	2	✔	✔	Figure 9-24 on page 9-24
2371429	Cable: Video / BEP rear (Frame Grabber)	1	a	a	Figure 9-21 on page 9-21

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Table 9-10 Cables (Continued)

P/N	Part Name	FRU	Pro BT03	BT03	Refer to
2253014	Cable: AC Dist. / Rear Panel Right	2	✔	✔	Figure 9-24 on page 9-24
2253016	Cable: Parallel Port / Rear Panel	2	✔	✔	Figure 9-25 on page 9-25
2253019	Cable: Ground/ Rear Panel Right	2	✔	✔	Figure 9-25 on page 9-25
2253079	Cable: Rear Panel Left / B/W Printer	2	✔	✔	Figure 9-25 on page 9-25
2253080	Cable: B/W Printer / Rear Panel Left (Print Trig)	2	✔	✔	Figure 9-25 on page 9-25
2254089	Cable: Ground / AC Box	2	✔	✔	Figure 9-25 on page 9-25
2256477	Cable: ECG BEP Cable USA - External	1	✔	✔	Figure 9-25 on page 9-25
2256478	Cable: ECG BEP Cable Europe - External	1	✔	✔	Figure 9-25 on page 9-25
2256685	Cable: External ECG (with Echo Stress Option)	2	✔	✔	Figure 9-25 on page 9-25
2258801	Cable: Internal Audio / Keyboard Control Back End	2	✔	✔	Figure 9-26 on page 9-26
2258803	Cable: External Audio Back End / Rear Panel	2	✔	✔	Figure 9-26 on page 9-26
2258804	Cable: Speakers / Back End	2	✔	✔	Figure 9-26 on page 9-26
2258805	Cable: ON/OFF Motherboard / Keyboard Controller	2	✔	✔	Figure 9-26 on page 9-26
2258806	Cable: Ground / ECG	2	✔	✔	Figure 9-26 on page 9-26
066E8200	RS-232 Adaptor - for Panasonic VCR	1	✔	✔	Figure 9-27 on page 9-27
2266742	Cable: RS232 VCR / Rear Panel - for Sony VCR	2	✔	✔	Figure 9-27 on page 9-27
2266743	Cable: Video IN / Rear Panel	2	✔	✔	Figure 9-27 on page 9-27
2266744	Cable: Video OUT / Rear Panel	2	✔	✔	Figure 9-27 on page 9-27
2266745	Cable: Audio OUT / Rear Panel	2	✔	✔	Figure 9-27 on page 9-27
2266746	Cable: Audio IN / Rear Panel	2	✔	✔	Figure 9-27 on page 9-27
2269429	Cable: Power Monitor	N	✔	✔	Figure 9-28 on page 9-28
2269430	Cable: Power Peripherals	N	✔	✔	Figure 9-28 on page 9-28
2269431	Cable: Power Color Printer	2	✔	✔	
2269432	Cable: Power Monitor Internal	N	b	b	Figure 9-28 on page 9-28

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Table 9-10 Cables (Continued)

P/N	Part Name	FRU	Pro BT03	BT03	Refer to
2276874	Cable: PC2IP (Data Front End to Back End)	2	✔	✔	Figure 9-28 on page 9-28
2296156	Cable: PC2IP to KB Controller	1	✔	✔	
2276875	Cable: Power Front End	2	✔	✔	Figure 9-28 on page 9-28
2276876	Cable: Power Back End	1	✔	✔	Figure 9-28 on page 9-28
2283903	Cable: Network Rear Panel Right to Isolation Box	1	✔	✔	Figure 9-29 on page 9-29
2292972	Cable: Network Back End Rear Panel to Isolation Box	N	✔	✔	Figure 9-29 on page 9-29
2297905	Cable: USB Cable	2	✔	✔	Figure 9-29 on page 9-29
2298089	Cable: ECG Internal COM-2	N	✔	✔	Figure 9-29 on page 9-29
2300857	Cable: Power Peripherals and Printer	2	✔	✔	Figure 9-29 on page 9-29
2269428-2	Cable: Cable Power Asia	1	✔	✔	
2269459-2	Cable: Cable Power - EU Plug	1	✔	✔	
2269460-2	Cable: Cable Power - AM Plug	1	✔	✔	
2415383-6	Cable: Cable Power - China Plug	1	✔	✔	

a. Applicable to RFI-configured systems *only*.
b. This cable kit includes two cables (Part No. 2391918 and 2391919) that should be connected together as one cable.

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9-3-6 Software

Table 9-12 Software

P/N	Part Name	FRU	Pro BT03	BT03
2415386	S/W Kit - contains s/w for systems: Vivid™ 3, Vivid™ 4, and Vivid-i™	1	✔	✔

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9-3-7 Probes

Table 9-14 Probes

P/N	Part Name	FRU	Pro BT03	BT03
H45001NE	Heart Sound Microphone	N	✔	✔
H40212LC	Probe: C358 (outside Japan)	1	✔	✔
E8386RK	Biopsy Kit for C358	N	✔	✔
H40602LM	Probe: C721 (Curved)	1	✔	✔
H40212LF	Probe: I739L Linear	1	✔	✔
H4701SZ	Probe: 3S Sector	1	✔	✔
H4000P H40422LB	Probe: 7S Sector	1	✔	✔
H40422LA H4901RA	Probe: 5S Sector	1	✔	✔
H40412LG	Probe: 10L (739L) Linear	1	✔	✔
H40412LH	Probe: 39A (12L) Linear	1	✔	✔
E83885MM	Biopsy Kit for 10L/12L	N	✔	✔
H4901PC	Probe: 10S	1	✔	✔
H44201TG	Probe: P509 (Japan)	1	✔	✔
H40212LM	Probe: T739L Linear	1	✔	✔
H40412LF	Probe: 7L (546L)	1	✔	✔
H45521DX	Probe: 6T OR	1	✔	✔
H45001YE	Probe: 8T (PED TEE)	1	✔	✔
H45521DY	Probe: 9T (PED TEE)	1	a	a
H45001YF	Probe: Adaptor PAMPTE/6Tv	1	✔	✔
H45001B	Probe: Wall Rack TEE	1	✔	✔
H4830JE	Probe: Pencil P2D	1	✔	✔
H4830JG	Probe: Pencil P6D	1	✔	✔
H40602LN	Probe: E721 OB/GYN	1	✔	✔
H45511NW	Probe: i8L Linear	1	✔	✔
H45511NT	Probe: i13L Linear	1	✔	✔

a. Applicable to RFI-configured systems *only*.

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Section 9-4
Peripherals

Table 9-16 Approved Peripherals

P/N	Part Name	FRU	Pro BT03	BT03
H45011PT	VCR Mitsubishi HS-MD3000E S-VHS RS232C \PAL	2	✔	✔
H45011PN	VCR Mitsubishi HS-MD3000U S-VHS RS232C \NTSC	2	✔	✔
H45011PG	JVC VCR for side shelf - SR-S365U NTSC S-VHS	2	✔	✔
H45011PH	JVC VCR for side shelf - SR-S388E PAL S-VHS	2	✔	✔
H45001PG	VCR Cassette - S-VHS	N	✔	✔
H45001PW	Sony UP2800P PAL Color Video Printer - with shelf	2	✔	✔
H45001JC	Sony UP2800P PAL Color Video Printer - no shelf	2	✔	✔
H45001CL	Sony UP2950MD NTSC Color Video Printer - with shelf	2	✔	✔
H45001JD	Sony UP2950MD NTSC Color Video Printer - no shelf	2	✔	✔
H45001PY	Sony UP-21MD PAL/NTSC Color Video Printer - no shelf	2	✔	✔
H45001PZ	Sony UP-21MD PAL/NTSC Color Video Printer - with shelf	2	✔	✔
H45011CN	Shelf for Color Printer	2	✔	✔
H45001PJ	Color Paper for Color Printer	N	✔	✔
H45021FZ	Sony UPD 897MD B/W Video Printer	2	✔	✔
H45001PH	B/W Paper for B/W Printer	N	✔	✔
H45011PZ	HP Deskjet 6540/3 Color Printer	2	✔	✔

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Section 9-5
Cabling Block Diagrams

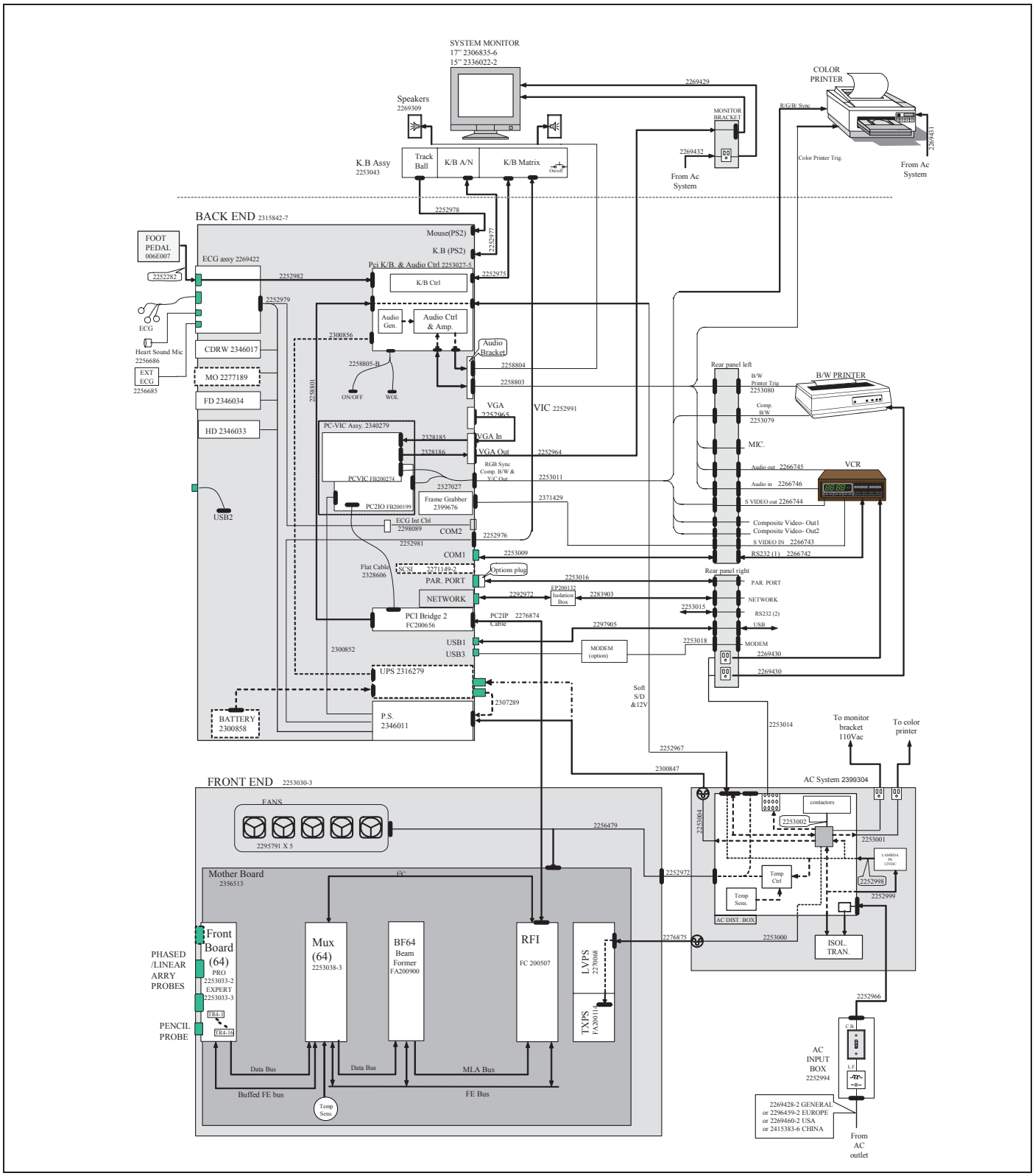


Figure 9-30 System Cabling Diagram - Vivid™ 3 BT03 (RFI Configuration)

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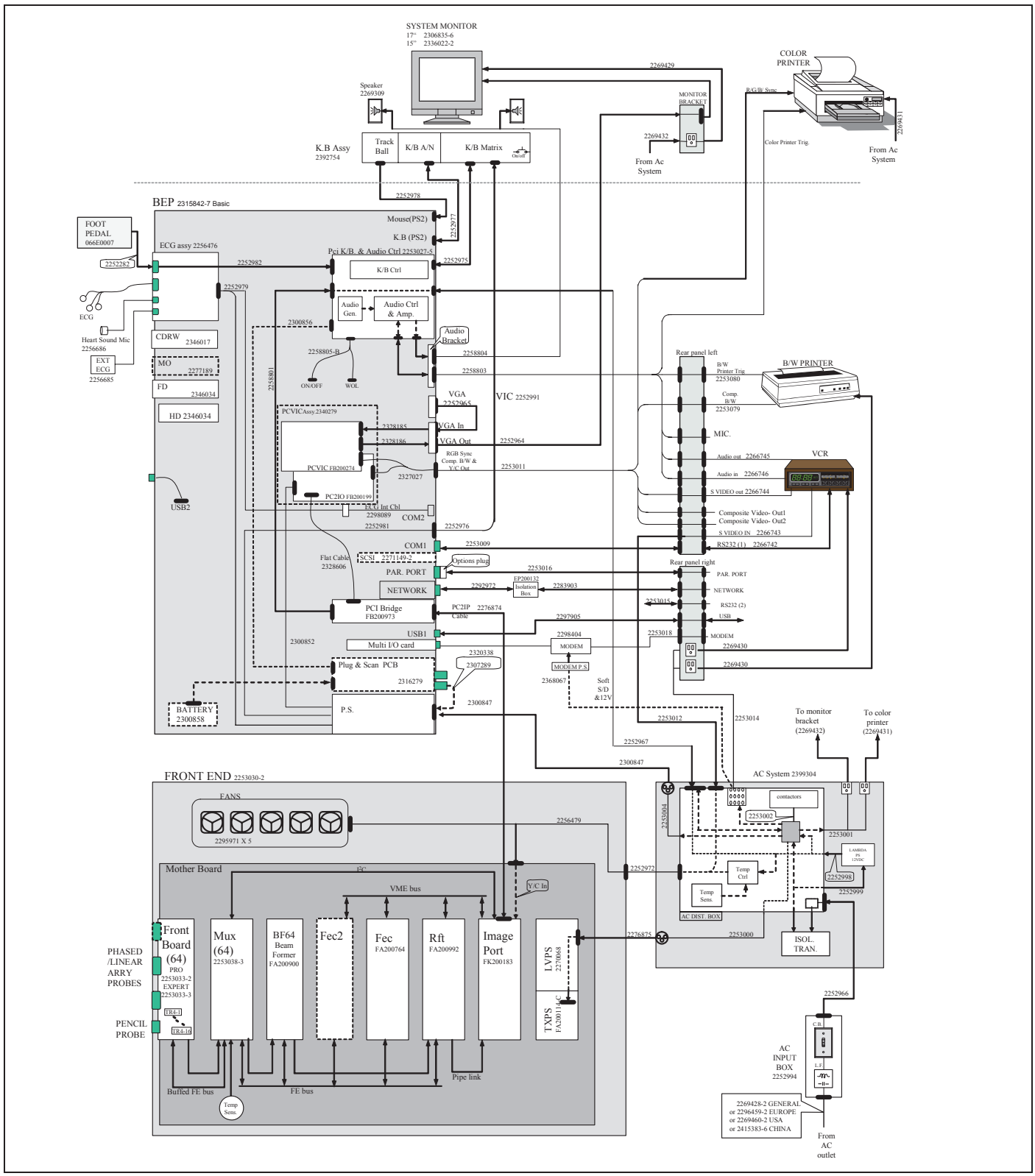


Figure 9-31 System Cabling Diagram - Vivid™ 3 BT03 (RFT Configuration)

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Chapter 10
Periodic Maintenance

Section 10-1
Overview

10-1-1 Purpose of Chapter 10

This chapter describes Periodic Maintenance (PM) procedures for the Vivid™ 3 ultrasound scanner and its peripherals. These PM procedures are designed to protect your investment in the Vivid™ 3 system, and to ensure constant operation at maximum efficiency.

After delivery and installation of the Vivid™ 3 ultrasound unit, your service representative will contact you to schedule the first of several routine service visits. In addition to routine maintenance by trained Field Service Engineers (FSEs), it is recommended that the procedures described in this chapter be observed as part of your own internal routine maintenance program.

Table 10-1 Contents in Chapter 10

Section	Description	Page Number
10-1	Overview	10-1
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10-4	Tools Required	10-6
10-5	System Periodic Maintenance	10-7
10-6	Probe Maintenance	10-14
10-7	Electrical Safety Tests	10-17
10-8	Excessive Current Leakage	10-29
10-9	PM and Safety Inspection Certificates	10-30

10-1-2 Warnings



DANGER: There are several places on the backplane, the AC distribution box, and the DC distribution box that could be dangerous. Be sure to disconnect the system power plug and to open the main circuit breaker before you remove any parts. Proceed with caution whenever power is ON and covers are removed.



DANGER: Do not pull out or insert circuit boards while mains power to the system is ON.



CAUTION: Practice good ESD prevention. Wear an anti-static strap when handling electronic parts and when disconnecting/connecting cables.



CAUTION: Do NOT operate the unit unless all board covers and frame panels are securely in place, to ensure optimal system performance and cooling.
When covers are removed, EMI may be present.

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Section 10-2
Why Perform Periodic Maintenance Procedures?

10-2-1 Keeping Records

It is good business practice that ultrasound facilities maintain records of periodic and corrective maintenance. The *Ultrasound Periodic Maintenance Inspection Certificate* provides the customer with documented confirmation that the Vivid™ 3 ultrasound scanner is regularly maintained on a periodic basis.

A copy of the *Ultrasound Periodic Maintenance Inspection Certificate* should be kept in the same room as the Vivid™ 3 ultrasound scanner, or nearby.

10-2-2 Quality Assurance

In order to gain accreditation from organizations such as the *American College of Radiology* (*USA*), it is the customer's responsibility to have a Quality Assurance program in place for each scanner. The program must be directed by a medical physicist, the supervising radiologist/physician or appropriate designee.

Quality Control testing of the system must be conducted routinely. The same tests are performed regularly during each period, so that changes can be monitored over time and effective corrective action taken, if required.

The results of Quality Control testing, corrective action, and the effects of corrective action, must be documented and maintained on site.

Your GE Medical Systems Service Representative can help you with establishing, performing and maintaining records for a Quality Assurance program.

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Section 10-3
Periodic Maintenance Schedule

10-3-1 How Often Should PM Procedures be Performed?

The **Periodic Maintenance Schedule** (provided in Table 10-2 on page 10-4) specifies how often the Vivid™ 3 ultrasound scanner should be serviced, and outlines items requiring special attention. Annual periodic maintenance inspections are recommended. Each PM inspection requires approximately 2 hours for completion, excluding time needed for corrective action.

NOTE: It is the customer's responsibility to ensure the periodic maintenance procedures are performed on the Vivid™ 3 ultrasound scanner as recommended in the Periodic Maintenance Schedule, in order to retain the high levels of safety, dependability, and system performance.

Your GE Medical Systems Service Representative has an in-depth knowledge of your Vivid™ 3 ultrasound scanning system and can best provide competent, efficient service. Please contact us for further information, and to schedule routine maintenance servicing by our qualified professional FSEs.

The service procedures and recommended frequencies listed in the **Periodic Maintenance Schedule** assumes use of the Vivid™ 3 scanner for an average patient load (10-12 patients per day). However, this is not applicable if the system is used as a primary mobile unit which is transported between diagnostic facilities.

NOTE: If conditions exist whereby typical usage and patient load is exceeded, it is strongly recommended to increase the periodic maintenance frequencies.

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Table 10-2 Periodic Maintenance Schedule

Service at Indicated Time	Daily	Weekly	Monthly	Annually	Notes
Clean Probes	•*				* or before each use
Clean Probe Holders	•				
Clean Air Filter			•		More frequently if necessary, depending on the environment
Inspect AC Mains Cable		*	•		*Mobile Unit Check Weekly
Inspect Cables and Connectors			•		
Clean Console			•		
Clean Monitor			•		
Inspect Wheels, Casters, Brakes and Swivel Locks	*		•		* Mobile Unit Check Daily
Check Control Console Movement	*		•		* Mobile Unit Check Daily
Console Current Leakage Checks				•	Also after corrective maintenance, or as required by your facility's QA program.
Peripheral Current Leakage Checks				•	Also after corrective maintenance, or as required by your facility's QA program.
Surface Probe Current Leakage Checks				•	Also after corrective maintenance, or as required by your facility's QA program.
Endocavity Probe (vaginal or anal) Current Leakage Checks					As prescribed in Probe Manual.
Transesphongeal (TEE) Probe Current Leakage Checks					As prescribed in Probe Manual.
Surgical Probe Current Leakage Checks					As prescribed in Probe Manual.
Measurement Accuracy Checks				•	Also after corrective maintenance, or as required by your facility's QA program.
Probe/Phantom Checks				•	Also after corrective maintenance, or as required by your facility's QA program.
Functional Checks				•	Also after corrective maintenance, or as required by your facility's QA program.

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Examine the following on a monthly basis:

- Connectors on cables - for any mechanical defects.
- The entire length of electrical and power cables - for cuts or abrasions.
- Equipment - for loose or missing hardware.
- The keyboard - for defects.
- Brakes - for defective operation.



DANGER: To avoid electrical shock hazard, do not remove the panels or covers from the machine. This servicing must be performed by qualified service personnel *only*. Failure to comply, could result in serious injury!



DANGER: If any defects are observed or any system malfunctions occur, DO NOT operate the equipment. Inform a qualified service engineer immediately.

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Section 10-4
Tools Required

10-4-1 Special Tools, Supplies and Equipment

10-4-1-1 Specific Requirements for Periodic Maintenance

Table 10-3 Overview of Requirements for Periodic Maintenance

Tool	Part Number	Comments
Digital Volt Meter (DVM)		
Anti Static Kit	46–194427P231 46–194427P279 46–194427P369 46–194427P373 46–194427P370	Kit includes: anti–static mat, wrist strap and cables for 220 to 240 V system 3M #2204 Large adjustable wrist strap 3M #2214 Small adjustable wrist strap 3M #3051 conductive Ground cord
Anti Static Vacuum Cleaner	46–194427P278 46–194427P279	120V 230V
Air Filter	2256176	Air intake
Safety Analyzer	46–285652G1	DALE 600 KIT (or equivalent) for electrical tests
SVHS VCR Cassette	E7010GG E7010GF	60 minutes 120 minutes
SVHS VCR Head Cleaner		See VCR user manual for requirements
5.25” MOD MEDIA	2277190	Blank 2.3 M disk Blank 5.2 M disk
5.25” MOD Disk Cleaning Kit (Vingmed)	066E0674	Sony MOA-D51
QIQ Phantom	E8370RB	RMI Grayscale Target Model 403GS
B/W Printer Cleaning Sheet		See printer user manual for requirements
Color Printer Cleaning Sheet		See printer user manual for requirements
Disposable Gloves		
System Service Code		Required in order to enter system diagnostics
User Manual		Current revision
Service Manual		Current revision

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Section 10-5
System Periodic Maintenance

10-5-1 Preliminary Checks

The preliminary checks take approximately 15 minutes to perform. Refer to the *Vivid™ 3 Pro/Vivid™ 3 Expert User Manual* whenever necessary.

Table 10-4 System Preliminary Checks

Step	Item	Description
1	Ask & Listen	Ask the customer if they have any problems or questions about the equipment.
2	Paperwork	Fill in the appropriate details at the top of the Vivid™ 3 Preventative Maintenance Inspection Certificate (see page 10-30). Note all probes and system options.
3	Power-up	Turn the system power ON and verify that all fans and peripherals turn on. Watch the displays during power up to verify that no warning or error messages are displayed.
4	Probes	Verify that the system properly recognizes all probes.
5	Displays	Verify proper display on the monitor and touch panel.
6	Presets	Back-up all customer presets on an CD-RW.

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10-5-2 Functional Checks

The functional checks take approximately 60 minutes to perform. Refer to the *Vivid™ 3 Pro/Vivid™ 3 Expert User Manual* whenever necessary.

NOTE: Refer to Chapter 4 - Functional Checks, for additional details about the functional checks described in this section.

10-5-2-1 System Checks

Table 10-5 System Functional Checks

Step	Item	Description
1	2D-Mode	Verify basic 2D-Mode operation. Check the basic system controls that affect this mode of operation.
2	CF-Mode	Verify basic CF-Mode (Color Flow Mode) operation. Check the basic system controls that affect this mode of operation.
3	Doppler Modes	Verify basic Doppler operation (PW and CW if available). Check the basic system controls that affect this mode of operation.
4	M-Mode	Verify basic M-Mode operation. Check the basic system controls that affect this mode of operation.
5	Applicable Software Options[a]	Verify the basic operation of all optional modes such as Multi-Image, 3D, Contrast, Harmonics, Cine, Stress Echo,... etc. Check the basic system controls that affect each options operation.
6	Probe Elements	Perform an Element Test on each probe to verify that all the probe elements and system channels are functional.
7	System Diagnostics	Perform the Automatic Test to verify that all boards are functioning according to specifications.
8	Keyboard Test	Perform the Keyboard Test Procedure (external and alphanumeric) to verify that all keyboard controls are OK.
9	Monitor	Verify basic Monitor display functions. Refer to Chapter 3 of the Vivid™ 4 User Manual.
10	Measurements	Scan a gray scale phantom and use the measurement controls to verify distance and area calculation accuracy. Refer to Chapter 18 of the Vivid™ 4 User Manual, for measurement accuracy specifications.

a. Some software may be considered as standard, depending upon system model configuration

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10-5-2-2 Peripheral/Option Checks

If any peripherals or options are not part of the system configuration, the following checks can be omitted. Refer to the *Vivid™ 4 User Manual* for a list of approved peripherals/options.

Table 10-6 GE Approved Peripheral/Hardware Option Functional Checks

Step	Item	Description
1	VCR	Verify record/playback capabilities of the VCR. Clean heads and covers if necessary.
2	B/W Printer	Verify hardcopy output of the B/W video page printer. Clean heads and covers if necessary.
3	Color Printer	Verify hardcopy output of the Color video page printer. Clean heads and covers if necessary.
4	DICOM	Verify that DICOM is functioning properly. Send an image to a DICOM device.
5	InSite/iLinq	Verify that InSite is functioning properly. Ensure two-way remote communications. (Warranty & Contract Customers only)
6	Footswitch	Verify that the footswitch is functioning as programed. Clean as necessary.
7	ECG	Verify basic operation with customer

10-5-3 Input Power Checks

10-5-3-1 Mains Cable Inspection

Table 10-7 Mains Cable Inspection

Step	Item	Description
1	Unplug Cord	Disconnect the mains cable from the wall and system.
2	Mains Cable	Inspect the mains cable and its connectors for any damage.
3	Terminals	Verify that the LINE, NEUTRAL and GROUND wires are properly attached to the terminals, and that no strands may cause a short circuit.
4	Inlet Connector	Verify that the Inlet connector retainer is functional.

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10-5-4 Cleaning

10-5-4-1 General Cleaning

Table 10-8 General Cleaning

Step	Item	Description
1	External Panels	On a weekly basis, moisten a soft, non-abrasive folded cloth with a mild, general purpose, non-abrasive soap and water solution or general purpose disinfectant. Wipe down the top, front, back and both sides of the unit. ***Do not spray any liquid directly onto the unit!***
2	Monitor	On a weekly basis, apply glass cleaner to a soft, non-abrasive folded cloth. Gently wipe the monitor face.
3	Console	Frequent and diligent cleaning of the Vivid™ 3 ultrasound unit reduces the risk of spreading infection from person to person, and also helps to maintain a clean working environment. Prior to cleaning, turn OFF the power to the system. Use a fluid detergent in warm water on a soft, damp cloth to carefully wipe the entire system. Be careful not to get the cloth too wet so that moisture does not enter the console.
4	Control Panel and Keyboard	**Control Panel:** On a weekly basis, moisten a soft, non-abrasive folded cloth or sponge with a mild, general purpose, non-abrasive soap and water solution or general purpose disinfectant. (**Do not use any solution containing abrasive powder or strong chemicals such as, acid or alkaline**). Squeeze excess liquid from the cloth/sponge, them wipe down the Control Panel. ***Do not spray any liquid directly onto the Control Panel!*** Rinse the cloth/sponge with clean running water and wipe the Control Panel again. Use a dry, soft, lint-free cloth to dry the Control Panel. Wait for the Control Panel surface to dry completely. **Keyboard:** Clean the keyboard as described (above) for cleaning the Control Panel. Note: In the event that disinfection is required or any stubborn stains remain, absorb a small quantity of isopropyl rubbing alcohol on a soft, dust-free cloth. Wipe the surface of the keycaps with the cloth, making sure that no liquid drips on or between the keys. Allow to dry.
5	Probe Holder	Clean the probe holders with warm water and a damp cloth to remove all traces of gel (soaking may be required to remove excess gel).

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10-5-4-2 Air Filter Cleaning

Regular cleaning of the Vivid™ 3 scanner's air filter will ensure that the filter does not become clogged - this would otherwise cause the system to overheat and reduce system performance and reliability.

NOTE: It is recommended that the air filter cleaning procedure is performed once every 3 months (quarterly). However, the required frequency for air filter cleaning will vary in accordance with environmental conditions.

Table 10-9 Air Filter Cleaning

Step	Item	Description
1	Air Filter	Remove the air filter located at the front of the scanner, above the probe connector sockets. Clean the air filter as follows: shake it in an area away from the system, wash with a mild soapy solution, rinse, and air dry.
2	Air Filter	Install the clean air filter. Refer to *Chapter 8 - Replacement Procedures* for air filter installation instructions.

NOTE: For convenience (or if the air filter is excessively dirty), replacement filters are available. Refer to Chapter 9 - Renewal Parts for the air filter replacement part number.

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10-5-5 Physical Inspection

Table 10-10 Physical Checks

Step	Item	Description
1	Labeling	Verify that all system labeling is present and in readable condition.
2	Scratches and Dents	Inspect the console for dents, scratches or cracks. Use touch-up paint, as required.
3	Monitor	Clean the monitor with a soft cloth dampened with mild detergent and water. Repeat using only water, and wipe with a dry cloth. Inspect the monitor for scratches and raster burns.
4	Probe Holders	Clean the probe holders with warm water and a damp cloth to remove all traces of gel.
5	Control Console	Power-down and unplug the system. Inspect the keyboard and control console. Note any damaged or missing items. Fix any loose buttons, and verify that the control console light bulb is working. Replace faulty components, as required. Clean the console and keyboard.
6	Control Console Movement	Verify ease of control console (Operator I/O Panel) movement in all acceptable directions. Ensure that it latches in position, as required.
7	Wheels and Brakes	Check all wheels and castors for wear and verify operation of the foot brake to stop the unit from moving, and release mechanism. Check all wheel locks and wheel swivel locks for proper operation.
8	Fans	Check that the FE crate cooling fans, BE fan and peripheral fans are operating and clean.
9	MOD	Clean the drive head and media with the vendor-supplied cleaning kit. Advise the user to repeat this often, to prevent future problems. MOD disks must be stored away from dust and cigarette smoke. Do not use alcohol or benzene to clean the MOD cartridge.
10	CD Drive	Clean the drive head and media with the vendor-supplied cleaning kit. Advise the user to repeat this often, to prevent future problems. CDs must be stored away from dust and cigarette smoke. Do not use alcohol or benzene to clean the CD drive.
11	Rear Panel Connectors	Check the rear panel connectors for bent pins, loose connections and loose or missing hardware. Verify that the labeling is in good condition.
12	AC Unit	Check the AC board connectors and the associated cabling for good connection and proper insulation. Verify that the connections are secured.
13	BEP Rear Connector	Check the BEP rear connector for bent pins. Screw all the cable connectors tightly to the connector sockets on the panel.
14	Cables and Connectors	Check all internal cable harnesses and connectors for wear, and secure connector seating. Pay special attention to footswitch assembly and probe strain or bend reliefs.
15	Power Cord	Check the power cord for cuts, loose hardware, tire marks, exposed insulation or other deterioration, and verify continuity. Tighten the clamps that secure the power cord to the unit and the outlet plug to the cord. Replace the power cord and clamp, as required.
16	Shielding and Covers	Check to ensure that all EMI shielding, internal covers, panels and screws are in place. Missing covers and hardware can cause EMI/RFI problems during scanning.
17	Peripherals	Check and clean the peripherals according to the manufacturer's directions. To prevent EMI or system overheating, dress the peripheral cables inside the peripheral cover.
18	External Microphones	Check for proper operation of any external microphones by recording an audio test.

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10-5-6 Diagnostic Checks (Optional)

To complete the periodic maintenance checks, perform the diagnostic tests as described in *Chapter 7 - Diagnostics/Troubleshooting*.

- Review the system error log for any problems.
- Check the temperature log to see if there are any trends that could cause problems in the future.

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Section 10-6
Probe Maintenance

WARNING: Any evidence of wear on a probe indicates that it must not be used. Improper handling may easily damage ultrasound probes. See the Vivid™ 3 Pro/Vivid™ 3 Expert User Manual and also refer to the probe manufacturer's handling instructions, for more details.

Failure to follow these precautions can result in serious injury and equipment damage. Failure to properly handle or maintain a probe may also void its warranty.

10-6-1 Probe Checks

Table 10-11 Probe Checks

Step	Item	Description
1	Probe Holder	Check there are no traces of gel on the probe holders. If any gel present, clean the probe holders with warm water and a damp cloth to remove all traces of gel (soaking may be required to remove excess gel).
2	Probes	Check all the probes for wear and tear on the lens, cable and connector. Look for bent pins on the connector and in the connector socket on the unit. Remove any dust from inside the connector sockets. Verify that the EMI fingers around the probe connector socket housing are intact. Check the probe locking mechanism and probe switch. Perform a visual check of transducer pins and connector sockets before connecting a probe. Verify that the system properly recognizes all probes.

10-6-2 Probe Handling

All Vivid™ 3 probes are designed and manufactured to provide trouble-free, reliable service. To ensure this, the correct handling of probes is important and the following points should be noted:

- Do not drop a probe or strike it against a hard surface, as this may damage the probe elements and the acoustic lens, or may crack the housing.
- Do not use a cracked or damaged probe. Any evidence of wear indicates the probe must *not* be used. Call your field service representative immediately for a replacement.
- Perform a visual check of the probe pins and system sockets before plugging in a probe
- Avoid pulling, pinching or kinking the probe cable, since a damaged cable may compromise the electrical safety of the probe.
- To avoid the risk of a probe accidentally falling, do not allow the probe cables to become entangled with, or to be caught in the wheels of the system.
- Protect the probe when moving the unit.
- Use a soft cloth and warm, soapy water to clean the probe.

Note: For detailed information on handling endocavity probes, refer to the appropriate supplementary instructions for each probe.

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10-6-3 Basic Probe Care

The *Vivid™ 3 Pro/Vivid™ 3 Expert User Manual* and the individual probe manufacturers' handling instructions provide a complete description of probe care, maintenance, cleaning and disinfection. Ensure that you are completely familiar with the proper care of GE Medical Systems probes.

WARNING: Any evidence of wear on a probe indicates that it must not be used. Ultrasound probes can be easily damaged by improper handling. See the Vivid™ 3 Pro/Vivid™ 3 Expert User Manual and also refer to the probe manufacturer's handling instructions, for more details.

Failure to follow these precautions can result in serious injury and equipment damage. Failure to properly handle or maintain a probe may also void its warranty.

TEE and Interoperative probes often have special usage considerations; always refer to the individual probe manufacturers' handling instructions/user manual.

10-6-4 Probe Cleaning and Disinfecting

WARNING: Always disinfect a defective probe, as follows:

- **When receiving the probe from the customer**
  (to protect the service personnel from possible contamination)
- **Before returning the probe to the manufacturer.**
  Be sure to tag the probe as being disinfected.

CAUTION: To help protect yourself from blood-borne diseases when cleaning and handling probes, wear approved, non-allergic disposable gloves.

Note: **IMPORTANT -** *For probe cleaning and disinfecting instructions, refer to the individual probe Users Manual (or care instructions supplied with the probe).*
See also the information provided in Chapter 13 of the Vivid™ 3 Pro/Vivid™ 3 Expert User Manual.

Note: Failure to follow the prescribed cleaning/disinfection procedures will void the probe's warranty.

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10-6-5 Returning and Shipping of Defective Probes

WARNING: Always disinfect a defective probe before returning it to the manufacturer. Be sure to tag the probe as being disinfected.

CAUTION: To help protect yourself from blood-borne diseases when cleaning and handling probes, wear approved, non-allergic disposable gloves.

Equipment being returned must be properly clean and free of blood and other potentially infectious contaminants.

GEMS policy states that body fluids must be properly removed from any part or equipment prior to shipment. GEMS employees, as well as customers, are responsible for ensuring that parts/equipment have been properly decontaminated prior to shipment. Under no circumstances should a part or equipment be shipped before being visibly clean and properly disinfected.

The purpose of the regulation is to protect employees in the transportation industry, as well as the persons who will receive and/or open the package.

NOTE: The US Department of Transportation (DOT) has ruled that "items that were saturated and/or dripping with human blood that are now caked with dried blood; or which were used or intended for use in patient care" are "regulated medical waste" for transportation purposes and must be transported as a hazardous material.

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Section 10-7
Electrical Safety Tests

10-7-1 Safety Test Overview

The electrical safety tests in this section are based on and conform to NFPA 99 (For USA) and IEC 60601-1 Medical Equipment Safety Standards. They are intended for the electrical safety evaluation of cord-connected, electrically operated, patient care equipment. If additional information is needed, refer to the NFPA 99 (for USA) and IEC 60601-1 documents.

WARNING: ***THE USER MUST ENSURE THAT THE SAFETY INSPECTIONS ARE PERFORMED AT LEAST EVERY 12 MONTHS ACCORDING TO THE REQUIREMENTS OF THE PATIENT SAFETY STANDARD IEC-EN 60601-1. ONLY TRAINED PERSONS ARE ALLOWED TO PERFORM THE ABOVE-MENTIONED SAFETY INSPECTIONS.***

CAUTION: To avoid the risk of electrical shock, the unit under test must not be connected to other electrical equipment. Remove all interconnecting cables and wires. The operator and patient must not come into contact with the unit while the tests are being performed.

CAUTION: Possible risk of infection. Do not handle soiled or contaminated probes and other components that have been in patient contact. Follow appropriate cleaning and disinfecting procedures before handling the equipment.

Test the system, peripherals and probes for leakage current.

WARNING: ***EXCESSIVE LEAKAGE CURRENT CAN CAUSE FATAL INJURY.***

HIGH LEAKAGE CURRENT CAN INDICATE DEGRADATION OF INSULATION OR OTHER PART AND COULD POTENTIALLY CAUSE ELECTRICAL FAILURE. DO NOT USE PROBES OR EQUIPMENT THAT HAVE EXCESSIVE CURRENT LEAKAGE.

To minimize the risk of a probe causing electrical shock, observe the following recommendations:

- Do not use a probe that is cracked or damaged in any way
- Check probe leakage current, as shown below:

Probe	Frequency for Checking
Surface	Once per year
Endocavitary	Twice per year
Any probe	Whenever damage is suspected

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10-7-2 GEMS Current Leakage Limits

The following limits are summarized for NFPA 99 (for USA) and IEC 60601-1 Medical Equipment Safety Standards. These limits are GEMS standards and in some cases are lower than the above standards listed.

Table 10-12 Chassis Current Leakage Limits - Accessible Metal Surfaces

Country	Normal Condition	Open Ground	Reverse Polarity	Open Neutral
USA	N/A	0.3 mA	0.3 mA	N/A
Other	0.1 mA	0.5 mA	0.5 mA	0.5 mA

Table 10-13 Type BF Applied Part Current Leakage Limits - Non-Conductive (Floating) Surface and Cavity Probes

Country	Normal Condition	Open Ground	Reverse Polarity	Open Neutral	Mains Applied[a]
USA	0.05 mA	0.05 mA	0.05 mA	0.05 mA	N/A
Other	0.1 mA	0.5 mA	0.5 mA	0.5 mA	5.0 mA

a. Mains Applied is the Sink Leakage Test. In this test, mains (supply) voltage is supplied to the part or equipment to determine the amount of current that will pass (sink) to Ground if a patient comes into contact with the part.

Table 10-14 Type CF Applied Part Current Leakage Limits - Surgical Probes and ECG Connections

Country	Normal Condition	Open Ground	Reverse Polarity	Open Neutral	Mains Applied[a]
USA	0.01 mA	0.05mA	0.05 mA	N/A	0.025 mA
Other	0.01 mA	0.05 mA	0.05 mA	0.05 mA	0.05 mA

a. Mains Applied is the Sink Leakage Test. In this test, mains (supply) voltage is supplied to the part or equipment to determine the amount of current that will pass (sink) to Ground if a patient comes into contact with the part.

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10-7-3 Outlet Test Wiring Arrangement - USA & Canada

Test all outlets in the area for proper grounding and wiring arrangement by plugging in the neon outlet tester and noting the combination of lights that are illuminated. Any problems found should be reported to the hospital immediately and the receptacle should not be used.

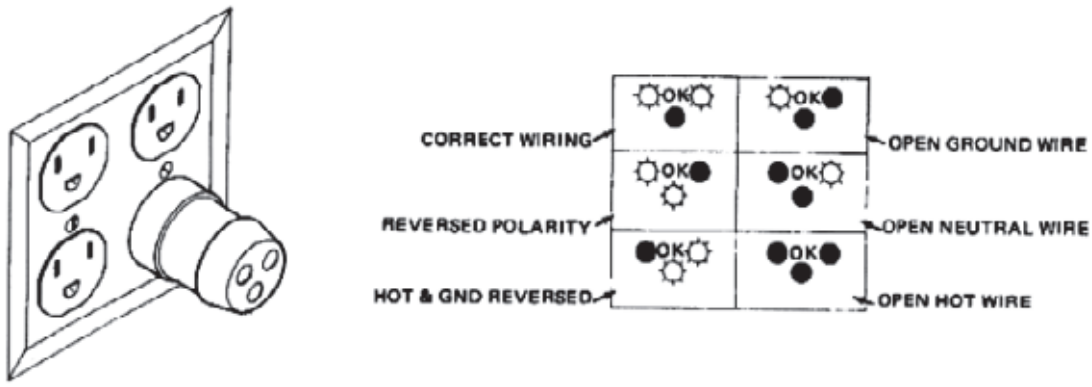


Figure 10-1 Typical Outlet Tester

NOTE: No outlet tester can detect the condition in which the Neutral (grounded supply) conductor and the Grounding (protective earth) conductor have been reversed. If later tests indicate high current leakages, this should be suspected as a possible cause and the outlet wiring should be visually inspected.

10-7-4 Grounding Continuity

CAUTION **Electric Shock Hazard!**
The patient or operator must not come into contact with the equipment during this test.

Measure the resistance from the third pin of the attachment plug to the exposed metal parts of the case. The Ground wire resistance should be less than **0.2** Ohms. Refer to the procedure in the IEC 601-1.1.

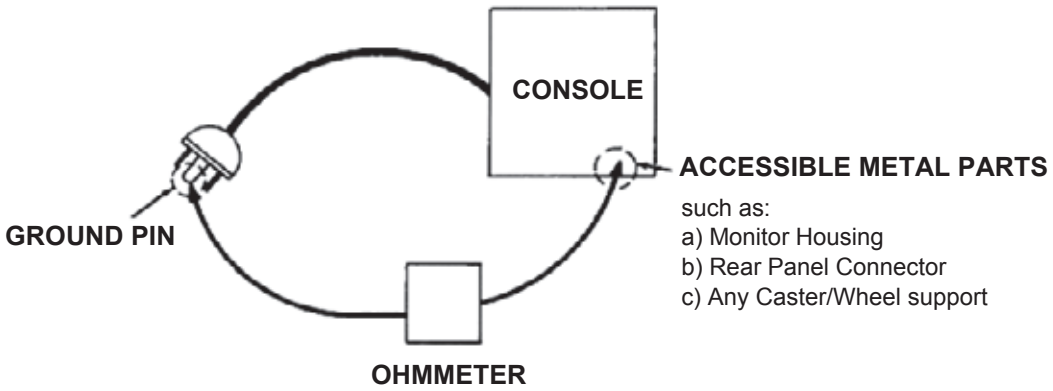


Figure 10-2 Ground Continuity Test

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10-7-4-1 Ground Continuity Testing - Generic Procedure

Follow these steps to test the Ground wire resistance:

1.) Turn the Vivid™ 3 unit OFF.

2.) Connect one of the Ohmmeter probes to the tested AC wall outlet (Ground pin).

3.) Using the other Ohmmeter probe, touch the exposed metal part of the Vivid™ 3 unit.

4) Set the meter **Function** switch to the **Resistance** position.

5) Measure and record the Ground wire resistance.
This should be less than 0.2 Ohms.

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10-7-5 Chassis Current Leakage Test

10-7-5-1 Definition

This test measures the current that would flow in a grounded person who touched accessible metal parts of the bedside station, if the Ground wire should break. The test verifies the isolation of the power line from the chassis.

The meter is connected from accessible metal parts of the case to Ground. Measurements should be made with the unit ON and OFF, with the power line polarity Normal and Reversed. Record the highest reading.

DANGER: Electric Shock Hazard.
When the meter's Ground switch is OPEN, *do not touch the unit!*

CAUTION: To avoid damaging the unit, never switch the polarity and the neutral status when the unit is powered ON. Be sure to turn the unit power OFF before switching them using the **Polarity** switch and/or the **Neutral** switch.

10-7-5-2 Generic Procedure

The test verifies the isolation of the power line from the chassis. The testing meter is connected from accessible metal parts of the case to Ground. Measurements should be made with the unit ON and OFF, with the power line polarity Normal and Reversed. Record the highest reading of current.

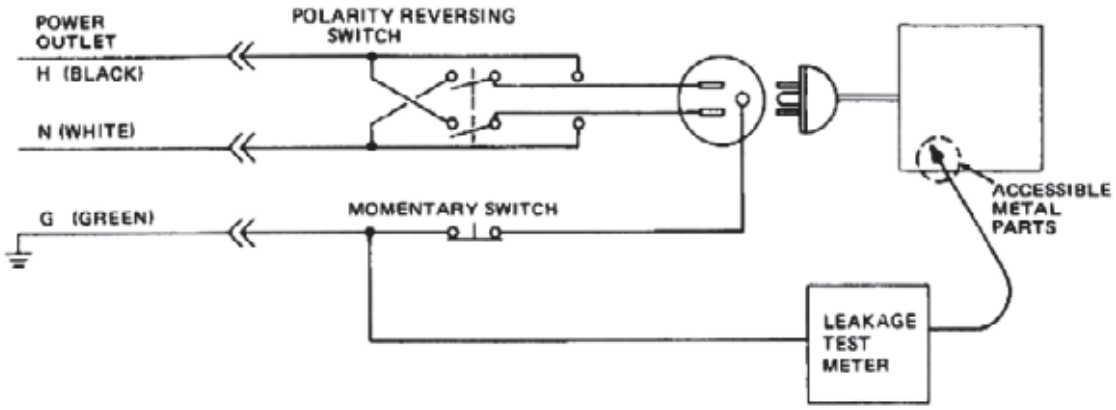


Figure 10-3 Set Up for Chassis Source Current Leakage, IEC 601-1 Clause 19 Continuous Current Leakages and Patient, Auxiliary Currents

When using the Microguard or a similar test instrument, its power plug may be inserted into the wall outlet and the equipment under test be plugged into the receptacle on the panel of the meter. This places the meter in the grounding conductor and the current flowing from the case to Ground will be indicated in any of the current ranges. The maximum allowable limit for chassis source leakage is shown in Table 10-12 on page 10-18.

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10-7-5-3 Data Sheet for Chassis Source Current Leakage

The Chassis Source Current Leakage Test passes when all readings measure less than the values shown in Table 10-12. Record all data on the Vivid™ 3 Preventative Maintenance Inspection Certificate (see page 10-30).

Table 10-15 Typical Data Sheet for Chassis Source Current Leakage Test

Unit Power	Tester Polarity Switch	Tester Neutral or Ground Switch	Test 1 Probe Connector	Test 2 Caster Wheel	Test 3 CRT	Test 4 (Optional)	Test 5 (Optional)
Enter Name of tested peripheral here:							
ON	NORM	OPEN					
ON	NORM	CLOSED					
ON	REV	OPEN					
ON	REV	CLOSED					
OFF	NORM	OPEN					
OFF	NORM	CLOSED					
OFF	REV	OPEN					
OFF	REV	CLOSED					

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10-7-6 Isolated Patient Lead (Source) Leakage – Lead-to-Ground

10-7-6-1 Definition

This test measures the current which would flow to Ground from any of the isolated ECG leads. The meter simulates a patient who is connected to the monitoring equipment and is grounded by touching some other grounded surface.

CAUTION: To avoid damaging the unit, never switch the polarity and the neutral status when the unit is powered ON. Be sure to turn the unit power OFF before switching them, using the **Polarity** switch and/or the **Neutral** switch.

10-7-6-2 Generic Procedure

Measurements should be made with the Ground **Open** and **Closed**, with the Vivid™ 3 unit **ON** and **OFF**, and with the power line polarity **Normal** and **Reversed**. Record the highest reading. For each combination, the operating controls (such as, the lead switch) should be operated to find the worst case condition.

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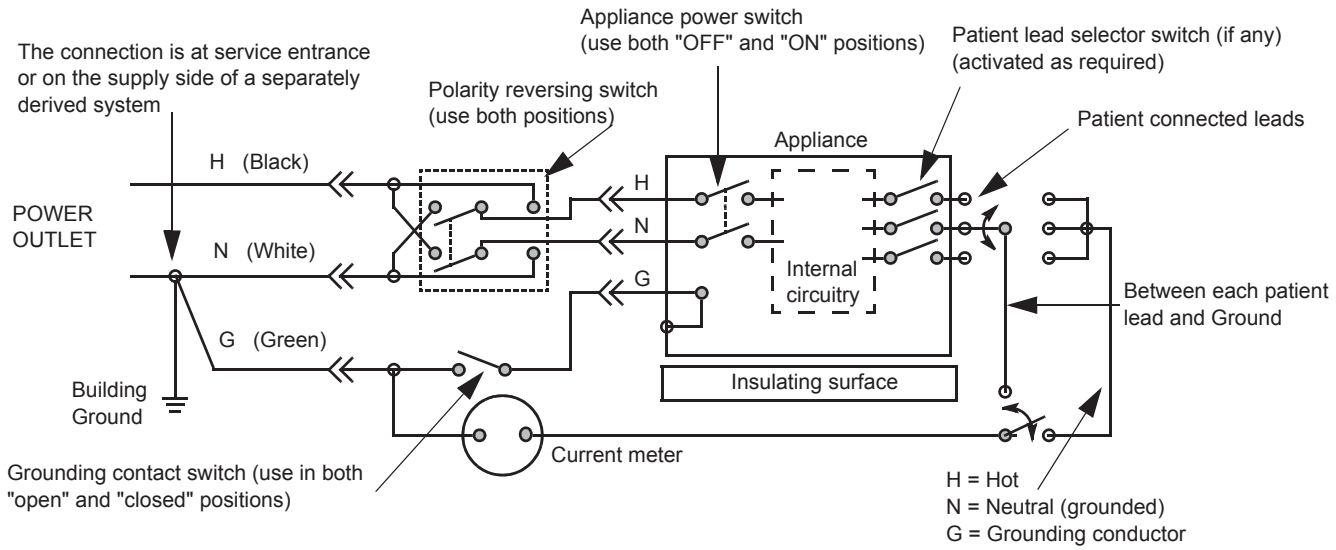


Figure 10-4 Test Circuit for Measuring Non-Isolated Patient Leads

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10-7-7 Isolated Patient Lead (Source) Leakage – Lead-to-Lead

NOTE: Refer to the procedure in the IEC 60601-1.

10-7-8 Isolated Patient Lead (Sink) Leakage - Isolation Test

NOTE: Refer to the procedure in the IEC 60601-1.

CAUTION: Line voltage is applied to the ECG leads during this test. To avoid the risk of possible electric shock, the system being tested must not be touched by anyone (patient or operator), while the ISO TEST switch is depressed.

NOTE: It is not necessary to test each lead individually, or power condition combinations, as required in previous tests.

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10-7-8-1 Data Sheet for ECG Current Leakage

The test passes when all readings measure less than the values shown in the tables below. Record all data on the Vivid™ 3 Preventative Maintenance Inspection Certificate (see page 10-30).

Table 10-16 Maximum Allowance Limit for ECG Lead Leakage Test to Ground

	AC Power Source	Maximum Allowance Limit	
		GROUND OPEN	GROUND CLOSED
Patient Lead-to-Ground Current Leakage Test and Patient Lead-to-Lead Current Leakage Test	115V	10uA	10uA
	220/240V	500uA	10uA

Table 10-17 Maximum Allowance Limit for ECG Lead Isolation Sink Test

	AC Power Source	Maximum Allowance Limit
Patient Lead Isolation Current Test	115V	20uA
	220/240V	5mA

Table 10-18 Typical Data Sheet for ECG Lead-to-Lead Test

ECG Power	Tester Polarity Switch	Tester Ground Switch	Tester Lead Selector				
			RL (N)	RA (R)	LA (L)	LL	C
ON	NORM	CLOSED					
ON	REVERSE	CLOSED					
ON	NORM	OPEN					
ON	REVERSE	OPEN					
OFF	NORM	CLOSED					
OFF	REVERSE	CLOSED					
OFF	NORM	OPEN					
OFF	REVERSE	OPEN					

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10-7-9 Probe Current Leakage Test

10-7-9-1 Definition

This test measures the current that would flow to Ground (from any of the probes) through a patient who is being scanned, and who becomes grounded by touching some other grounded surface.

10-7-9-2 Generic Procedure

Measurements should be made with the Ground OPEN and CLOSED, with power line polarity *Normal* and *Reversed*, and with the unit OFF and ON. For each combination, the probe must be active to find the worst case condition.

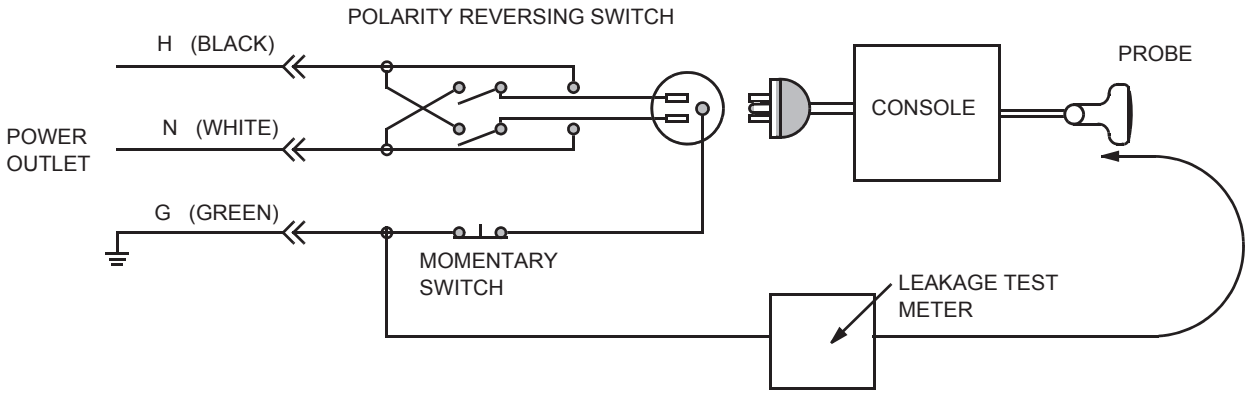


Figure 10-5 Set Up for Probe Current Leakage Test

NOTE: Each probe will have a certain amount of leakage current, depending on its design. Small variations in probe current leakages are normal from probe to probe. Other variations will result from differences in line voltage and test lead placement.

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10-7-9-3 No Meter Probe Adapter Procedure

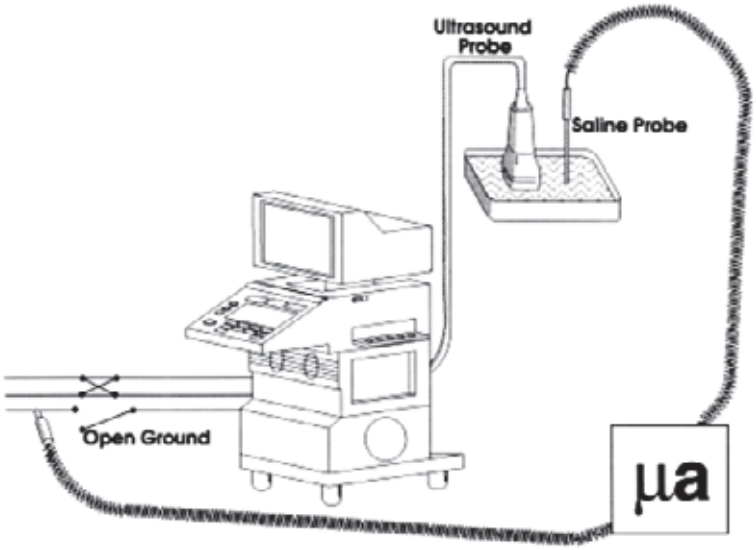


Figure 10-6 Check Without Probe Adapter

Follow these steps to test each transducer for leakage current.

1.) Turn the Vivid 3 unit OFF.
2.) Plug the unit into the test meter, and the meter into the tested AC wall outlet.
3.) Plug the external probe into the meter “EXTERNAL” connector.
4.) Set the meter's “FUNCTION” switch to EXTERNAL position.
5.) Connect the probe for test with the connector of the console.
6.) Add the saline probe and the imaging area of the probe into the saline bath.
7.) Turn unit power ON for the first part; turn it OFF for the second half.
8.) Depress the ISO TEST rocker switch and record the highest current reading.
9.) Follow the test conditions described in Table 10-19 for every transducer.
10.)Keep a record of the results with other hard copies of PM data.

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10-7-9-4 Data Sheet for Transducer Source Current Leakage

The test passes when all readings measure less than the values shown in Table 10-13 and Table 10-14. Record all data on the Vivid™ 3 Preventative Maintenance Inspection Certificate (see page 10-30).

CAUTION: When power to the unit is ON, *never* switch the Polarity and the status of Neutral . Be sure to turn OFF power to the unit before switching them, using the POLARITY switch and/or the NEUTRAL switch. *Failure to comply with this warning may cause damage to the unit!*

Table 10-19 Typical Data Sheet for Transducer Source Current Leakage Test

Transducer Tested:			
Unit Power	**Tester Power POLARITY Switch**	**Tester GROUND or NEUTRAL Switch**	**Measurement**
ON	NORM	OPEN	
ON	NORM	CLOSED	
ON	REV	OPEN	
ON	REV	CLOSED	
OFF	NORM	OPEN	
OFF	NORM	CLOSED	
OFF	REV	OPEN	
OFF	REV	CLOSED	

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Section 10-8
Excessive Current Leakage

10-8-1 Possible Causes of Excessive Current Leakage

10-8-1-1 Chassis Fails

Check the Ground on the power cord and plug for continuity. Ensure the Ground is not broken, frayed, or intermittent. Replace any defective part.

Tighten all Grounds. Ensure star washers are under all Ground studs.

Inspect wiring for bad crimps, poor connections, or damage.

Test the wall outlet; verify it is grounded and is free of other wiring abnormalities. Notify the user or owner to correct any deviations. As a work around, check the other outlets to see if they could be used instead.

NOTE: No outlet tester can detect the condition where the white neutral wire and the green grounding wire are reversed. If later tests indicate high current leakages, this should be suspected as a possible cause and the outlet wiring should be visually inspected.

10-8-1-2 Probe Fails

Test the probe in another connector to verify if the fault lies with the probe or the scanner.

NOTE: Each probe will have some amount of leakage, dependent on its design. Small variations in probe current leakages are normal from probe to probe. Other variations will result from differences in line voltage and test lead placement. The maximum allowable leakage current for body surface contact probe differs from inter-cavity probe. Be sure to enter the correct probe type in the appropriate space on the check list.

If excessive leakage current is slot dependent, inspect the system connector for bent pins, poor connections, and Ground continuity.

If the problem remains with the probe, replace the probe.

10-8-1-3 Peripheral Fails

Tighten all Grounds. Ensure star washers are under all Ground studs.

Inspect wiring for bad crimps, poor connections, or damage.

10-8-1-4 Still Fails

If all else fails, begin isolation by removing the probes, external peripherals, then the on-board peripherals (one at a time) while monitoring the leakage current measurement.

10-8-1-5 New Unit

If the leakage current measurement tests fail on a new unit and if the situation cannot be corrected, submit a Safety Failure Report to document the system problem. Remove the unit from operation.

10-8-1-6 ECG Fails

Inspect cables for damage or poor connections.

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Section 10-9
PM and Safety Inspection Certificates

Vivid™ 3 Preventative Maintenance Inspection Certificate

Customer Name:		System ID:	Dispatch Number / Date Performed:	Warranty/Contract/HBS
System Type		Model Number:	Serial Number:	Manufacture Date:
Probe 1:	Frequency:	Scan Format*:	Model Number:	Serial Number:
Probe 2:	Frequency:	Scan Format*:	Model Number:	Serial Number:
Probe 3:	Frequency:	Scan Format*:	Model Number:	Serial Number:
Probe 4:	Frequency:	Scan Format*:	Model Number:	Serial Number:
Probe 5:	Frequency:	Scan Format*:	Model Number:	Serial Number:
Probe 6:	Frequency:	Scan Format*:	Model Number:	Serial Number:
Probe 7:	Frequency:	Scan Format*:	Model Number:	Serial Number:
Probe 8:	Frequency:	Scan Format*:	Model Number:	Serial Number:
Probe 9:	Frequency:	Scan Format*:	Model Number:	Serial Number:

*Scan Format: Phased Array, Linear Array, Curved Array, Mechanical Array, or other

Functional Checks (if applicable)	**OK?** or **N/A**
2D-Mode Function	
Doppler Modes Function	
CF-Mode Function	
M-Mode Function	
Applicable Software Options	
Applicable Hardware Options	
Control Console	
Monitor	
Measurement Accuracy	
GE-approved Peripherals	

Physical Inspection and Cleaning (if applicable)	**Inspect**	**Clean**
Control Console		
Monitor		
Air Filter		
Probe Holders		
External I/O		
Wheels, Brakes & Swivel Locks		
Cables and Connectors		
GE-approved Peripherals (VCR, CD-RW, MOD, Printers)		

Comments:

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Vivid™ 3 Electrical Safety Inspection Certificate

Electrical Test Performed	Max Value Allowed	Value Measured	OK?	Comments
Outlet (correct Ground & wiring config.)				
System Ground Continuity				
Chassis Source Current Leakage - Probe				
Chassis Source Current Leakage - Caster				
Chassis Source Current Leakage - CRT				
Patient Lead Source Leakage (Lead-to-Ground)				
Patient Lead Source Leakage (Lead-to-Lead)				
Patient Lead Source Leakage (Isolation)				
Peripheral 1 Current Leakage				
Peripheral 1 Ground Continuity				
Peripheral 2 Current Leakage				
Peripheral 2 Ground Continuity				
Peripheral 3 Current Leakage				
Peripheral 3 Ground Continuity				
PROBES				
Probe Number (from page 10-30)	**Max Value Allowed**	**Max Value Measured**	**OK?**	**Comments**
Probe 1:				
Probe 2:				
Probe 3:				
Probe 4:				
Probe 5:				
Probe 6:				
Probe 7:				
Probe 8:				
Probe 9:				

Final Check: All system covers are in place. The Vivid™ 3 system scans with all probes, as expected.

Accepted by:

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