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7-4-4 External Keyboard Diagnostic Test

The external keyboard diagnostic tests enable you to test the buttons and lights on the keyboard in different modes.

Note: To test the keys on the alphanumeric keyboard, refer to the *Keyboard Diagnostic Test* section, on page 7-76.

7-4-4-1 Manual External Keyboard Test

1) Access the *HW Diagnostics* menu, as described in the *Accessing the Back End Diagnostic Options* section, on page 7-68.
2) Trackball to the **External Keyboard** button and press **Select**. The *Extended Keyboard Test* window is displayed, as shown below:

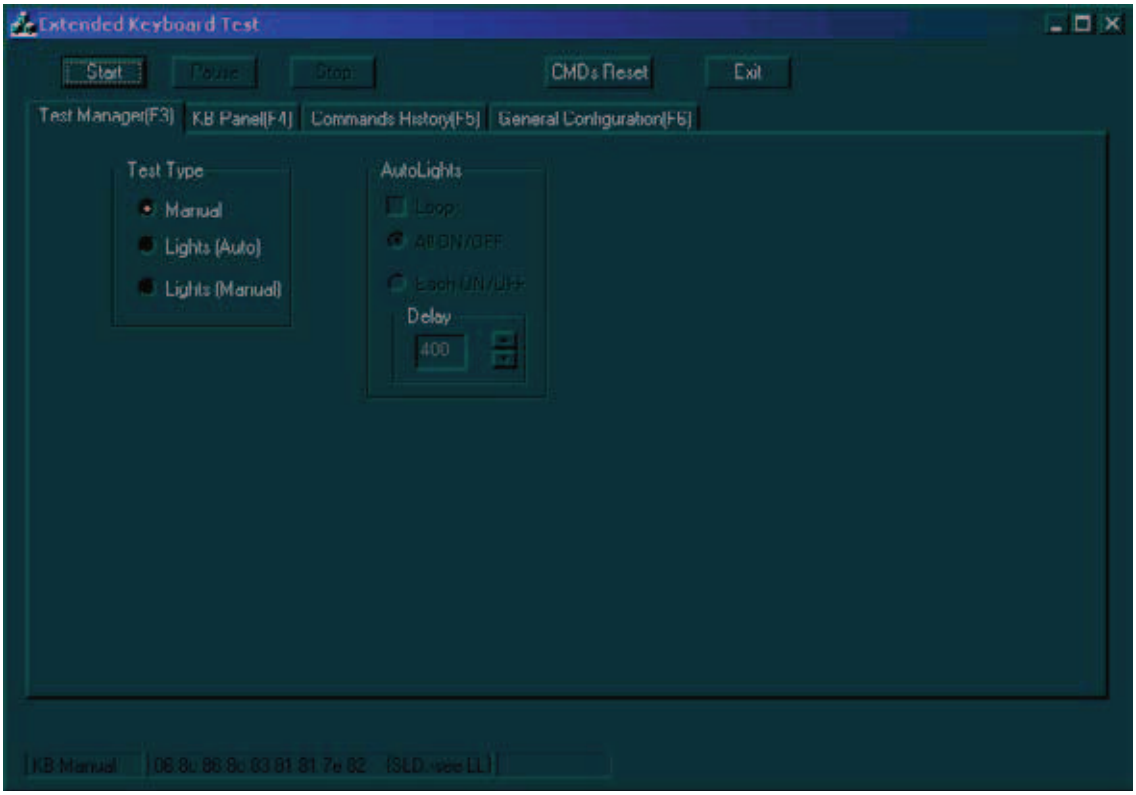


Figure 7-48 Test Manager Tab - Extended Keyboard Test Window

3) In the **Test Manager** tab, trackball to the **Manual** radio button and press **Select**.
4) Trackball to the **KB Panel** tab and press **Select**. The **KB Panel** tab is displayed, as shown in Figure 7-49 on page 7-74.

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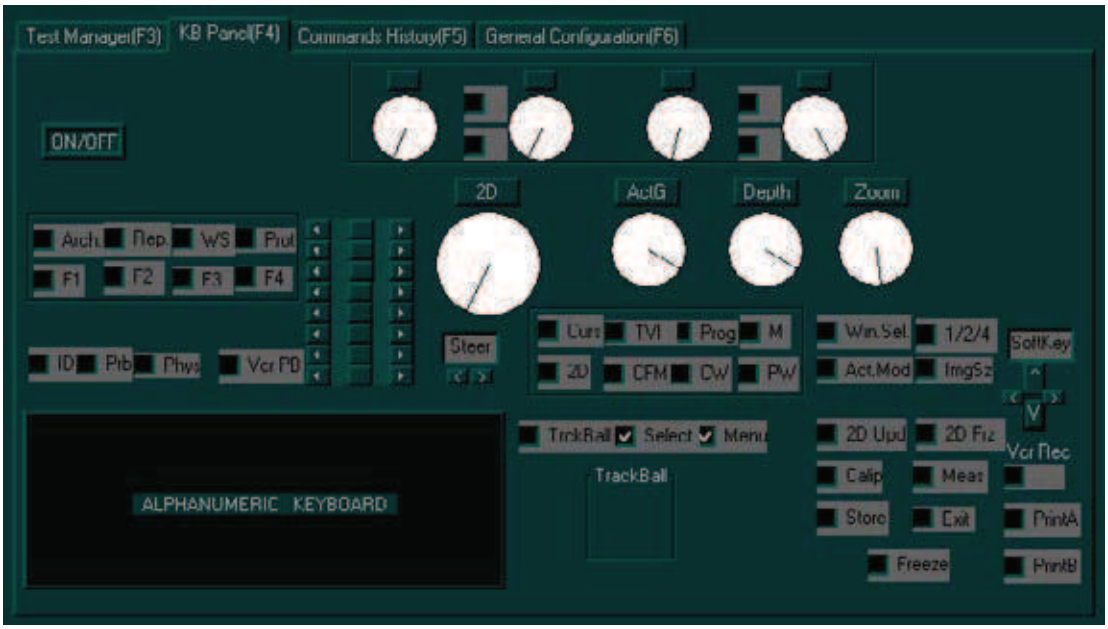


Figure 7-49 KB Panel Tab - Extended Keyboard Test Window

5) Press each of the control panel buttons (except for **Select**, **Menu** and the **On/Off** button), and verify that the correct buttons are activated on-screen in the **KB Panel** tab.

6) Push each of the rocker switches, and verify that the correct rockers are activated on-screen in the **KB Panel** tab.

7) Rotate each of the rotaries, and verify that the correct rotaries are activated on-screen in the **KB Panel** tab.

8) Slide each of the sliders, and verify that only the correct sliders are activated on-screen in the **KB Panel** tab.

9) Press the soft keys, and verify that only the correct soft keys are activated on-screen in the **KB Panel** tab.

10) Connect the Footswitch to the connector on the front panel of the unit, and press the right, middle and left of the switch. Verify that the numbers {68}, {69} and {70} accordingly are displayed on the info bar.

11) When you are finished, trackball to the **Exit** button and press **Select**.

7-4-4-2 Automatic Lights Test

1) Access the *HW Diagnostics* menu, as described in the *Accessing the Back End Diagnostic Options* section, on page 7-68.

2) Trackball to the **External Keyboard** button and press **Select**. The *Extended Keyboard Test* window is displayed, as shown in Figure 7-48 on page 7-73.

3) In the **Test Manager** tab, trackball to the **Lights (Auto)** radio button and press **Select**.

4) Trackball to the **Start** button and press **Select**. Verify that all the LEDs are illuminated.

5) Press the **Preset** button on the keyboard, and then trackball to the **Start** button and press **Select**. Ensure that the **Select** checkbox is selected in the **KB Panel** tab. Verify that all the backlights on the alphanumeric and extended keyboards are illuminated.

6) When you are finished, trackball to the **Exit** button and press **Select**.

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7-4-4-3 Manual Lights Test

1) Access the *HW Diagnostics* menu, as described in the *Accessing the Back End Diagnostic Options* section, on page 7-68.
2) Trackball to the **External Keyboard** button and press **Select**. The *Extended Keyboard Test* window is displayed, as shown in Figure 7-48 on page 7-73.
3) In the **Test Manager** tab, trackball to the **Lights (Manual)** radio button and press **Select**.
4) In the **KB Panel** tab, deselect the **Select** checkbox. Verify that after the **Select** LED is off, the alphanumeric keyboards LEDs are dimmed.
5) When you are finished, trackball to the **Exit** button and press **Select**.

7-4-4-4 Commands History

Select the **Commands History** tab in the *Extended Keyboard Test* window to view a report of the activity of the extended control panel during the test, as shown below:

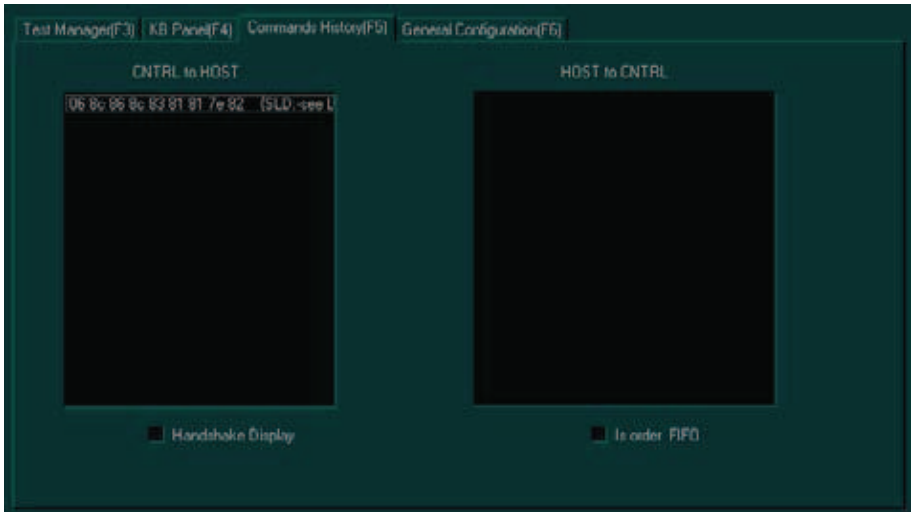


Figure 7-50 Commands History Tab - Extended Keyboard Test Window

7-4-4-5 General Configuration

Select the **General Configuration** tab in the *Extended Keyboard Test* window to set the type of log files that is generated, for example an error log or no log at all.

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7-4-5 Keyboard Diagnostic Test

The keyboard diagnostic test enables you to check the functionality of the alphanumeric keyboard keys.

1) Access the *HW Diagnostics* menu, as described in the *Accessing the Back End Diagnostic Options* section, on page 7-68.

2) Trackball to the **Keyboard** button and press **Select**. The *Keyboard Test* dialog box is displayed, as shown below:

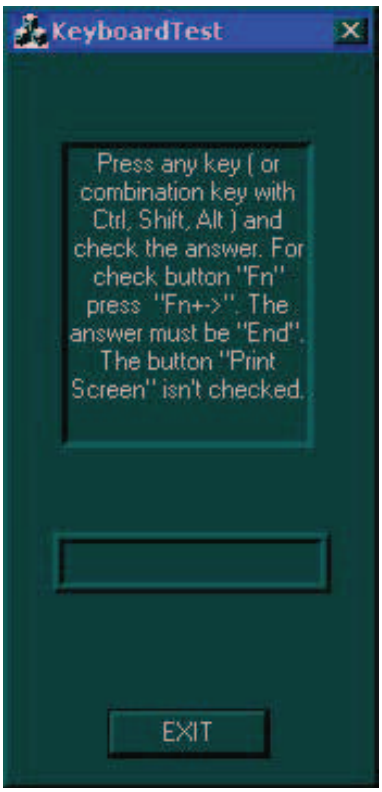


Figure 7-51 Keyboard Test Dialog Box

3) Follow the on-screen instructions.

4) When you are finished, trackball to the **Close** button and press **Select**.

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7-4-6 Media Driver Diagnostic Test

The media driver diagnostic test enables you to check the functionality of the MOD, if installed, as well as the functionality of the CD Writer, if installed.

7-4-6-1 MOD Diagnostic Test

WARNING: Do not run an MOD Diagnostic Test on MO media that is being used by the customer as a back-up device, since this test may cause unrecoverable damage to any backed-up patient information on the MO media.

1) Insert a new MO Media Sony EDM-2300B (2.3G) into the MOD.

1) Access the *HW Diagnostics* menu, as described in the *Accessing the Back End Diagnostic Options* section, on page 7-68.

2) Trackball to the **Media Driver** button and press **Select**. The *Util_MO_CDR_App* dialog box is displayed, as shown below:

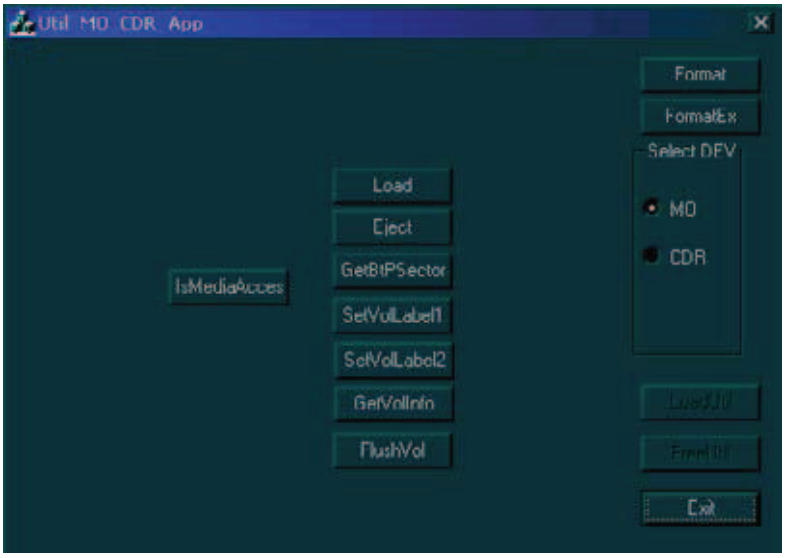


Figure 7-52 Util_MO_CDR_App Dialog Box

3) Trackball to the **MO** radio button and press **Select**.

4) Trackball to the **IsMediaAccess** button an press **Select**. The message **Media in drive G** is accessible is displayed.

5) Trackball to the **Eject** button and press **Select**. The message **Media is outside** is displayed. Verify that the media has actually been ejected.

6) Trackball to the **Load** button and press **Select**. The message **Media is inside** is displayed. Verify that the media is actually inside.

7) Trackball to the **Format** button and press **Select**. The message **Media in drive G was formatted successfully** is displayed.

8) Trackball to the **GetVolInfo** button and press **Select**. The message **Media in drive G has following properties: Media Label = MY_LABEL, Media File-System Name = FAT** is displayed.

9) Trackball to the **GetBtPSector** button and press **Select**. **The message The Bytes Per Sector value of media in drive G is 512** is displayed.

10) Trackball to the **SetVolLabel1** button and press **Select**.The message **Media Label set to TEST_LABEL1** is displayed.

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11) Trackball to the **<GetVolInfo>** button and press **Select**. The message **Media in drive G has following properties: Media Label = TEST_LABEL, Media File-System Name = FAT** is displayed.

12) Trackball to the **Exit** button and press **Select**.

7-4-6-2 CD Writer Diagnostic Test

1) Insert a new recordable CD X16 in the CDR drive.

2) Access the *HW Diagnostics* menu, as described in the *Accessing the Back End Diagnostic Options* section, on page 7-68.

3) Trackball to the **Media Driver** button and press **Select**. The *Util_MO_CDR_App* dialog box is displayed, as shown in Figure 7-52 on page 7-77.

4) Trackball to the **CDR** radio button and press **Select**.

5) Trackball to the **IsMediaAccess** button and press **Select**.
The message **Media in drive H is accessible** is displayed.

6) Trackball to the **Eject** button and press **Select**.
The message **Finalize Media?** is displayed.

7) Select **No**. The message **Media is outside** is displayed.
Verify that the media has actually been ejected.

8) Trackball to the **Load** button and press **Select**. The message **Media is inside** is displayed.
Verify that the media is actually inside.

9) Trackball to the **Format** button and press **Select**.
The message **Media in drive H was formatted successfully** is displayed.

10) Trackball to the **GetVolInfo** button and press **Select**.
The message: **Media in drive H has following properties: Media Label = MY_LABEL, Media File-System Name = CDUDF** is displayed.

11) Trackball to the **GetBtPSector** button and press **Select**.
The message **The Bytes Per Sector value of media in drive H is 2048** is displayed.

12) Trackball to the **SetVolLabel1** button and press **Select**.
The message **Media Label set to TEST_LABEL2** is displayed.

13) Trackball to the **GetVolInfo** button and press **Select**.
The message **Media in drive H has following properties: Media Label = TEST_LABEL2, Media File-System Name = CDUDF** is displayed.

14) Trackball to the **FlushVol** button and press **Select**.
The message **The cached data is flushed to the volume in drive H** is displayed.

15) Trackball to the **Exit** button and press **Select**.

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7-4-7 Computer Diagnostic Test

The computer diagnostic tests enable you to perform a benchmark test for the correct frame rate, as well as check the memory usage.

7-4-7-1 Benchmark Testing

1) Access the *HW Diagnostics* menu, as described in the *Accessing the Back End Diagnostic Options* section, on page 7-68.

2) Trackball to the **Computer Testing** button and press **Select**. The following options are displayed:



Figure 7-53 Benchmark Testing Options

3) Trackball to the required option from the **Select one of the cines** drop-down list and press **Select**. The following results are displayed, as shown in Figure 7-54 on page 7-80.

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Figure 7-54 Benchmark Testing Results

In the information displayed under *CPU Description*, *Memory* and *Frame Rate*, make sure that the values displayed in the upper line (which indicates current computer results) are higher or equal to those indicated in the lower line.

7-4-7-2 Check Disk/Bus

1) Access the *HW Diagnostics* menu, as described in the *Accessing the Back End Diagnostic Options* section, on page 7-68.
2) Trackball to the **Computer Testing** button and press **Select**. The options shown in Figure 7-53 on page 7-79 are displayed.
3) Trackball to the **Check Disc/Bus** button and press **Select**. The **Disk/Bus Bench** window is displayed as shown in Figure 7-55 on page 7-81.

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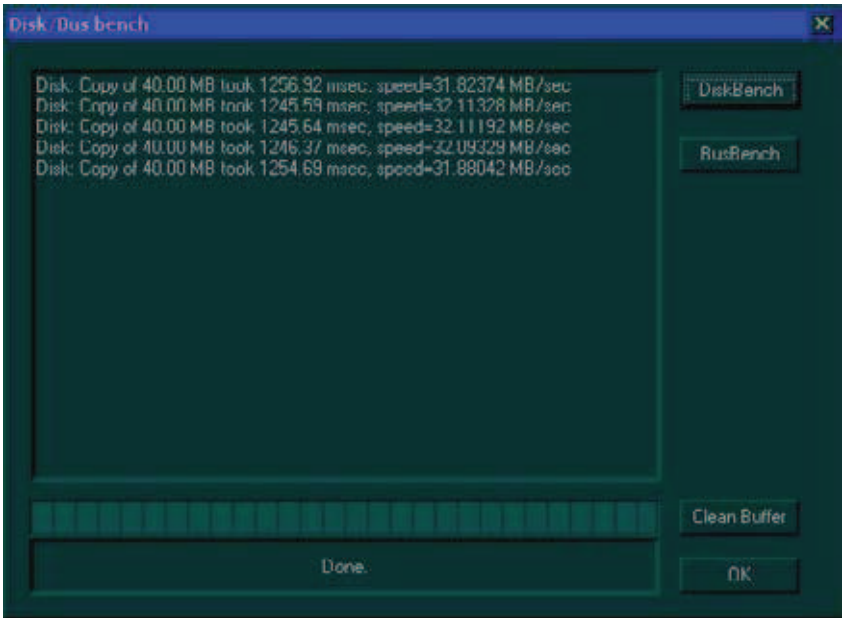


Figure 7-55 Disk/Bus Bench Window

Disk Bench: In the information displayed, make sure that the speed values displayed are greater than 23MB/sec. This test checks the speed of information transfer between the hard disk and IDE BUS.

Bus Bench: In the information displayed, make sure that the speed values displayed are greater than 86MB/sec. This test checks the speed of information transfer between the memory and the BUS.

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7-4-8 UPS Test

The UPS Test is used to verify proper operation of the uninterrupted power supply (UPS) and its connection to the system. This procedure is performed in *Standby* Mode.

1) Hold down the ON/OFF button on the control console for more than 3 seconds.

   The Shutdown Options screen is displayed, as shown in Figure 7-56.

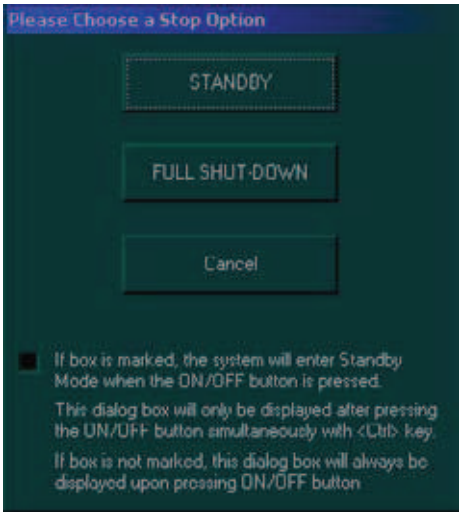


Figure 7-56 Shut-Down Options Screen

2) Trackball to **Standby** and press **Select**.

   The system enters Standby mode. The light on the ON/OFF button on the control console blinks repeatedly.

3.) Disconnect the AC power cable from the mains wall power outlet.

4.) Check that the ON/OFF button on the control console blinks repeatedly (the system is now powered by the UPS).

5.) Leave the system in this state for a period of 20 minutes, checking that the ON/OFF button continues to blink during this time (indicating correct operation of the UPS).

6.) Reconnect the AC power cable to the mains wall power outlet.

7.) Hold down the ON/OFF button on the control console for more than 3 seconds.

   The system quickly re-boots and is ready for scanning.

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7-4-9 Checking the Network Adaptors from Windows Device Manager

NOTE: This check is performed on the system while in Technical Support Mode, as described below. Make sure the T-plug (dongle) is inserted into the parallel or USB port on the Vivid™ 3 rear connectors panel.

1) Turn ON the system by pressing the ON/OFF button on the control console and re-boot into Technical Support Mode using the T-plug.

   While re-booting the system, be prepared to select **Technical Support Mode** when prompted, then press <**Enter**>.

2.) From the Windows desktop, select **Start** > **Programs** >**Computer Management** > **Device Manager** > **Network Adaptors**, as shown below.

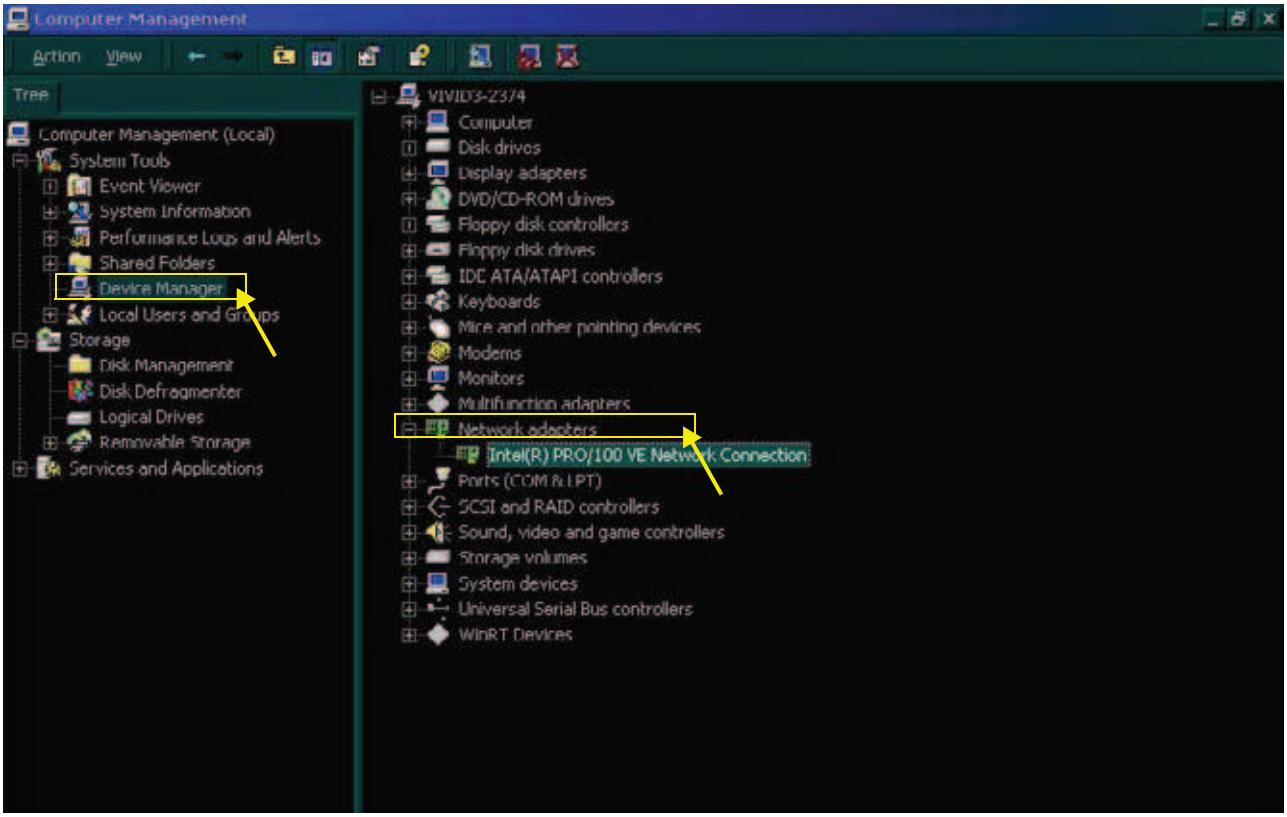


Figure 7-57 Checking the Network Adaptors

3.) Make sure that the **Intel(R) PRO/100VE Network Connection** is indicated as shown in Figure 7-57, above.

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Section 7-5
Common Service Interface

NOTE: The Common Service Interface uses the Windows version of PC-Doctor.

The Service Platform contains a set of software modules that are common to many of GE Medical Systems' ultrasound and cardiology systems. This web-enabled technology provides linkage to e-Services, e-Commerce and the iCenter, making GE Medical Systems' scanners more e-enabled than ever.

7-5-1 iLinq Interactive Platform Features

Many of the services of the Common Service Platform come from its integration with iLinq. The following list briefly describes iLinq's features:

- **Web Server/Browser:** Used by the Service Platform, as well as other Service Software.
- **Connectivity:** Provides basic connectivity between the scanner and the OnLine Center (OLC) or the field engineer in the field.
- **Configuration:** Provides the interface to configure the various iLinq parameters.
- **Contact GE:** Enables the user to contact the OnLine Center and describe the problems with their scanner in an easy and convenient way, using a one-touch switch.
- **Interactive Application:** Displayed in the form of HTML pages each time the browser starts. This is the entry point for any user to start any iLinq application.

7-5-2 Global Service User Interface

The Global Service User Interface (GSUI) is the pattern for the user interface. This interface standard is followed by all modalities to achieve a common look and feel across all GE Medical Systems products.

The user interfaces provided by the service platform are designed for GE Medical Systems personnel and, as such, are in *English* only. At this time there is no multilingual capacity built into the Common Service Interface.

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7-5-2-1 Service Log In

1) From the System Configuration window, make sure that **iLinq** (the Common Service platform) is enabled under the *Technical Support* tab, as shown in Figure 7-58 below.

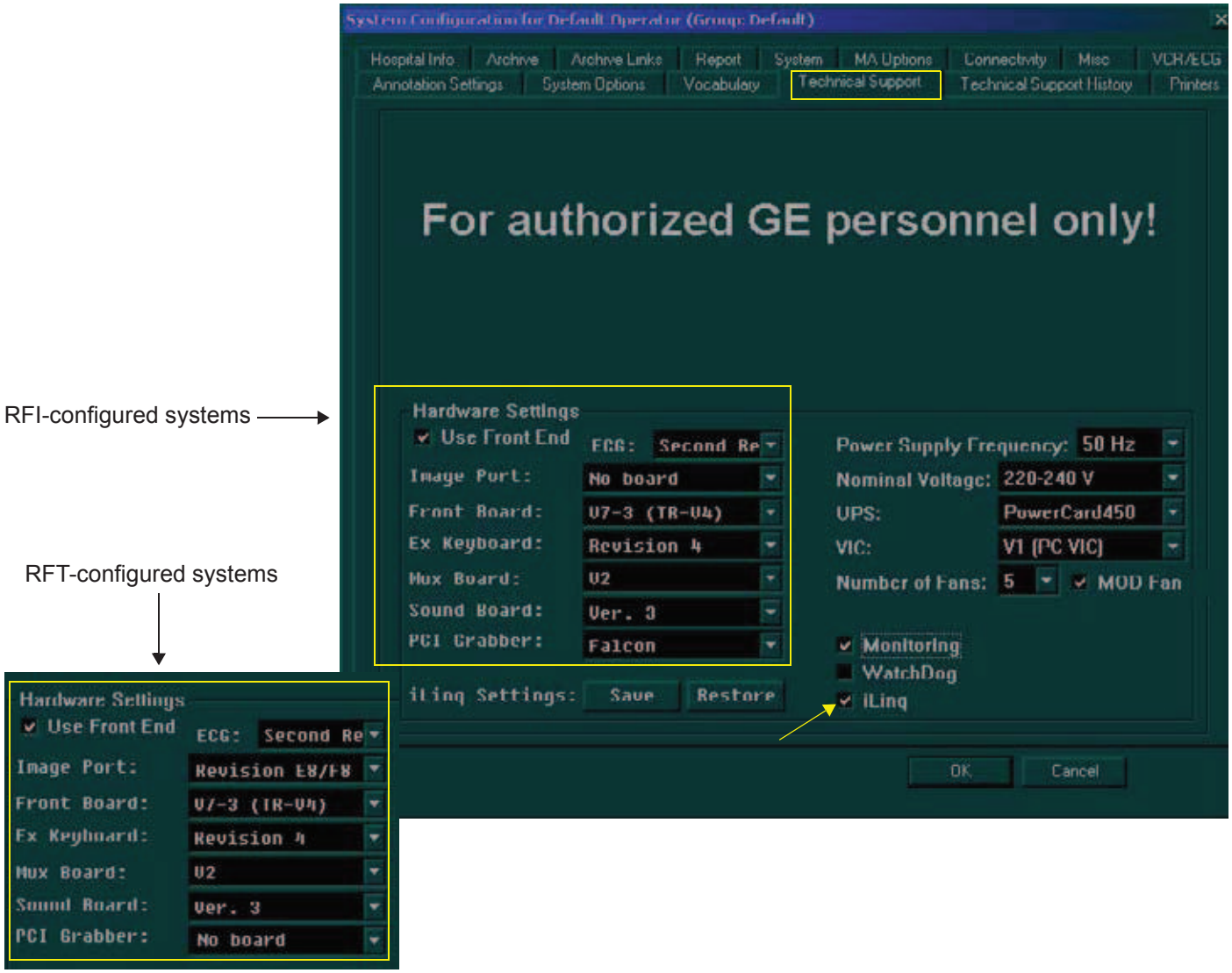


Figure 7-58 Technical Support - System Configuration

2) Trackball to **OK** and press **Select**. The System Configuration window closes.

Note: If iLinq was not found to be enabled in step 1, it is necessary to re-boot the system before proceeding.

3) Trackball to the wrench icon in the status bar at the bottom of the scanning screen and press **Select**.

The *Profile Manager* window is displayed, as shown in Figure 7-59 on page 7-86.

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Figure 7-59 Profile Manager Window

4) Select **InSite** from the **Profile Name** drop-down list to confirm the connection to the local host

   OR

   if you are running the application as a field engineer from a remote location, select **Remote** from the **Profile Name** drop-down list.

5) Trackball to the **Start Communicator** button and press **Select**. Wait a while, until the *Service Login* dialog box is displayed, as shown below:

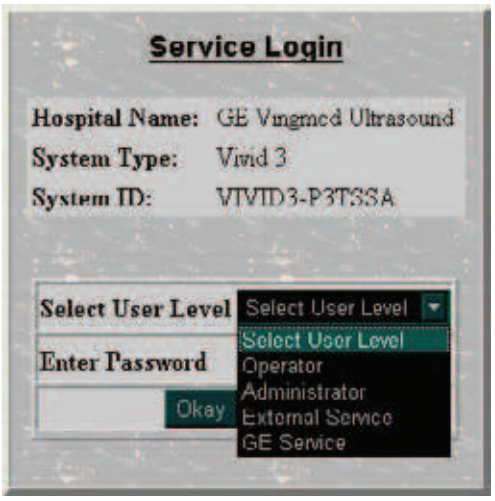


Figure 7-60 Service Login Dialog Box

6) Select **Operator** from the **Select User Level** drop-down list, and in the **Enter Password** field, enter the password supplied by the OLC (this is updated on a frequent basis).

Note: For a detailed description of the access and security levels, refer to the *Access and Security* section, on page 7-88.

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7) Trackball to the **Okay** button and press **Select**. The *GEMS Service Home Page* window is displayed, as shown below:



Figure 7-61 GEMS Service Home Page Window

The *GEMS Service Home Page* window contains details of the system location, the system IP address, the application status and other status information about the system. The navigation bar at the top of the page enables you to select the required tool or application, as described in the following sections:

- *Error Logs Page* section, on page 7-88.
- *Diagnostics Page* section, on page 7-96.
- *Image Quality Page* section, on page 7-109.
- *Calibration Page* section, on page 7-109.
- *Configuration Page* section, on page 7-110.
- *Utilities Page* section, on page 7-111.
- *Replacement Page* section, on page 7-125.
- *PM Page* section, on page 7-125.

Note: When using the Common Service Desktop, do not iconify any of the *Common Service Desktop* windows, as they will be located in the bottom-left corner of the screen (behind the *Service Desktop Manager* window) and cannot be restored. Resize the windows with the mouse, and move them as required to make room for other windows.

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7-5-2-2 Access and Security

The service interface has various different security and user levels. Users are only granted access to the tools they are authorized to use, as described in the following table:

Table 7-1: Access and Security

User Level	Access Authorization
Operator	Normally used in-house and protected with a special scanner configuration that is not allowed to leave the facility.
Administrator	Use the OLC access method provided by iLinq.
External Services	Access is protected with a physical media key (typically a CD-ROM) and a password. The contents of the media key determine the level of access and the period of time for which access is granted.
GE Service	Requires a network connection, a physical media key and knowledge of the password.

All access to the service interface is via the Network port, except for iLinq. A modem on the scanner is specifically intended for iLinq use. Every access request, whether successful or not is logged in a service access log that can be viewed by authorized users.

7-5-3 Error Logs Page

When the *Error Logs* page is selected (as shown in Figure 7-62 below), the log viewing options described in the following sections, are available:

- *Log Viewer* section, on page 7-89.
- *Log Browser* section, on page 7-93.

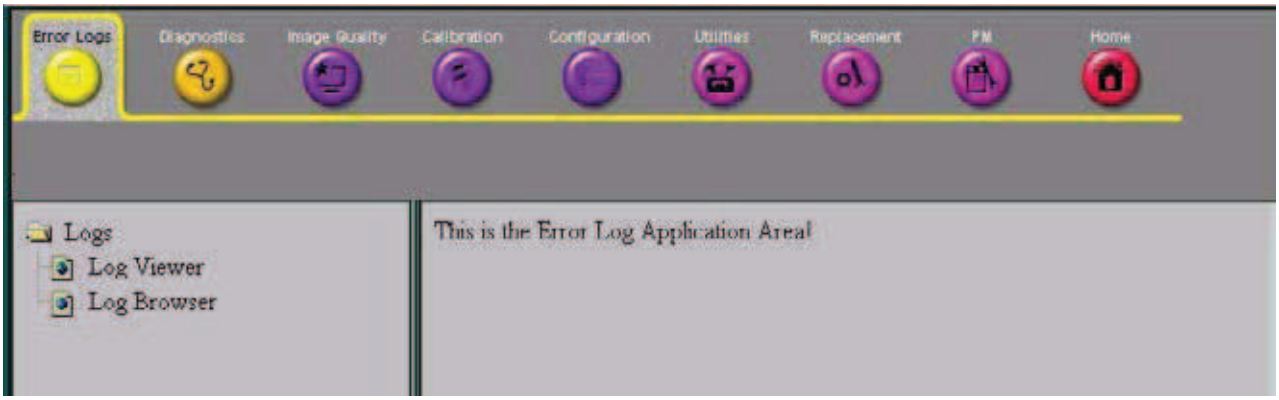


Figure 7-62 Error Logs Page

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7-5-3-1 Log Viewer

When the **Log Viewer** option is selected in the left pane of the *Error Logs* page, the following five categories are displayed, each of which enable you to view a number of different system logs.



Figure 7-63 Log Viewer Menu Options

The **Log Viewer** is driven by the following high-level requirements:

- Simple filtering of the scanner log(s) with filtering capabilities as a function of login access permissions.
- Log visibility by all services modes.
- Multiple instances of the log viewer.
- Color-coded log entries for severity levels, as follows:
  - Severity 1 - Green
  - Severity 2 - Yellow
  - Severity 3 - Red
- Support the transfer of logs to local or remote destinations.

7-5-3-1-1 Logs

The **Logs** option on the **Logs Viewer** menu enables you to view the following logs:

- **System:** Displays all the system logs, including errors and additional details, as shown below:



Figure 7-64 System Logs

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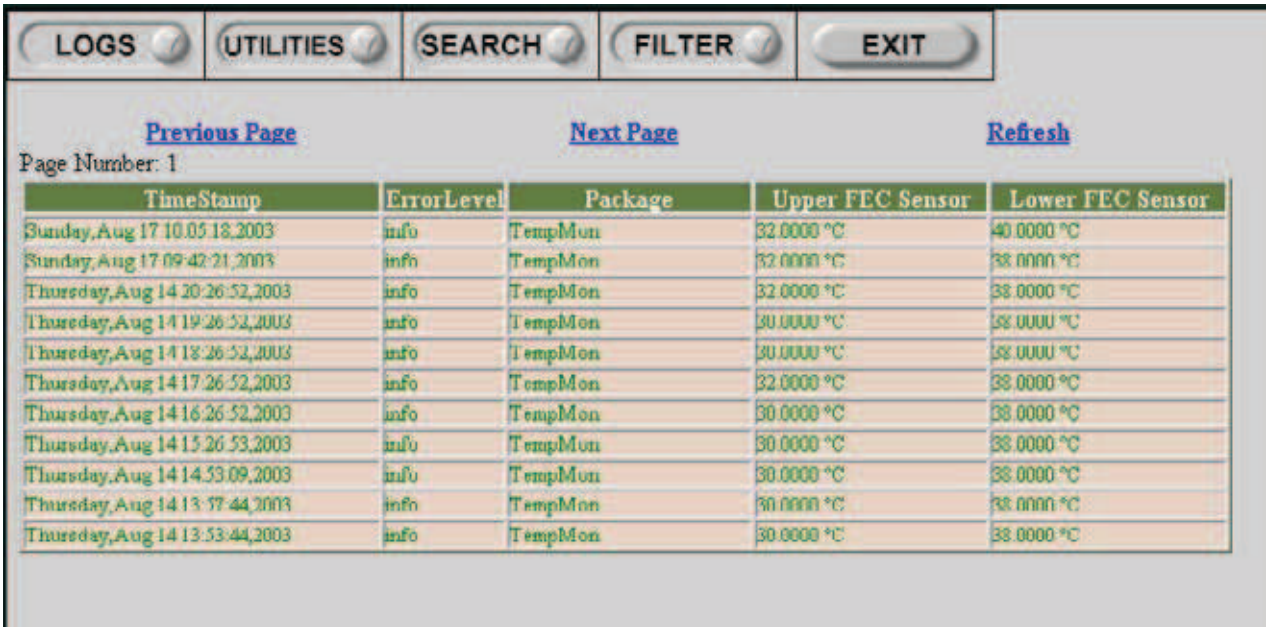
- **Power:** Displays all the power logs, including errors, monitoring dates and values, as shown below:



TimeStamp	ErrorLevel	Package	ErrorMessage
Sunday,Aug 17 10:05:18,2003	info	PowMon	-0.552
Sunday,Aug 17 09:42:21,2003	info	PowMon	0.552
Thursday,Aug 14 20:26:52,2003	info	PowMon	1.657
Thursday,Aug 14 19:26:52,2003	info	PowMon	1.105
Thursday,Aug 14 18:26:52,2003	info	PowMon	1.105
Thursday,Aug 14 17:26:52,2003	info	PowMon	0.552
Thursday,Aug 14 16:26:52,2003	info	PowMon	0.552
Thursday,Aug 14 15:26:53,2003	info	PowMon	-0.552
Thursday,Aug 14 14:53:09,2003	info	PowMon	0.000
Thursday,Aug 14 13:57:44,2003	info	PowMon	0.000
Thursday,Aug 14 13:53:44,2003	info	PowMon	-0.552
Thursday,Aug 14 13:50:59,2003	info	PowMon	0.000
Thursday,Aug 14 09:01:33,2003	info	PowMon	-0.552
Thursday,Aug 14 08:01:33,2003	info	PowMon	-0.552

Figure 7-65 Power Logs

- **Temperature:** Displays all the temperature logs, including errors, monitoring dates and values, as shown below:



TimeStamp	ErrorLevel	Package	Upper FEC Sensor	Lower FEC Sensor
Sunday,Aug 17 10:05:18,2003	info	TempMon	32.0000 °C	40.0000 °C
Sunday,Aug 17 09:42:21,2003	info	TempMon	32.0000 °C	38.0000 °C
Thursday,Aug 14 20:26:52,2003	info	TempMon	32.0000 °C	38.0000 °C
Thursday,Aug 14 19:26:52,2003	info	TempMon	30.0000 °C	38.0000 °C
Thursday,Aug 14 18:26:52,2003	info	TempMon	30.0000 °C	38.0000 °C
Thursday,Aug 14 17:26:52,2003	info	TempMon	32.0000 °C	38.0000 °C
Thursday,Aug 14 16:26:52,2003	info	TempMon	30.0000 °C	38.0000 °C
Thursday,Aug 14 15:26:53,2003	info	TempMon	30.0000 °C	38.0000 °C
Thursday,Aug 14 14:53:09,2003	info	TempMon	30.0000 °C	38.0000 °C
Thursday,Aug 14 13:57:44,2003	info	TempMon	30.0000 °C	38.0000 °C
Thursday,Aug 14 13:53:44,2003	info	TempMon	30.0000 °C	38.0000 °C

Figure 7-66 Temperature Logs

NOTE: Upper FEC Sensor = sensor inside the Front End
Lower FEC Sensor = sensor inside the AC Distribution Box

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7-5-3-1-2 Utilities

The **Utilities** option on the **Logs Viewer** menu enables you to access the following log utilities:

- **Plot Log:** Enables you to view the results of the Temperature or Power logs in graphical format. Select **Power** or **Temperature** from the **Log** option on the **Logs Viewer** menu, and then select **Plot Log** to display the results as shown below:

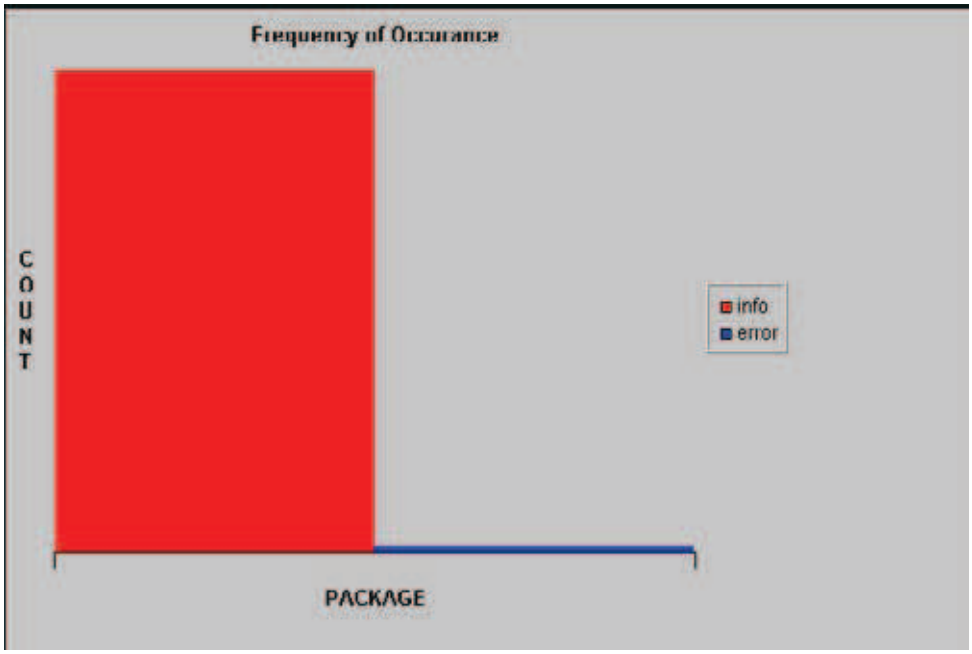


Figure 7-67 Plot Log Window

- **Plot Page:** Enables you to view the results of the System log in graphical format, showing the distribution of the log information according to packages. Select **System** from the **Log** option on the **Logs Viewer** menu, and then select **Plot Page** to display the results as shown below:

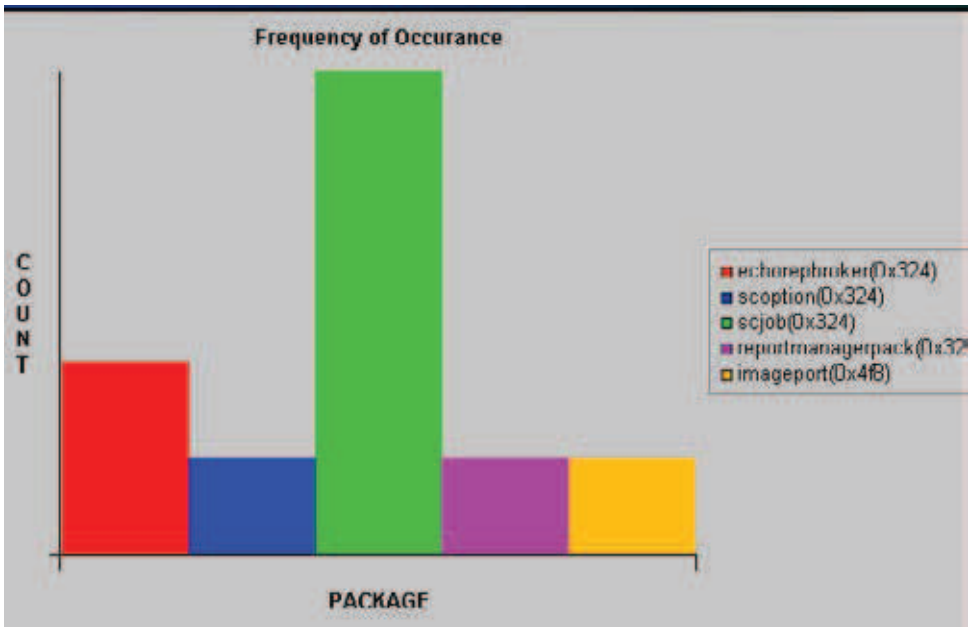


Figure 7-68 Plot Page Window

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7-5-3-1-3 Search

The **Search** option on the **Logs Viewer** menu enables you to enter case-sensitive text that you want to filter from the logs or pages that you are currently viewing, as shown below:



Figure 7-69 Search for Text in Log or Page

7-5-3-1-4 Filter

The **Filter** option on the **Logs Viewer** menu is available to users with the GE Service access level. Select the **System Logs** option to select default options that you want to filter from the **System Logs**, as shown below:

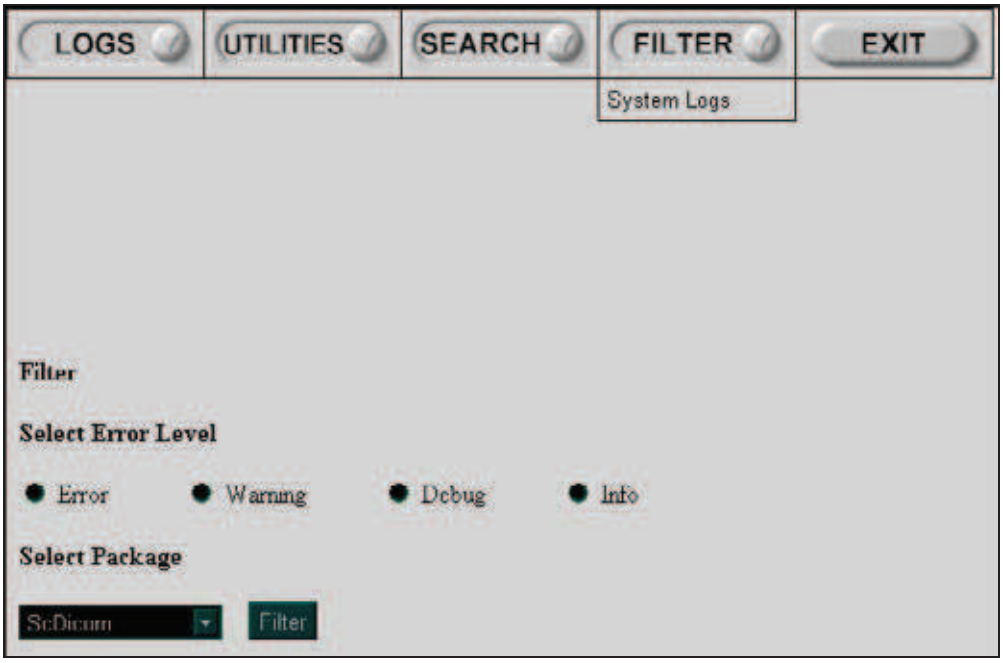


Figure 7-70 Filter Options

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7-5-3-1-5 Exit

The **Exit** option on the **Log Viewer** menu enables you to exit the **Log Viewer**. Select the **Exit Log Viewer** option to return to the Common Service Desktop.



Figure 7-71 Exit Option

7-5-3-2 Log Browser

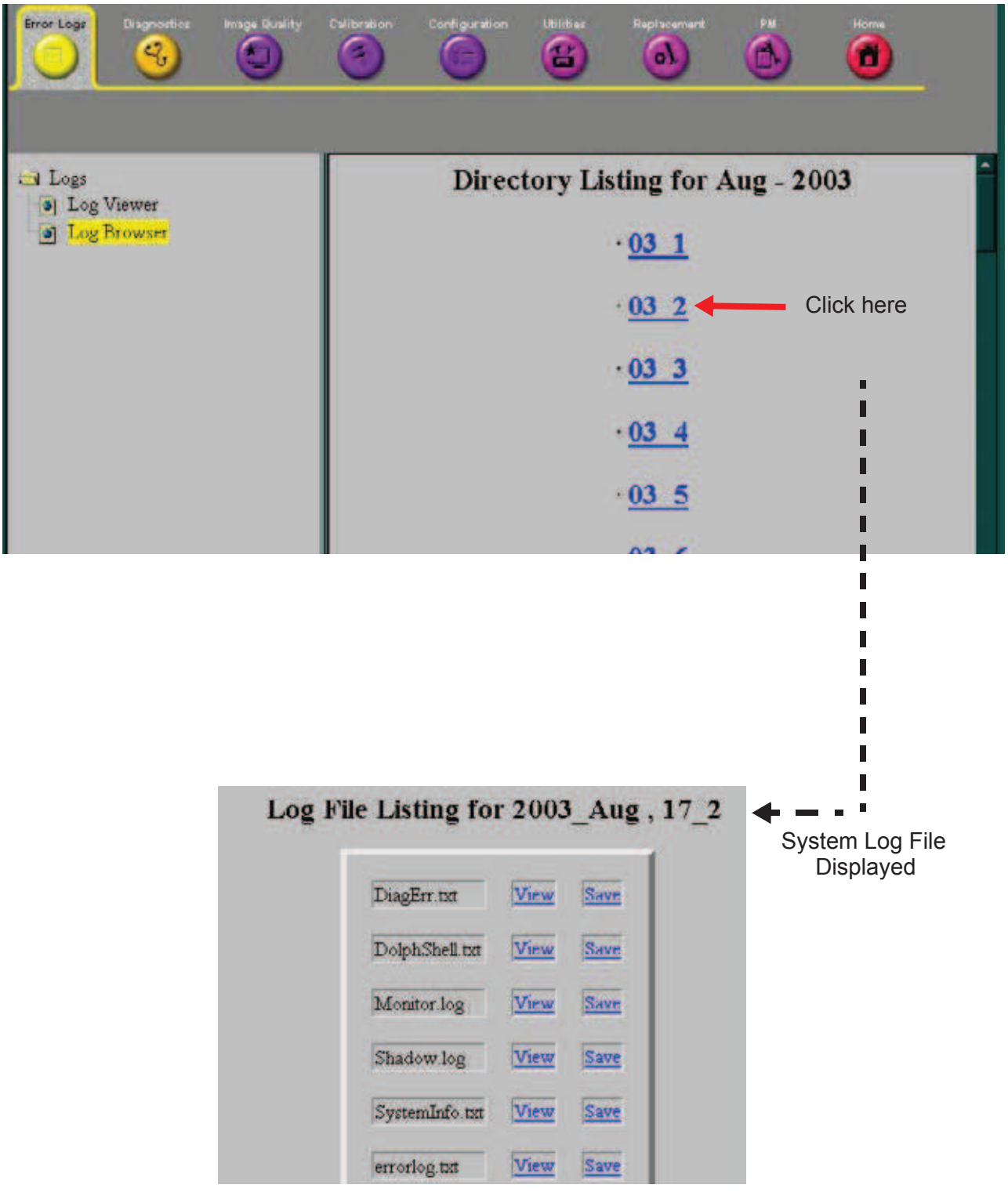
When **Log Browser** is selected in the left pane of the *Error Logs* page, you can browse through the different log categories. All the logs that were generated during the past 3 months are listed under *Logs Available on System*, as shown in Figure 7-72 below:



Figure 7-72 Log Browser

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Each system re-boot will generate a new log file; each log file can be viewed by selecting the appropriate link, as shown in the example in Figure 7-73 below:



Note: _2 signifies the second reboot of that day

Figure 7-73 Viewing a Log File

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If required, a log file can be saved using the **Save** function from this screen (Figure 7-73) (i.e, when you are connected to the system remotely), or you may save the file to a floppy disk on the system itself.

Only three log files may be reviewed in the field:

- DiagErr
- SystemInfo
- errorlog

For all others, the information contained within the log file would be meaningless since it needs to be reviewed on an actual system and cannot be analyzed remotely.

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7-5-4 Diagnostics Page

The service platform uses a web-controlled user interface to provide access to common service components and perform diagnostics. There are two types of diagnostics:

- **Interactive:** The user is required to perform an operation on the ultrasound unit in order for the test to be completed successfully. This option is not applicable when used remotely.
- **Non-Interactive:** The tests are performed without the user's intervention.

When the *Diagnostics* page is selected, as shown below, the options described in the following sections are available:

- *Utilities* section, on page 7-97.
- *PC Diagnostics* section, on page 7-101.
- *Front End Diagnostics* section, on page 7-104.

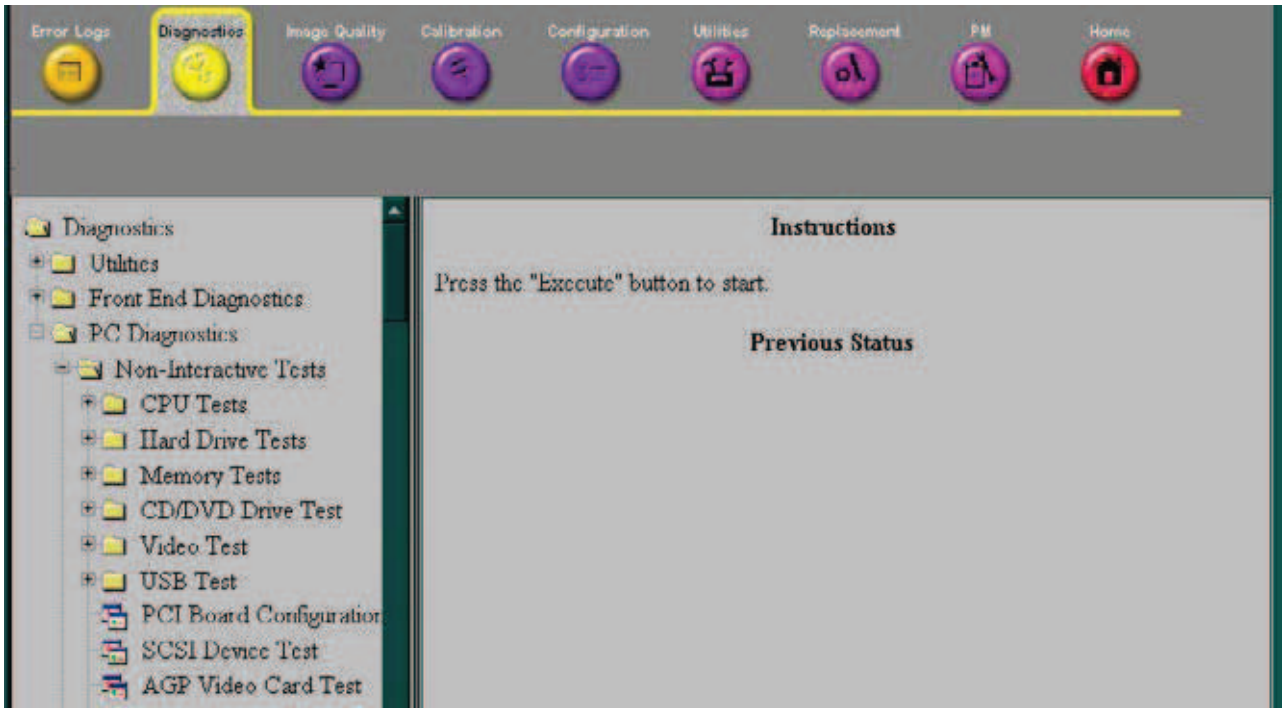


Figure 7-74 Diagnostics Page

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7-5-4-1 Diagnostics Page

When a test is selected in the left pane of the *Diagnostics* page, the right pane is divided into three frames, as shown in Figure 7-74 on page 7-96.

7-5-4-1-1 Instructions Frame

The Instructions frame displays a test-specific HTML page, or the default instructions HTML page.

7-5-4-1-2 Status Frame

The Status frame displays the last known status for the particular diagnostic. When a new diagnostic test is performed, the Status frame displays the current status of all test results.

7-5-4-1-3 Control Frame

The Control frame enables you to control the diagnostics and provide feedback. The background color of the Control frame is initially grey. Upon completion of a diagnostic, the background color changes to indicate the completion status - either Red (fail), Green (pass) or Grey (abort).

- **Execute Button:** Enables you to start a selected diagnostic test. Once the diagnostic is running, the Execute button becomes the Abort button, enabling you to stop the diagnostic.
- **Loop Count Field:** Enables you to enter the number of times that the diagnostic test should be performed. Any numeric value between one and four digits can be entered. This field is queried after you press **Execute** to start a diagnostic test.
- **Text Field:** Displays a short starting or aborting message, as well the diagnostic completion status.
- **Progress Indicator:** Displays the test progress.

7-5-4-2 Utilities

When the **Utilities** option is selected in the left pane of the *Diagnostics* page, the following operations can be performed (refer to Figure 7-75):

- **Disruptive Mode:** Enables you to put the unit into Disruptive Mode, required in order to perform all the Front End diagnostics, as described in the *Front End Diagnostics* section, on page 7-104. When this mode is requested by the OLC or by the field engineer, the user will be asked to confirm Disruptive Mode by clicking the **Yes** button, as shown below:

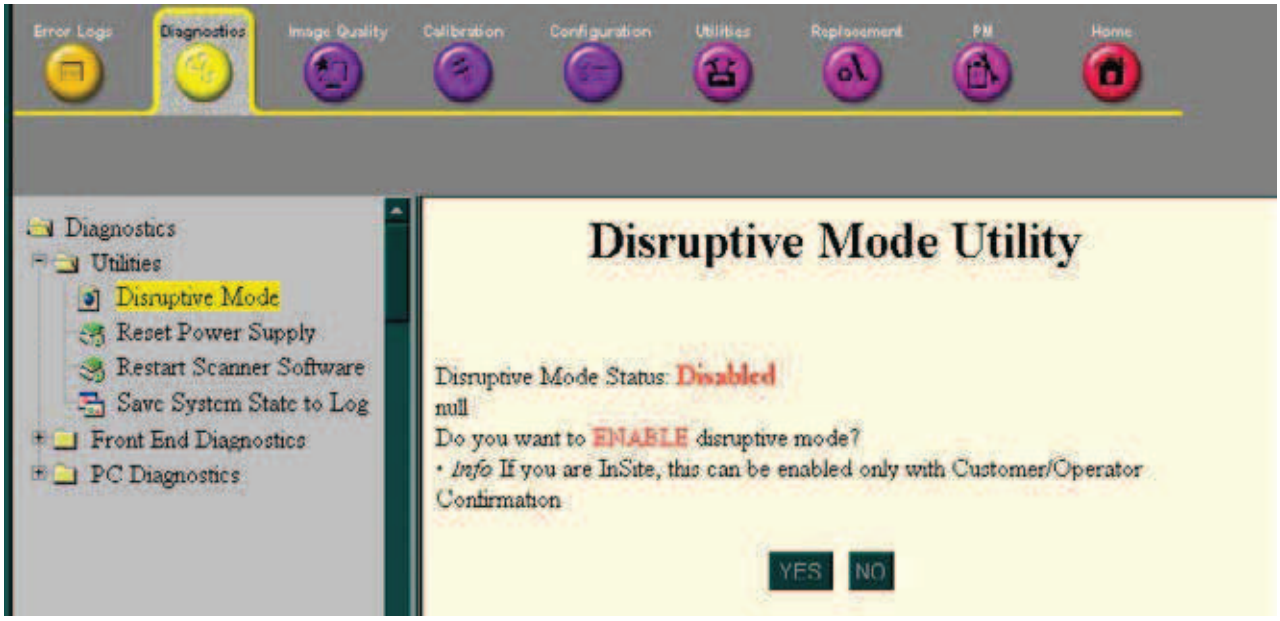


Figure 7-75 Request for Disruptive Mode

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- **Reset Power Supply:** Enables you to reset the Front End power supply:

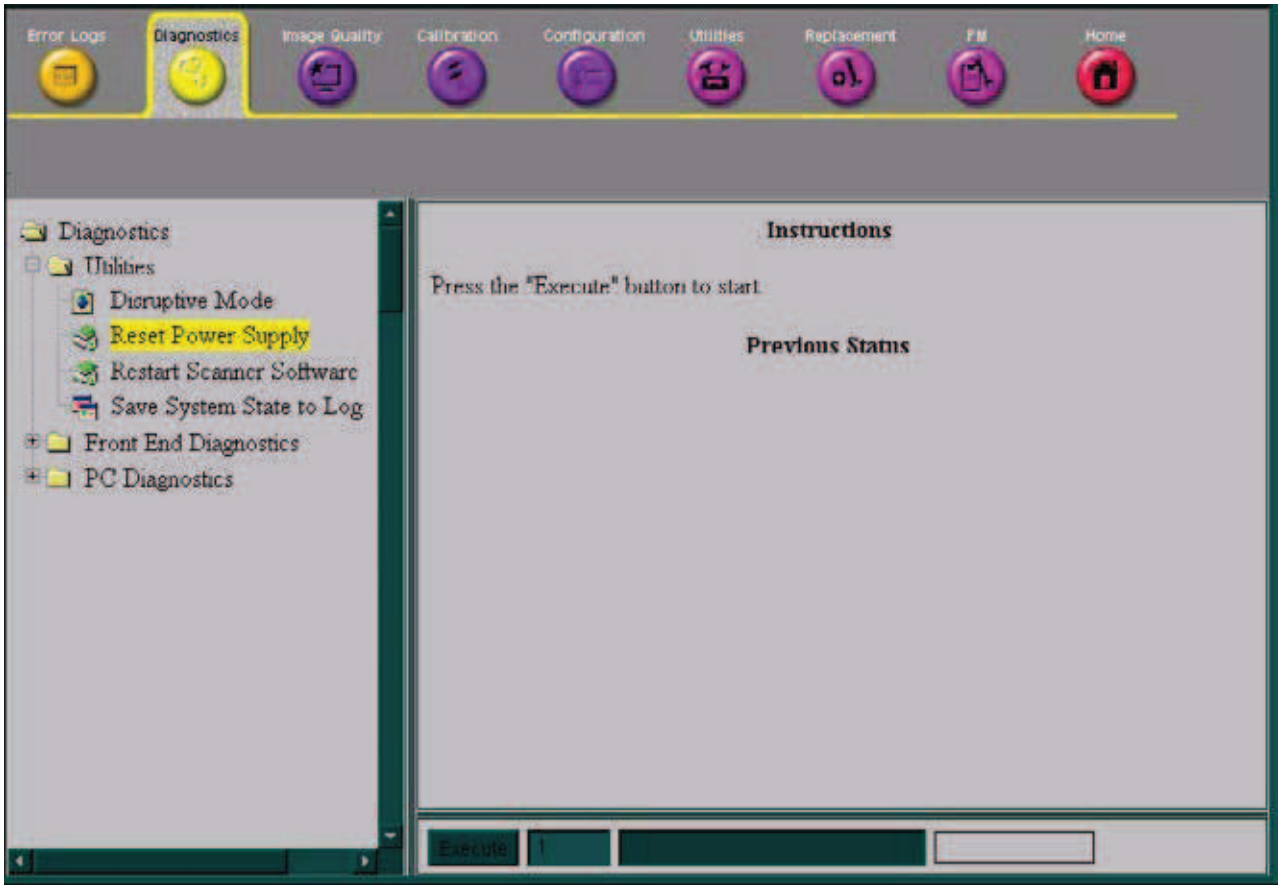


Figure 7-76 Reset Power Supply

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- **Restart Scanner Software**: (System Shutdown) Enables you to remotely shutdown or restart the system.

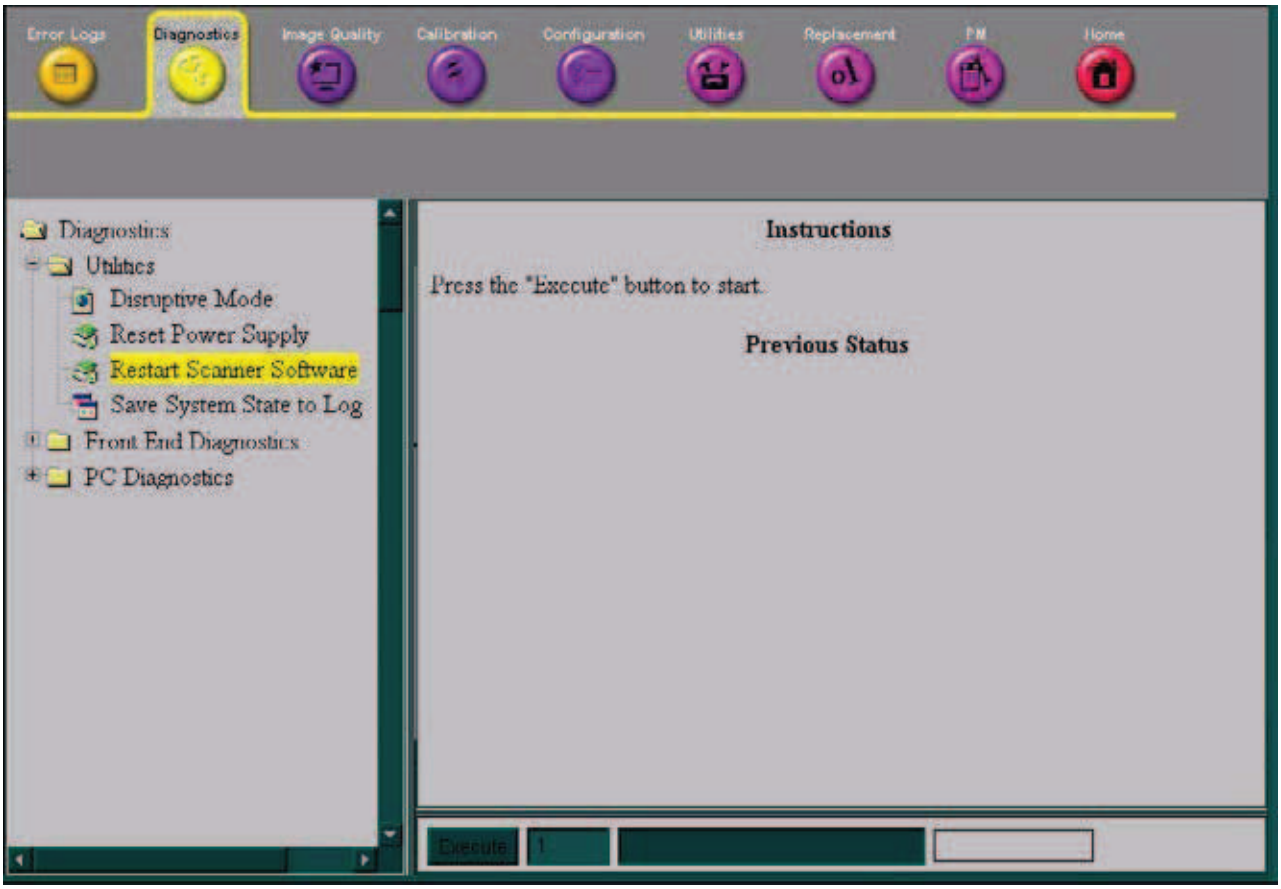


Figure 7-77 Restart Scanner Software

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- **Save System State to Log:** This performs the same system operation as that initiated when pressing <**Ctrl**> **F** or <**Alt**> **D**.

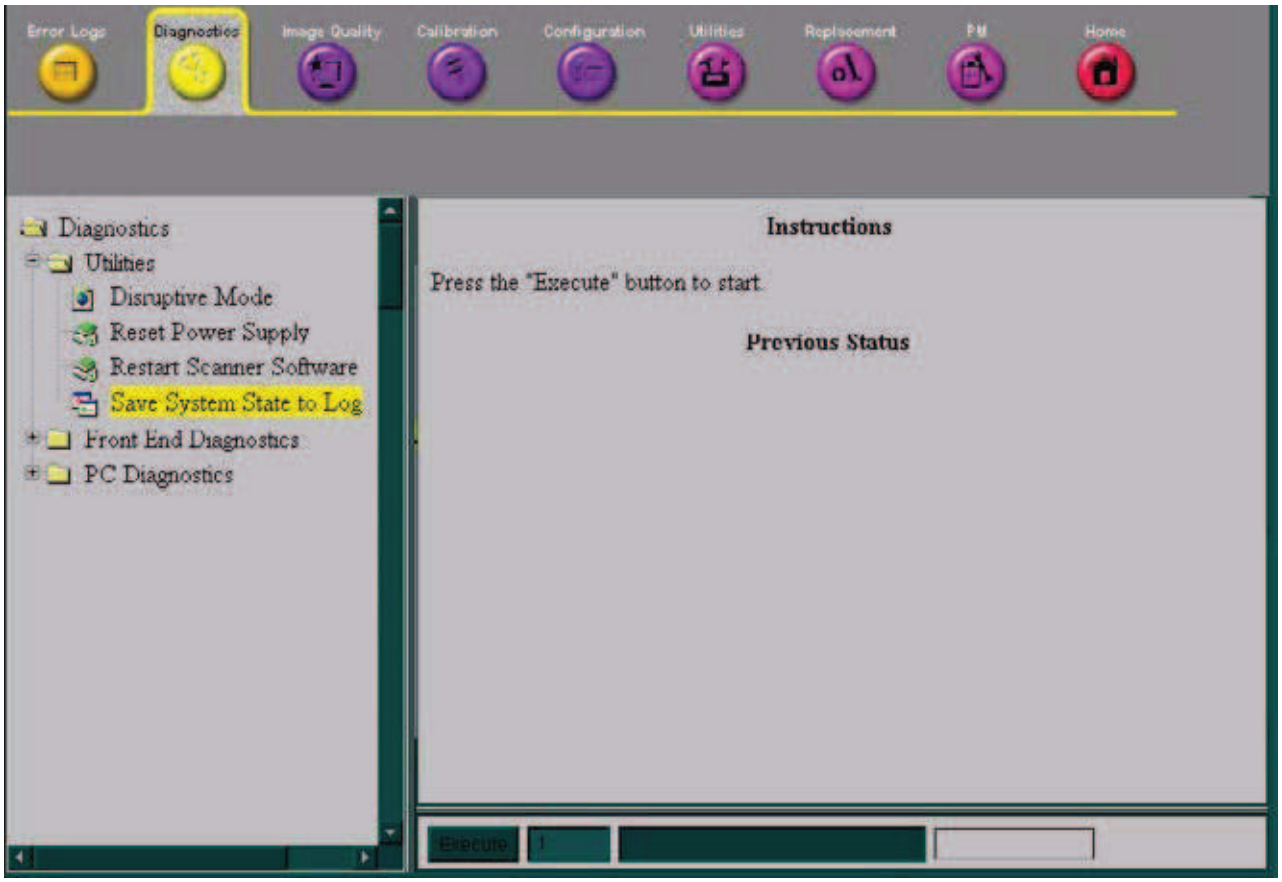


Figure 7-78 Save System State to Log

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7-5-4-3 PC Diagnostics

When **PC Diagnostics** is selected in the left pane of the *Diagnostics* page, the diagnostic tests described in the following sections can be performed:

- *CPU Tests* section, below.
- *Hard Drive Tests* section, on page 7-102.
- *Memory Tests* section, on page 7-102.
- *DVD/CD-ROM Drive Tests* section, on page 7-102.
- *Video Test* section, on page 7-103.
- *PCI Board Configuration Test* section, on page 7-103.

NOTE: The USB Test is also listed under PC Diagnostics, but should not be used.

7-5-4-3-1 CPU Tests

When **PC Diagnostics** is selected in the left pane of the *Diagnostics* page, the following CPU diagnostic tests can be performed:

- **CPU Test (All):** Performs a battery of tests on your CPU to ensure that it is working properly. All the remaining tests are performed as part of the CPU Test.
- **CPU Registers:** Tests the CPU Registers using the default test patterns. On 32 bit CPUs, the extended registers are also checked. If errors are detected, the failed registers are listed.
- **CPU Arithmetics:** Tests the proper function of the arithmetic commands ADC, ADD, DEC, DIV, IDIV, IMUL, INC, MUL, SBB and SUB with 16 and 32 bit operands. If errors are detected, the failed commands and operands are listed.
- **CPU String Operations:** Tests the proper operation of the string commands LODS, MOVS, SCAS and STOS with 8, 16 and 32 bit operands. If errors are detected, the failed commands and operands are listed.
- **CPU Logical Operations:** Tests the proper operation of the logical operations AND, NOT, OR and XOR with 16 and 32 bit operands. If errors are detected, the failed operands are listed.
- **CPU Math Registers:** Tests the coprocessor register stack, pointers and commands FLDLZ, FLDPI, FLDLN2, FLDLG2M FLDL2T FLDL2E and FLD1. If errors are detected, the failed steps and commands are listed.
- **CPU Math Commands:** Tests the coprocessor commands FBLD/FBSTP, FLD/FST, FXCH, FCOM, FICOM, FTST, FXAM and FUCOM. If errors are detected, the failed instructions are listed.
- **CPU Transcendental:** Tests the coprocessor transcendental commands F2XM1, FPATAN, FPTAN, FYL2XP1, FCOS, FSIN and FSINCOS. If errors are detected, the failed commands are listed.
- **CPU MMX Arithmetic:** Tests the MXX commands PADD, PSUB, PMUL and PMADD. If errors are detected, the failed commands are listed.
- **CPU MMX Logical:** Tests the MXX commands PAND, PANDN, POR and PXOR. If errors are detected, the failed commands are listed.
- **CPU MMX Shift:** Tests the MXX commands PSLL and PSRL. If errors are detected, the failed commands are listed.
- **CPU MMX Data Transfer:** Tests the MXX commands MOVD and MOVQ. If errors are detected, the failed commands are listed.
- **CPU MMX Misc.:** Tests the MXX commands PCMPEQ, PCMPGT, PACKSS, PACKUS and PUNPCK. If errors are detected, the failed commands are listed.

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7-5-4-3-2 Hard Drive Tests

When **PC Diagnostics** is selected in the left pane of the *Diagnostics* page, the following hard drive diagnostic tests can be performed:

- **Hard Drive Test (All):** Performs a battery of tests to examine the hard drive and ensure that it can perform all its functions. All the remaining tests are performed on the hard drive to ensure that the hard disk controller and the drive mechanism are working correctly. The disk surface itself is also checked. This test may take over ten minutes.
- **Hard Drive Linear Seek:** Moves the hard disk drive heads from track 0 to the maximum track one track at a time.
- **Hard Drive Funnel Seek:** Moves the hard disk drive heads in a funnel fashion (from the first track to the last, then to the second track, the second last track, the third track and so on).
- **Hard Drive Surface Scan:** Scans the surface for defects on the hard disk drive.

7-5-4-3-3 Memory Tests

When **PC Diagnostics** is selected in the left pane of the *Diagnostics* page, the following memory diagnostic tests can be performed:

- **Memory Test (All):** Uses 18 test patterns to test memory locations. If errors are detected, the address of the block in which the error was detected is shown. During testing, these diagnostics will also look for parity errors and other exceptions. If encountered, these are added to the test log as errors.
- **Memory Pattern Test:** Uses several test patterns to test as much memory as possible.
- **Memory Parity Test:** Checks for parity errors on the memory bus during intensive string transfer operation. If an error is detected, the address of the failed block is displayed.

7-5-4-3-4 DVD/CD-ROM Drive Tests

When **PC Diagnostics** is selected in the left pane of the *Diagnostics* page, the following DVD/CD-ROM diagnostic tests can be performed. **Seek** tests ensure that the drive can access all locations on a disk, while **Read** tests ensure that the drive can read all the data.

- **DVD/CD-ROM Test (All):** Examines the DVD or CD-ROM drive to ensure that it is working properly. You can use either a data CD-ROM disk or a DVD disk for these tests, You cannot use an audio CD for this test.
- **DVD/CD-ROM Linear Seek:** Tests that all the locations on a DVD or CD-ROM disk can be accessed in a linear fashion, from the first to the last.
- **DVD/CD-ROM Random Seek:** Tests that all the locations on a DVD or CD-ROM disk can be accessed randomly.
- **DVD/CD-ROM Funnel Seek:** Tests that all the locations on a DVD or CD-ROM disk can be accessed in a funnel fashion, from the first to the last, then from the second to the second last, and so on.
- **DVD/CD-ROM Linear Read:** Reads the data on the DVD or CD-ROM disk in a linear fashion, from the beginning to the end.
- **DVD/CD-ROM Random Read:** Reads the data on the DVD or CD-ROM disk randomly.

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7-5-4-3-5 Video Test

When **PC Diagnostics** is selected in the left pane of the *Diagnostics* page, the following video diagnostic tests can be performed. These tests use 18 test patterns to fill the video buffer, testing your graphics acceleration and text output

- **Video Test (All):** Test the system's video capabilities. This involves testing the memory, testing the graphics acceleration and testing the text output. You can follow the tests being performed on the monitor. This test can be cancelled at any time by pressing **<Esc>** on the keyboard.
- **Video Memory:** Tests the video memory by filling the video buffer with 18 test patterns, one pattern at a time. These tests fill the entire screen with a single color.
- **Video Data Transfer:** Tests the graphics acceleration part of the video controller. This test fills the screen with black and white concentric squares, and rectangles of various sizes and colors. If errors are detected, the locations of the problems are displayed.
- **Video Text Output:** Prints a text string in random sizes and colors to test the video device driver and video controller.

7-5-4-3-6 Frame Grabber Test

Testing for proper operation of the Frame Grabber Board is achieved by performing the Video Grabbing Test. For details, refer to the Video Grabbing Test on page 4 - 4. For information regarding the video grabbing calibration procedure, refer to Video Grabbing Calibration on page 6 - 17.

7-5-4-3-7 PCI Board Configuration Test

A Peripheral Component Interconnect (PCI) bus is a fast standard bus that is common in Pentium systems. When **PC Diagnostics** is selected in the left pane of the *Diagnostics* page, PCI diagnostic tests can be performed to ensure that the PCI bus is working up to speed. The motherboard is scanned to verify the configuration space and to ensure that the diagnostics can communicate with the board.

7-5-4-3-8 Keyboard Test

When **PC Diagnostics** is selected in the left pane of the *Diagnostics* page, the keyboard diagnostic tests can be performed. After selecting your keyboard type from the drop down list, click the **Test** button. The *PCDR Keyboard Test* window is displayed, showing all the keyboard keys. Press each key on the keyboard once and ensure that the corresponding keys on-screen are removed from view. If a key is not removed, that key may be damaged and need to be replaced or repaired. Click the **Reset Keys** button to reset the keyboard, or click the **Close** button to exit the test.

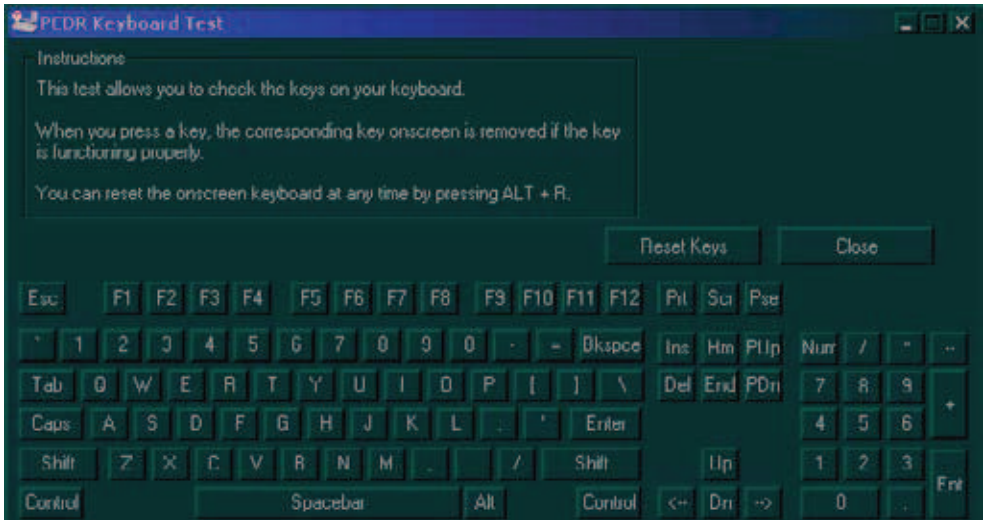


Figure 7-79 PCDR Keyboard Test Window

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7-5-4-3-9 Audio Test

The audio test option is not enabled.

7-5-4-3-10 Monitor Test

When **PC Diagnostics** is selected in the left pane of the *Diagnostics* page, the following monitor diagnostic tests can be performed, as shown below:

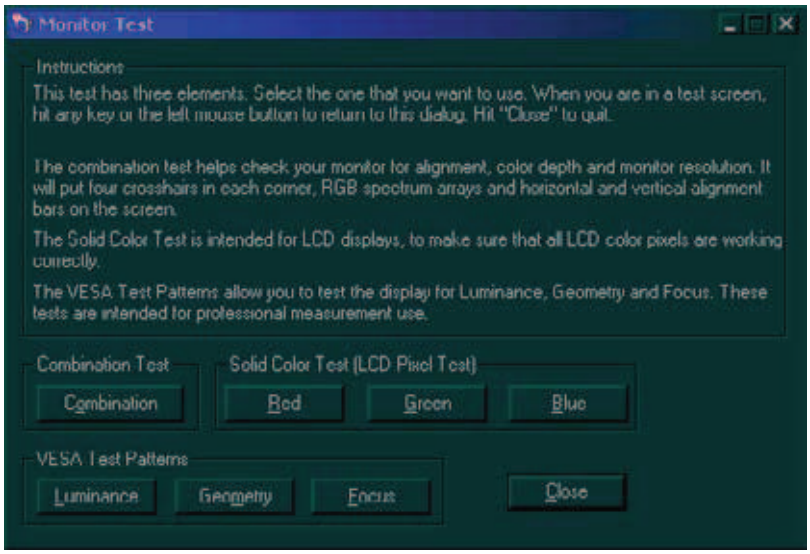


Figure 7-80 Monitor Test

- **Combination Test:** Checks the monitor alignment, color depth and monitor resolution. Four cross hairs are placed in each corner of the screen, as well as RGB spectrum arrays and horizontal and vertical alignment bars.
- **Solid Color Test:** Tests the panel display on laptops and LCD screens. This test display a solid color on the screen to ensure that all the color pixels are operating correctly.
- **VESA (Video Electronics Standards Association) Test Patterns:** Checks luminance, geometry and focus. These tests are designed for professional measurement use.

7-5-4-4 Front End Diagnostics

When the **Front End Diagnostics** option is selected in the left pane of the *Diagnostics* page, the same tests as those performed by pressing **<Ctrl+F11>** during regular operation, can be conducted. Both *Non-interactive* (see Figure 7-81 [or Figure 7-82]) and *Interactive* (see Figure 7-83) tests may be performed. However, the *Interactive* tests require the use of specific probes.

NOTE: To avoid failure alarms during the Front End diagnostics tests, disconnect all probes that are not required to perform the test.

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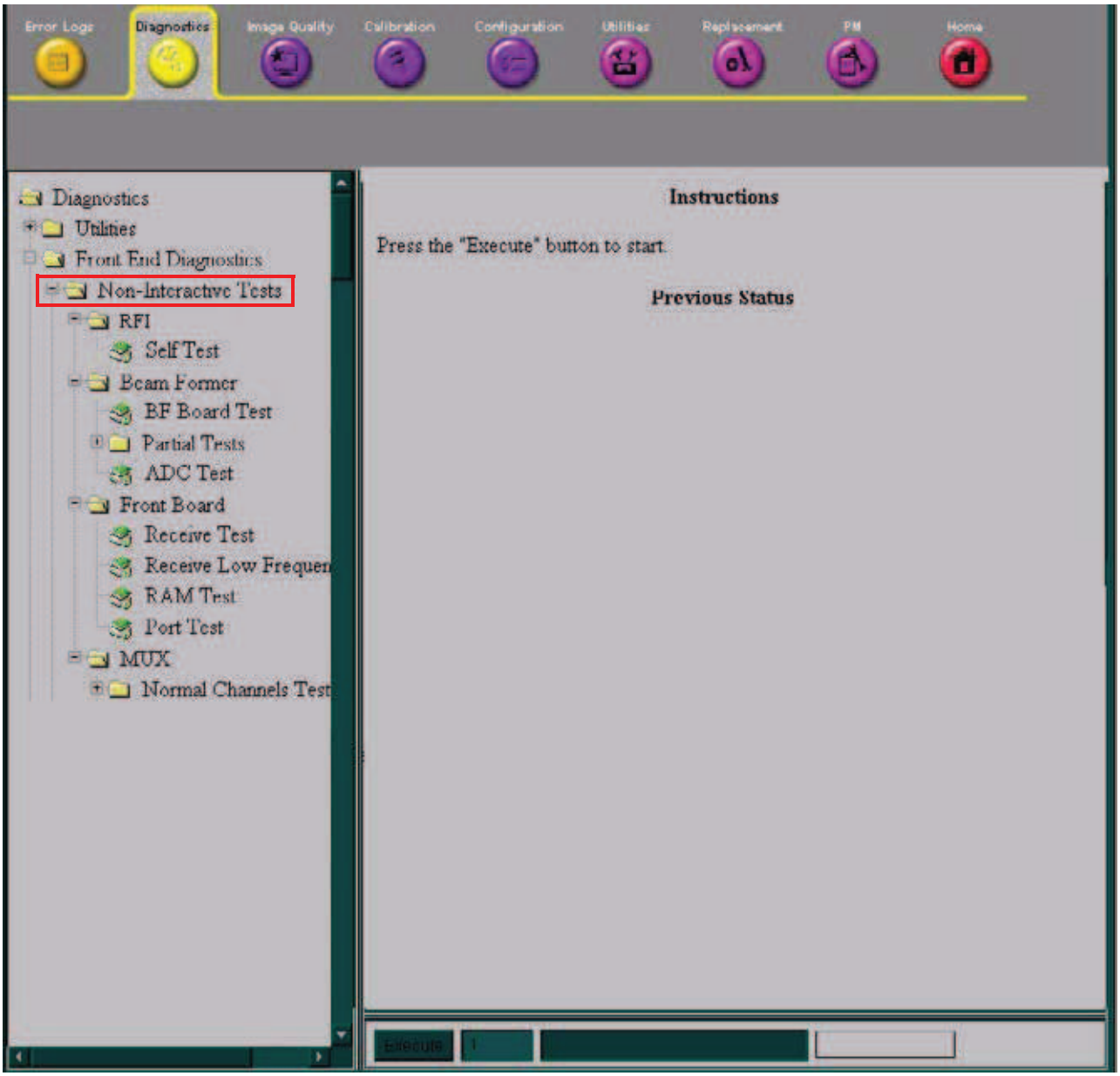


Figure 7-81 Non-Interactive Tests (Systems with RFI Configuration)

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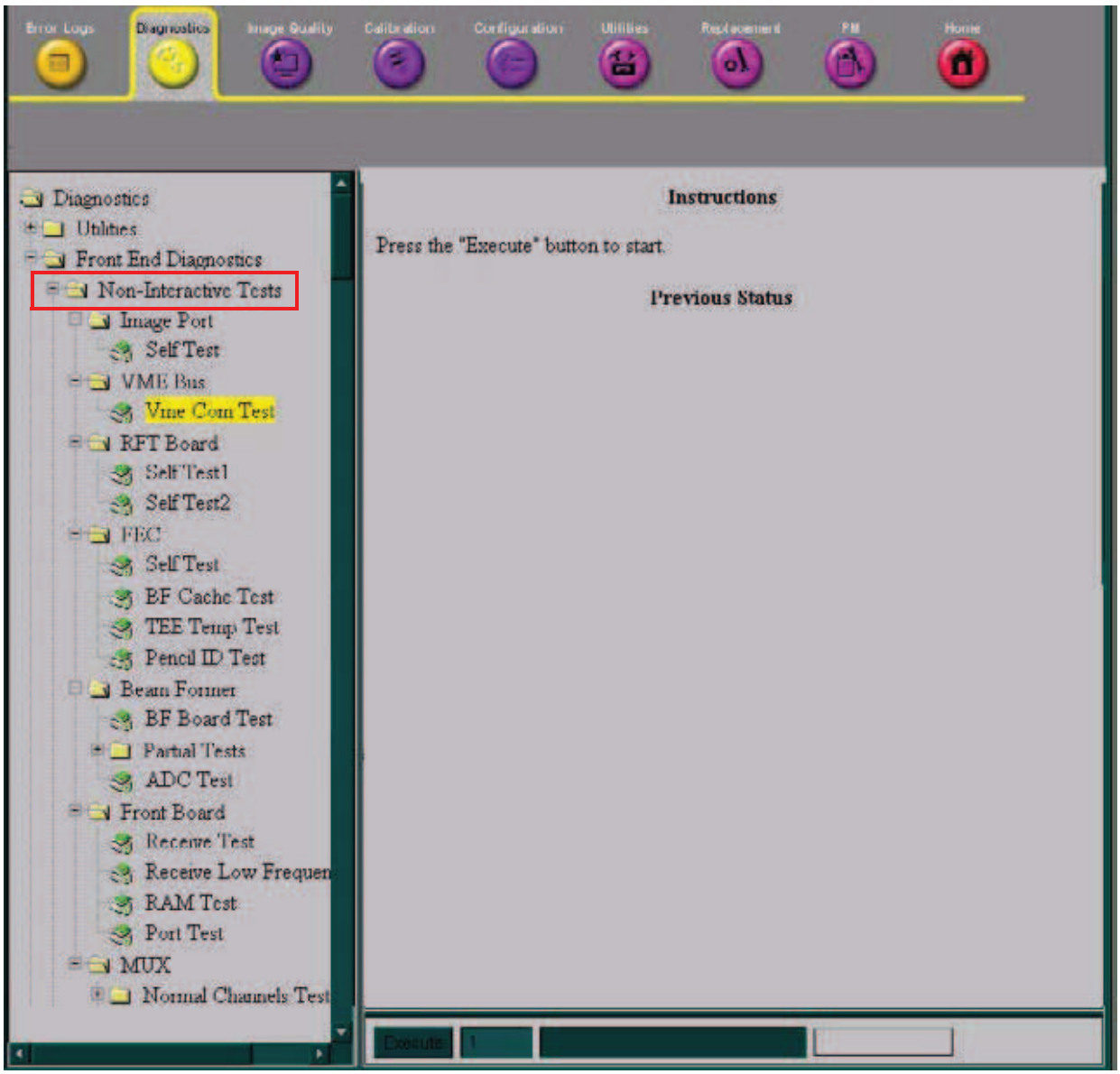


Figure 7-82 Non-Interactive Tests (Systems with RFT Configuration)

For information on performing a specific Non-interactive test, refer to the appropriate section, as follows:

- RFI - see Radio Frequency Interface (RFI) Diagnostic Tests (for RFI Configuration) on page 7 - 11

  OR (for systems with RFT Configuration):

  - Image Port - Image Port (IMP) Diagnostic Tests (for RFT Configuration) on page 7 - 13.
  - VME Bus - VME Bus (VME) Diagnostic Tests (for RFT Configuration) on page 7 - 15.
  - RFT Board - RFT Diagnostic Tests (for RFT Configuration) on page 7 - 17.
  - FEC - Front End Controller (FEC) Diagnostic Tests (for RFT Configuration) on page 7 - 19.
- Beam Former - see Beamformer (BF) Diagnostic Tests on page 7 - 21.
- Front Board - see Front Board Assembly (FB) Diagnostic Tests on page 7 - 25.
- MUX - see MUX Diagnostic Tests on page 7 - 47.

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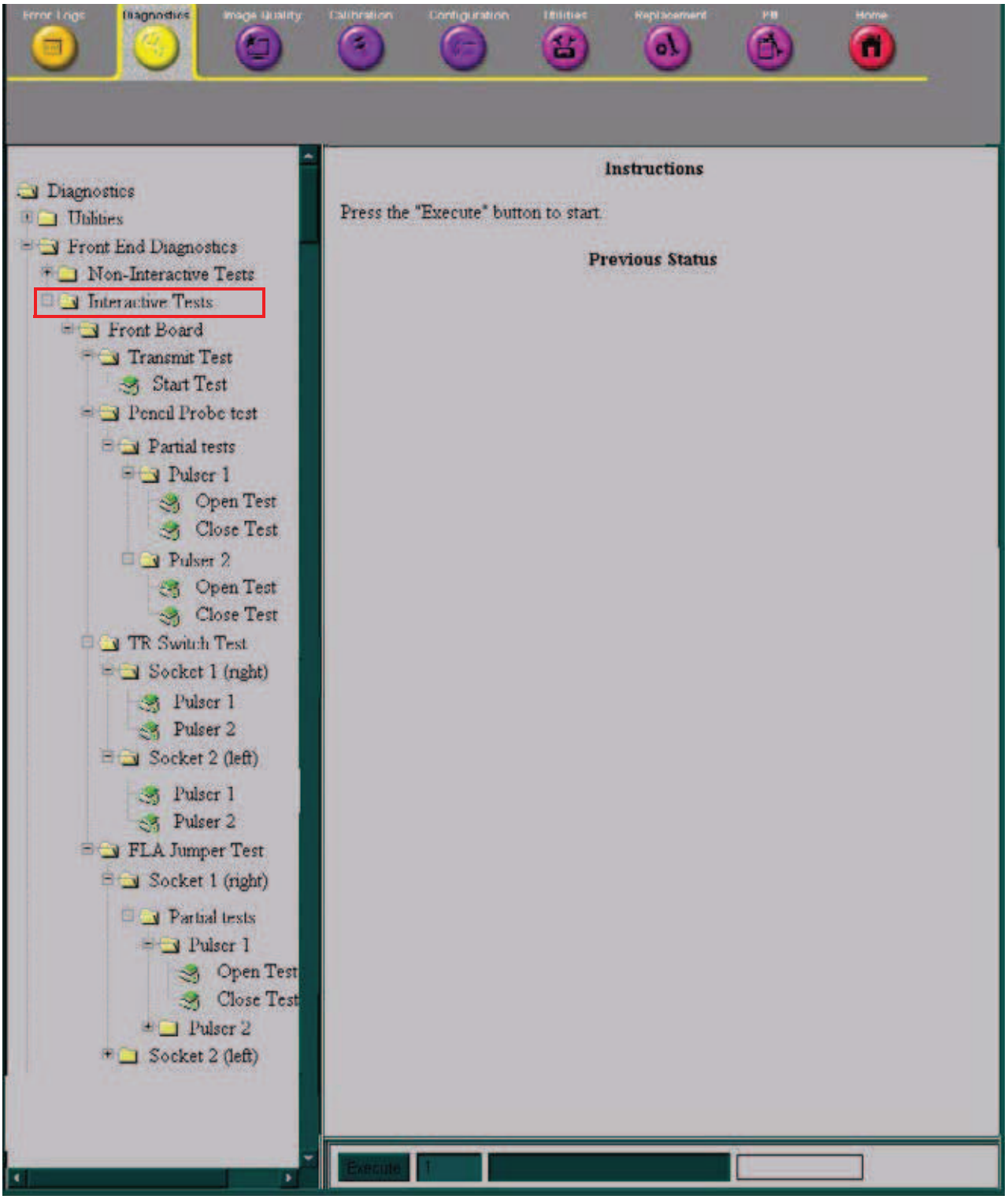


Figure 7-83 Interactive Tests

NOTE: Interactive tests are performed on the Front Board only.

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For information on performing a specific Interactive test, refer to the appropriate section, as follows:

- Transmit Test - see Transmit Test on page 7 - 28.
- FLA Jumper Test - see FLA Jumper Switch on page 7 - 30
- TR Switch Test - see TR Switch Test on page 7 - 38.

Note: On the TR Switch Test, *Socket 1* and *Socket 2* relate to which socket the probe is plugged into. Select the appropriate Pulser.

- Pencil Probe Test - see Pencil Probe Test on page 7 - 40.

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7-5-5 Image Quality Page

When the *Image Quality* page is selected, as shown below, you can verify and calibrate image quality.

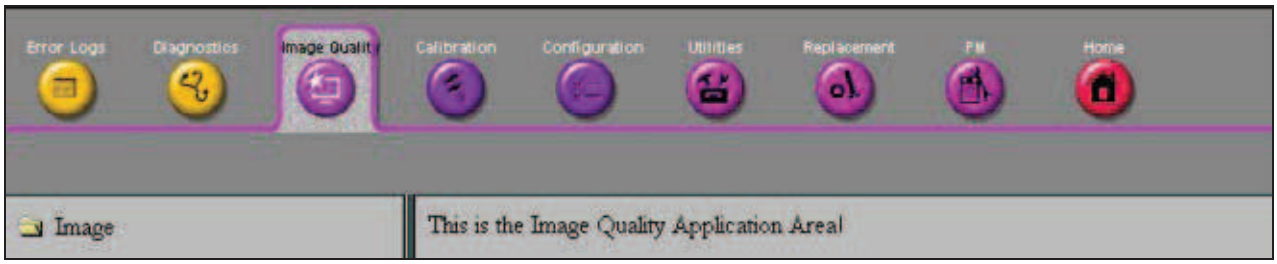


Figure 7-84 Image Quality Page

Note: This page is not populated in this version.

7-5-6 Calibration Page

When the *Calibration* page is selected, as shown below, you can perform different calibration procedures, as described in *Chapter 6, Service Adjustments*.



Figure 7-85 Calibration Page

Note: This page is not populated in this version.

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7-5-7 Configuration Page

When the *Configuration* page is selected, you can configure the GSUI (InSite). No changes should be made in this page without the help of GE Medical Systems Service Personnel, as any modifications made by untrained personnel can cause damage to the ultrasound unit.

.



Figure 7-86 Configuration Page

Note: This page is not populated in this version.

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7-5-8 Utilities Page

When the *Utilities* page is selected (as shown below), a variety of Windows 2000 utility tools are available to indicate the status of the system, in addition to various other tools.

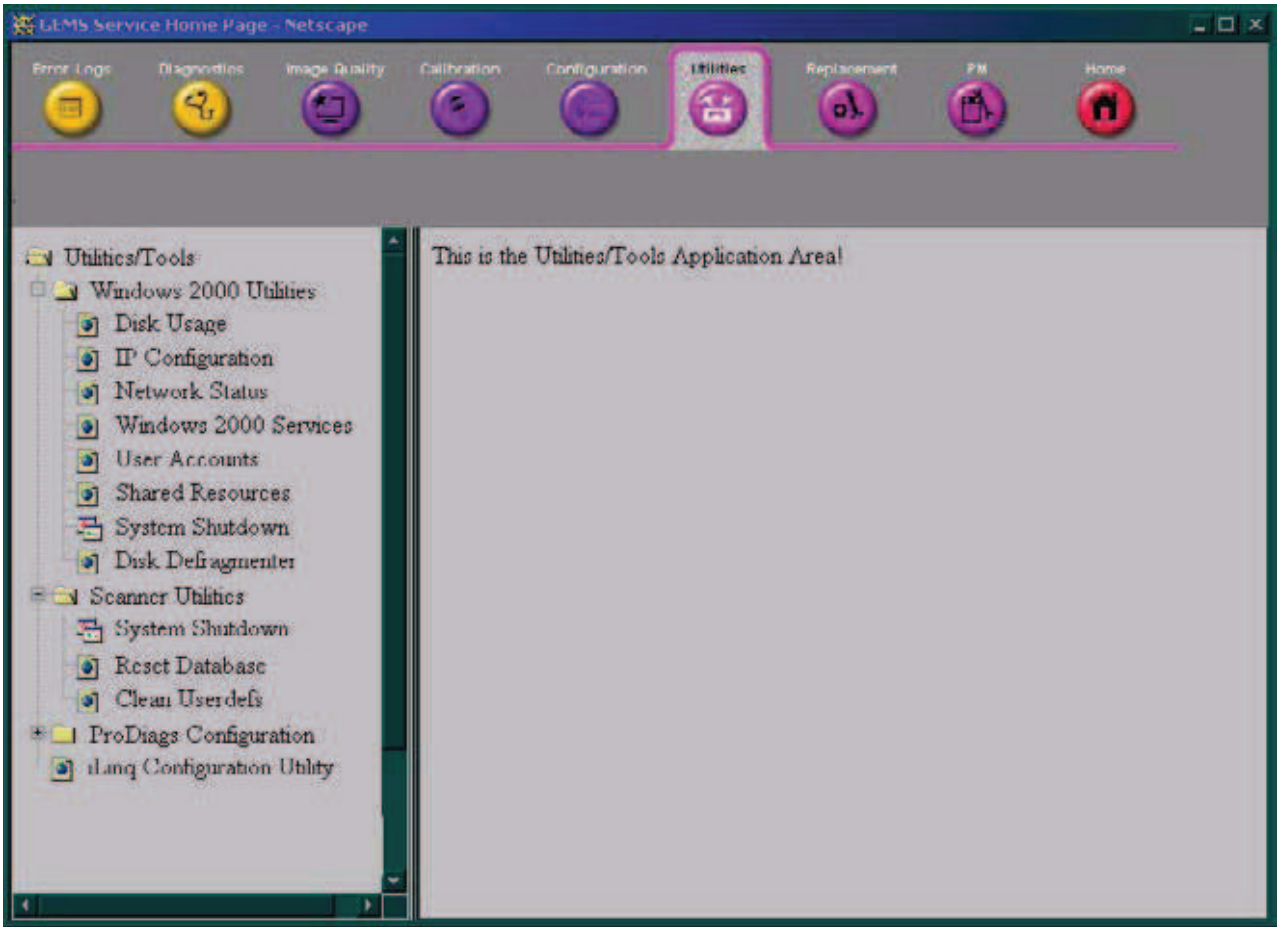


Figure 7-87 Utilities Page

7-5-8-1 Windows 2000 Utility

The information accessed under *Windows 2000 Utilities* are:

- **Disk Usage** - shows the amount of hard disk space available, and the size already utilized.
- **IP Configuration** - shows the IP configuration of the different remote devices - such as, the network or the modem.
- **Network Status** - shows the communication status of active connections on the network.
- **Windows 2000 Services** - shows which services (applications) are currently active on Windows 2000.
- **User Accounts** - shows the internal account information that was provided and set up on the system by the OLC.
- **Shared Resources** - indicates the resources being shared by the system.
- **System Shutdown** - There are three options provided (see Figure 7-88):

  Restart System - restart the application

  Shutdown System - total shutdown of the system

  Retain Disruptive Mode - request to perform diagnostics remotely

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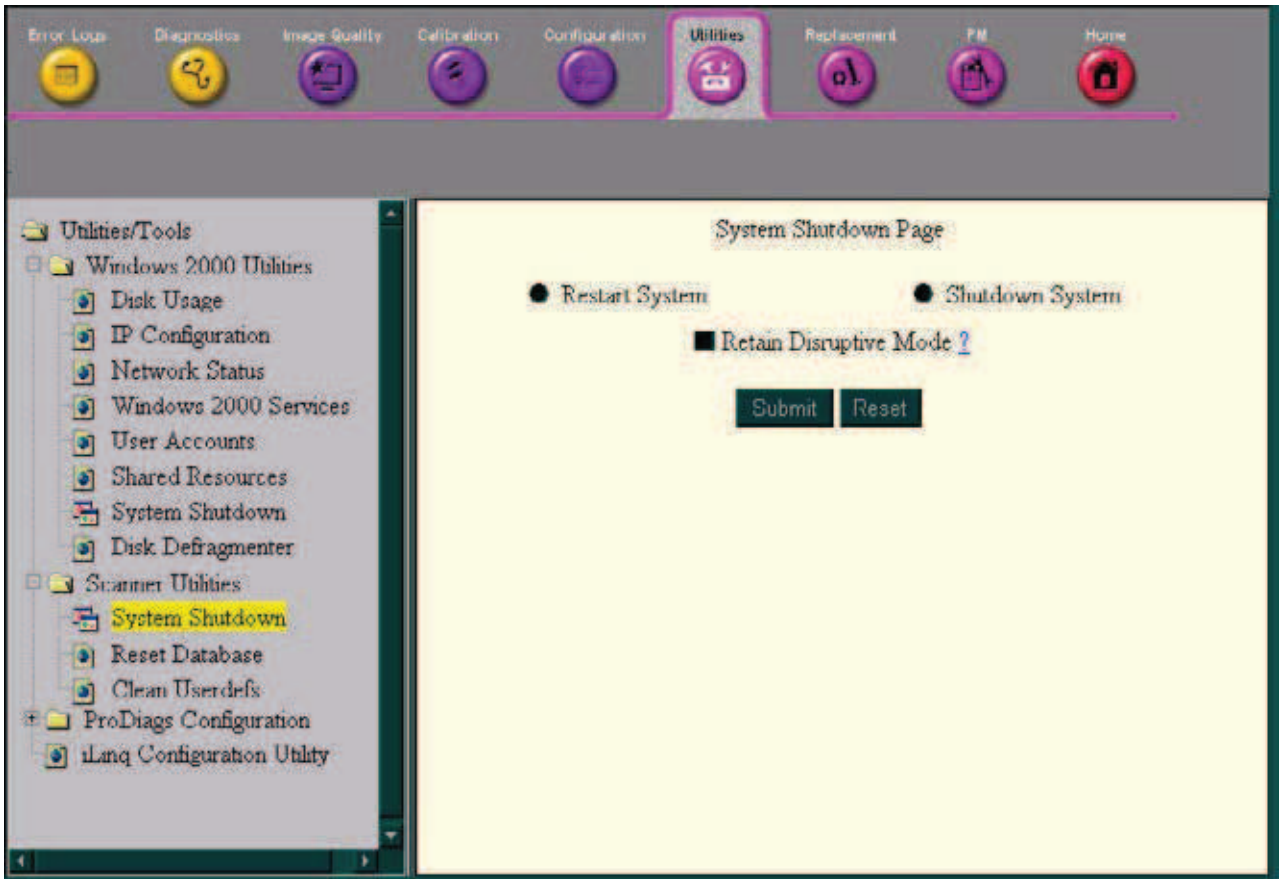


Figure 7-88 System Shutdown

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7-5-8-2 Scanner Utilities

The functions accessed under *Scanner Utilities* are described below.

- **System Shutdown** - There are three options provided (described on previous page - also see Figure 7-88)
- **Reset Database** - used to empty the database and reset a new one (see Figure 7-89 **below**).

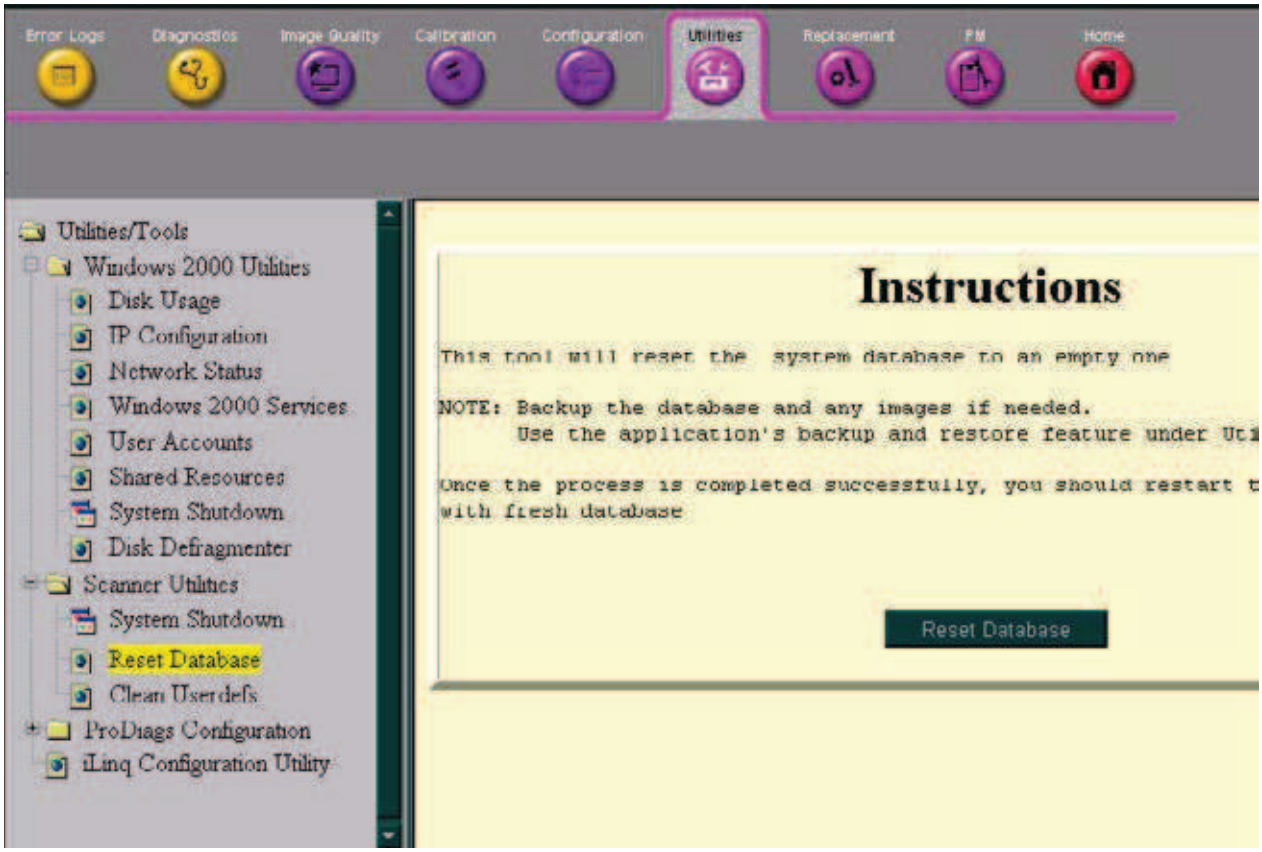
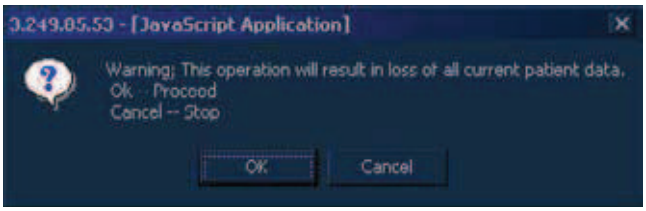


Figure 7-89 Reset Database

WARNING: ***THIS PROCESS IS IRREVERSIBLE! Before proceeding, make sure you have a complete backup of the existing database***.

When selecting **Reset Database**, the following warning message is displayed:



Click **OK** to proceed.

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- **Clean UserDefs** - used to clean all user-defined settings and restore the default settings

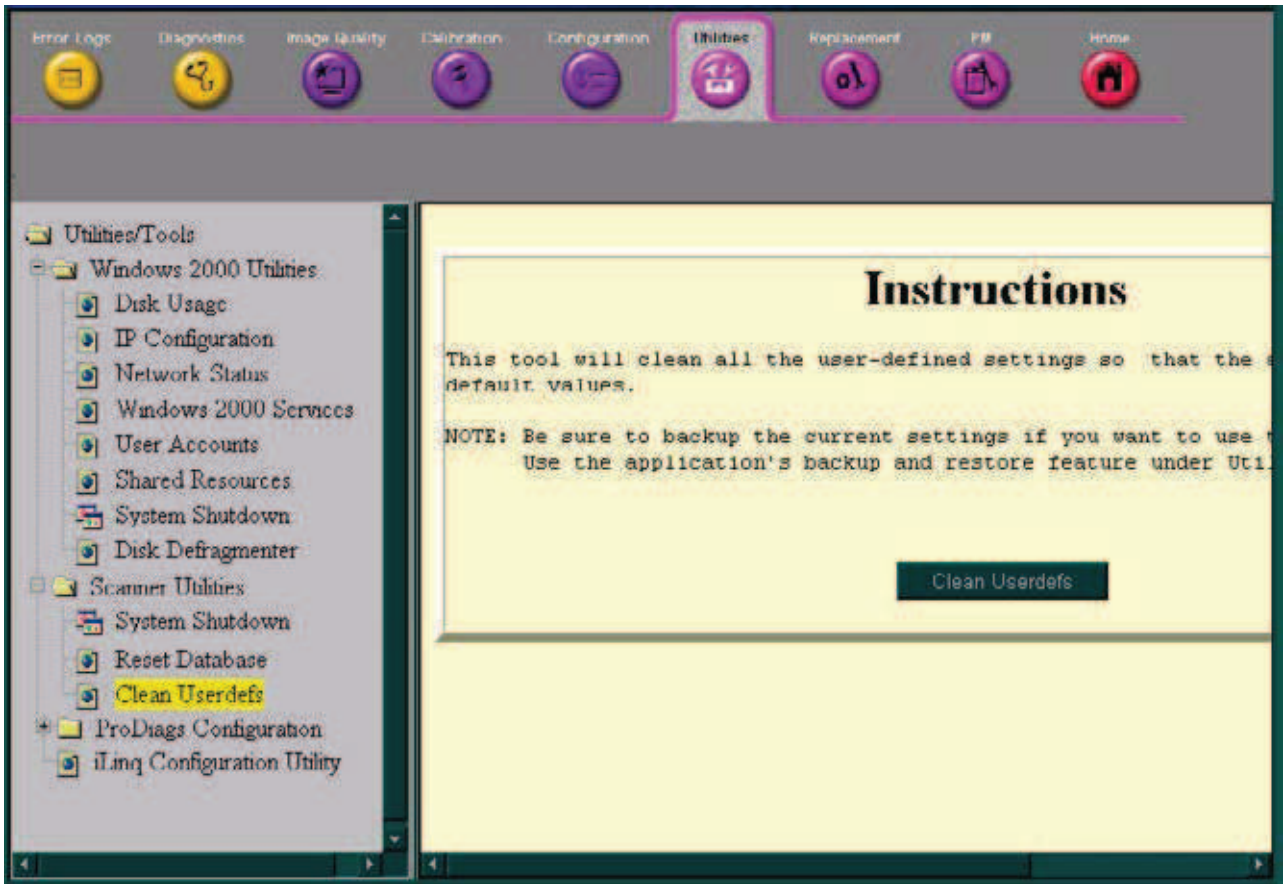
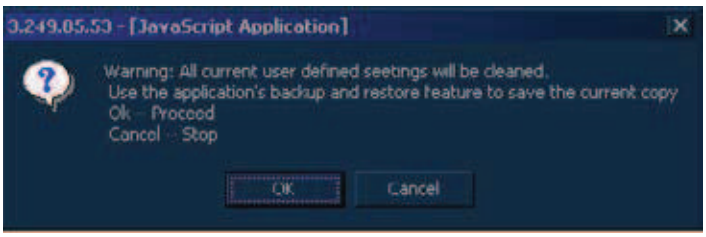


Figure 7-90 Clear User-defined Settings

CAUTION: ***THIS PROCESS IS IRREVERSIBLE! Before proceeding, make sure you have a complete backup of the current settings if they will be required in the future***.

When selecting **Clean Userdefs**, the following warning message is displayed:



After making a back-up copy of the current settings, click **OK** to proceed.

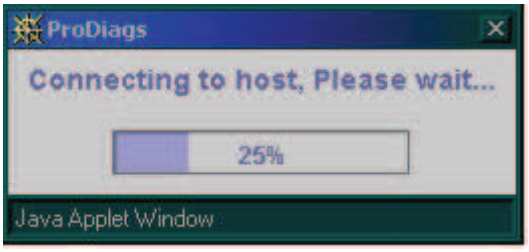
NOTE: This function performs the same procedure as that of Restore Factory Presets (accessed under the System Configuration window - System tab).

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7-5-8-3 ProDiags Configuration

7-5-8-3-1 ProDiags Browser

1) Select the **Prodiags Browser** under the **Configuration Utility** option. The following message is displayed.



Wait a few minutes, until the following screen is displayed.

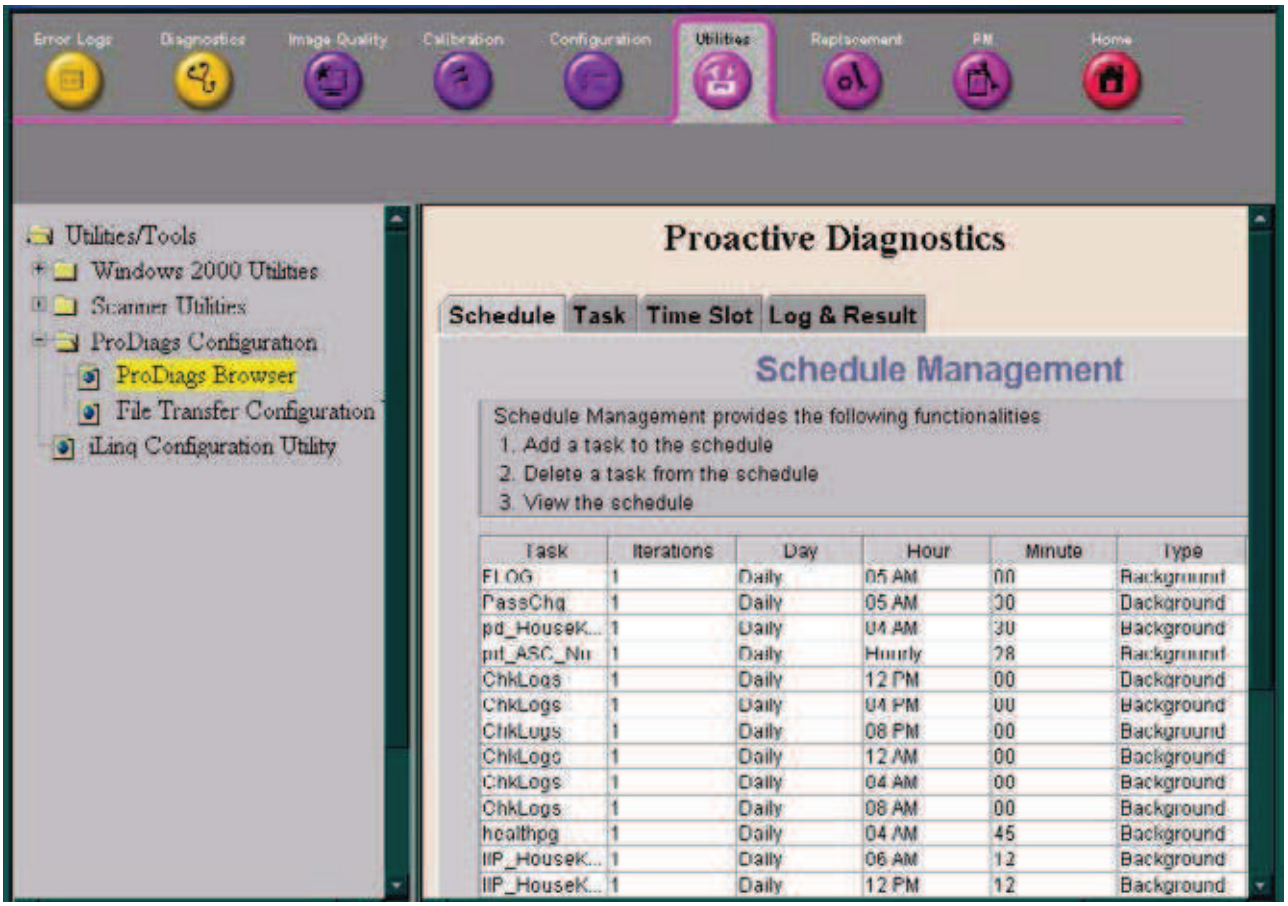


Figure 7-91 ProDiags Browser - Schedule

The **Schedule** tab indicates the tasks that are scheduled, and on which date they are scheduled, and their frequency. It also indicates the type of operation - *Background* or *Foreground*.

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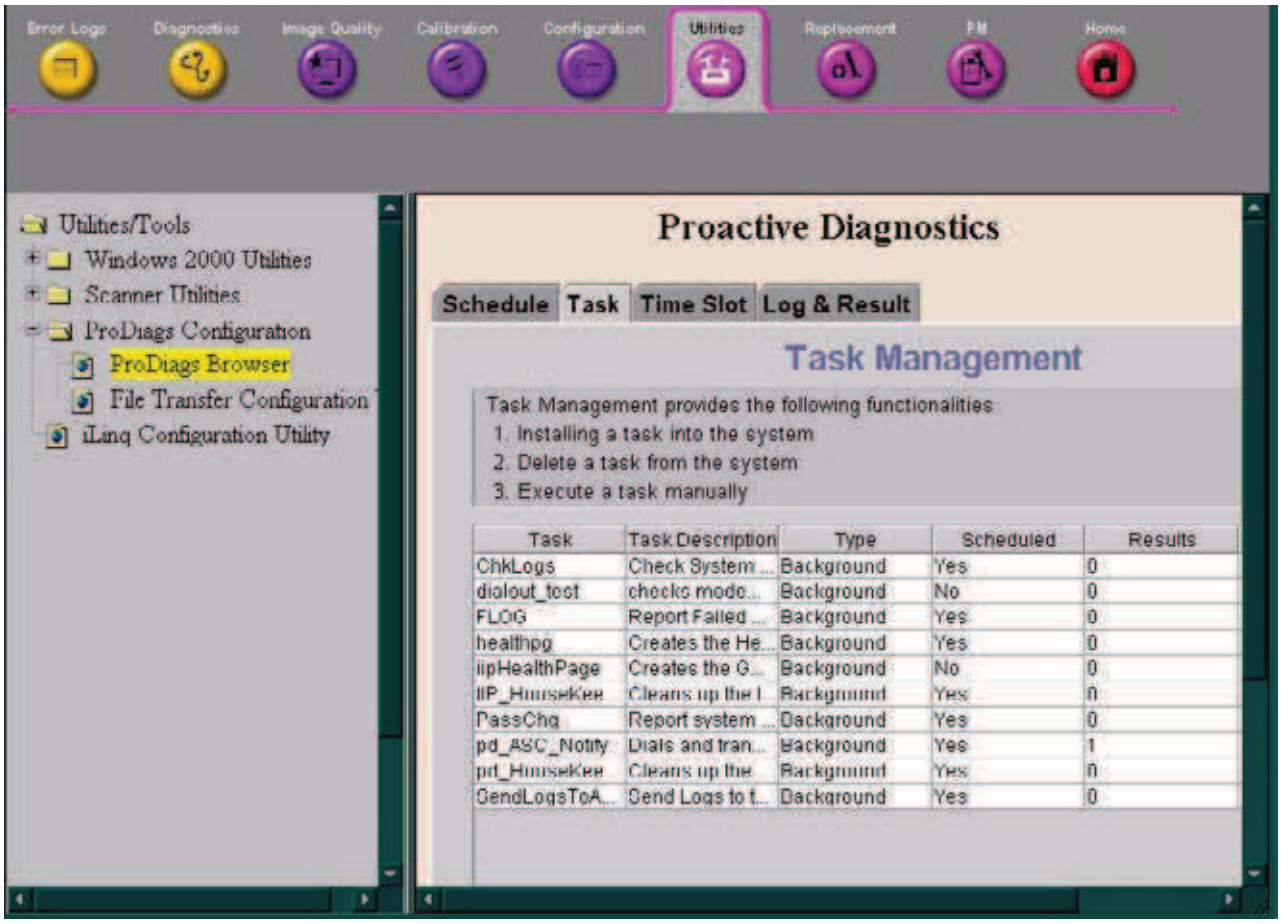


Figure 7-92 ProDiags Browser - Task

The **Task** tab indicates all the tasks that are available for activation. This also indicates which tasks are scheduled, and their type.

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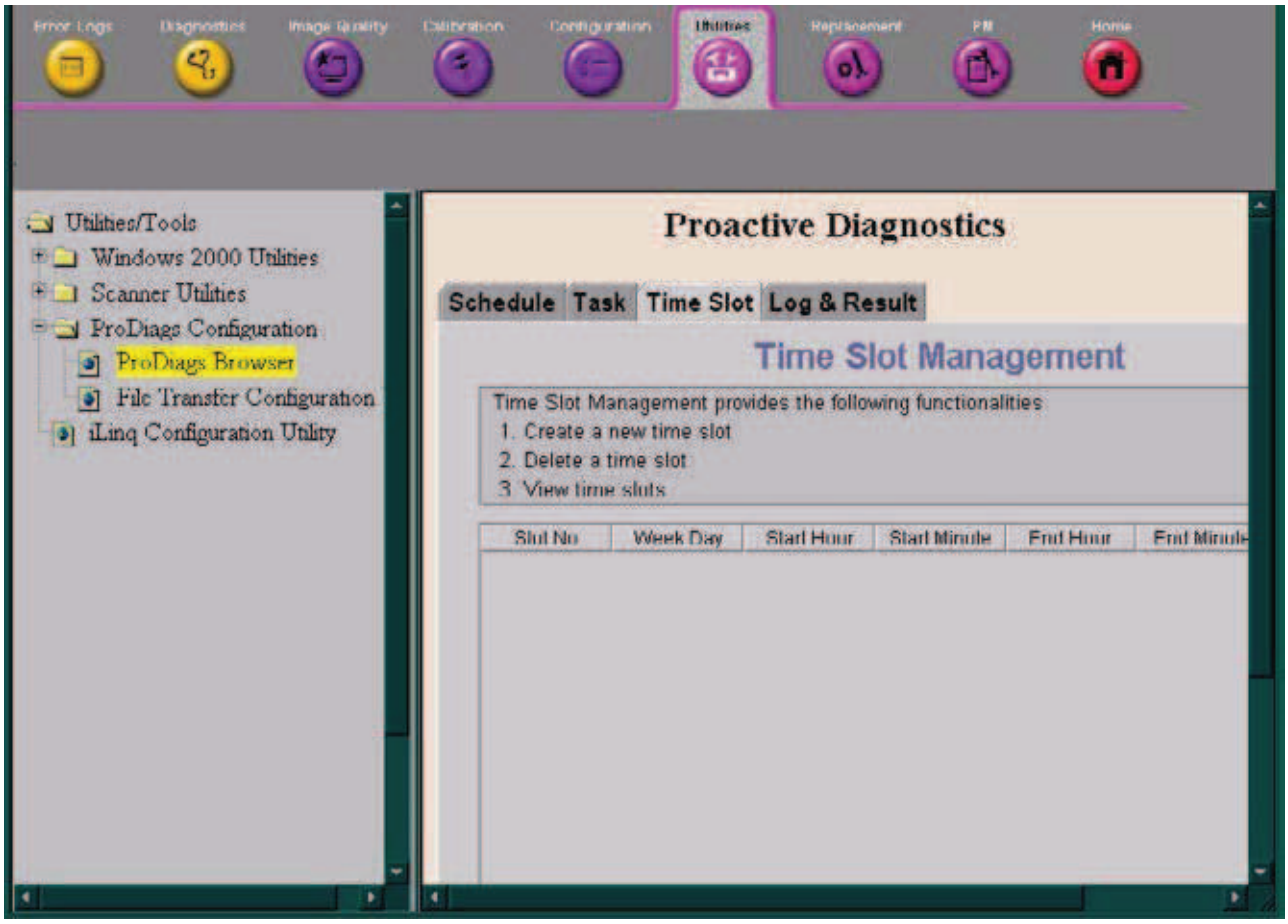


Figure 7-93 ProDiags Browser - Time Slot

The **Time Slot** tab indicates the time slots available for setting tasks.

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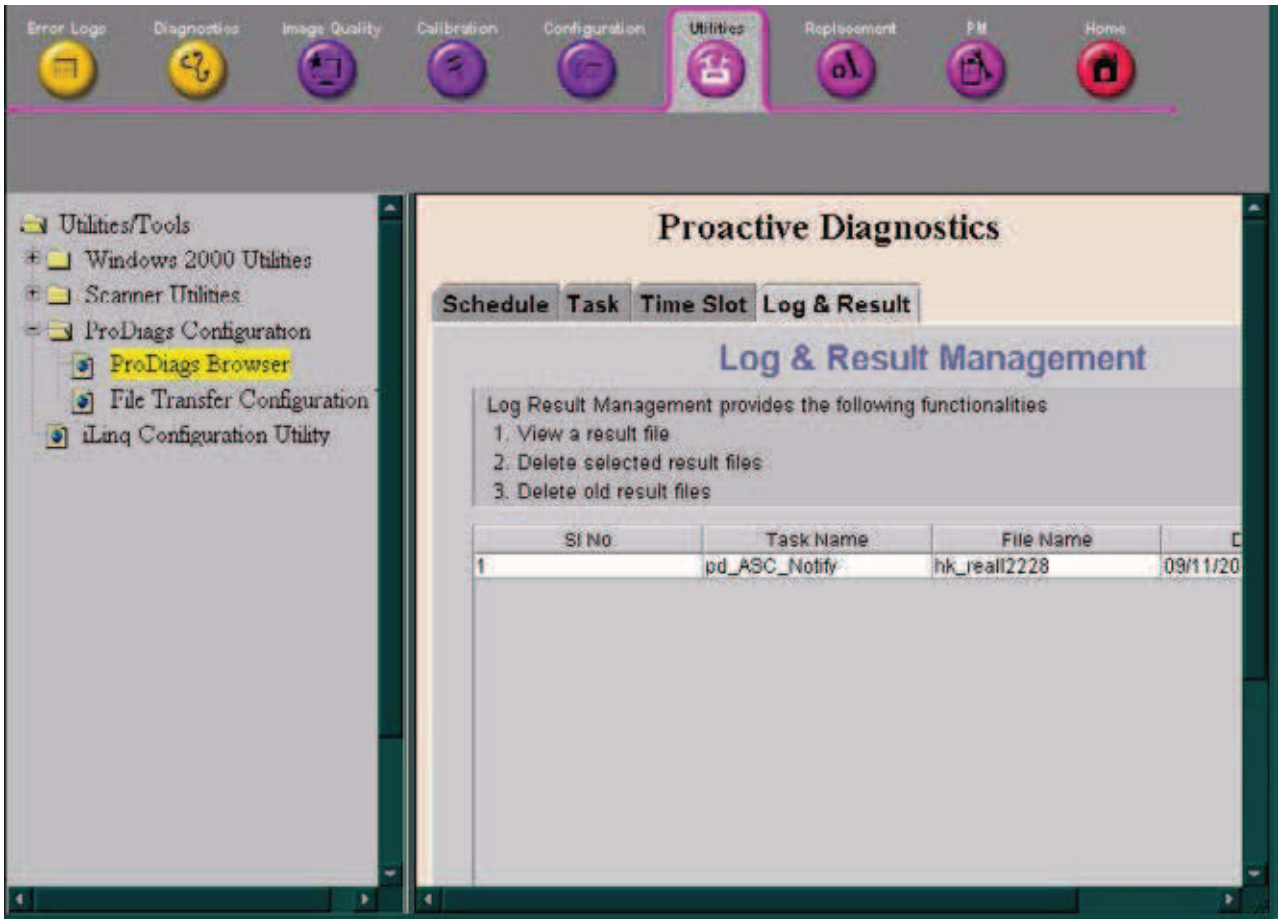


Figure 7-94 ProDiags Browser - Log and Result

The **Log & Result** tab indicates the logs and results of any tasks that have been performed.

At any of the above-mentioned tabs, you can *Add* or *Delete* a task from the list of displayed tasks.

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7-5-8-3-2 File Transfer Configuration

The **File Transfer Configuration** utility can be used to transfer files to the GE Service center. Follow the on-screen instructions as shown below.

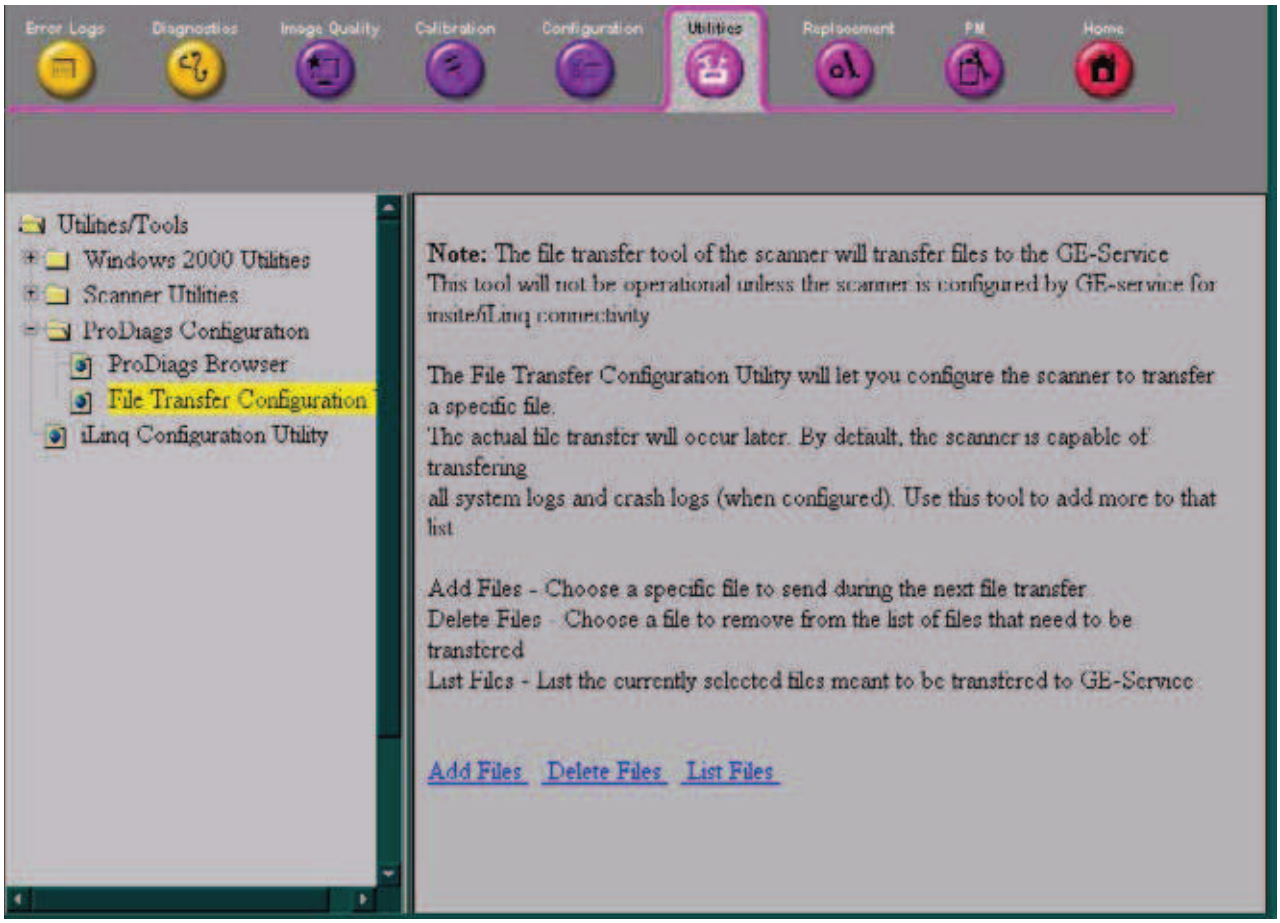


Figure 7-95 File Transfer Configuration

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7-5-8-3-3 iLinq Configuration Utility

When the **iLinq Configuration Utility** option is selected in the left pane of the Configuration page (see Figure 7-96 below) - the *InSite Interactive Platform Configuration* window is displayed, as shown in Figure 7-97 on page 7-121.

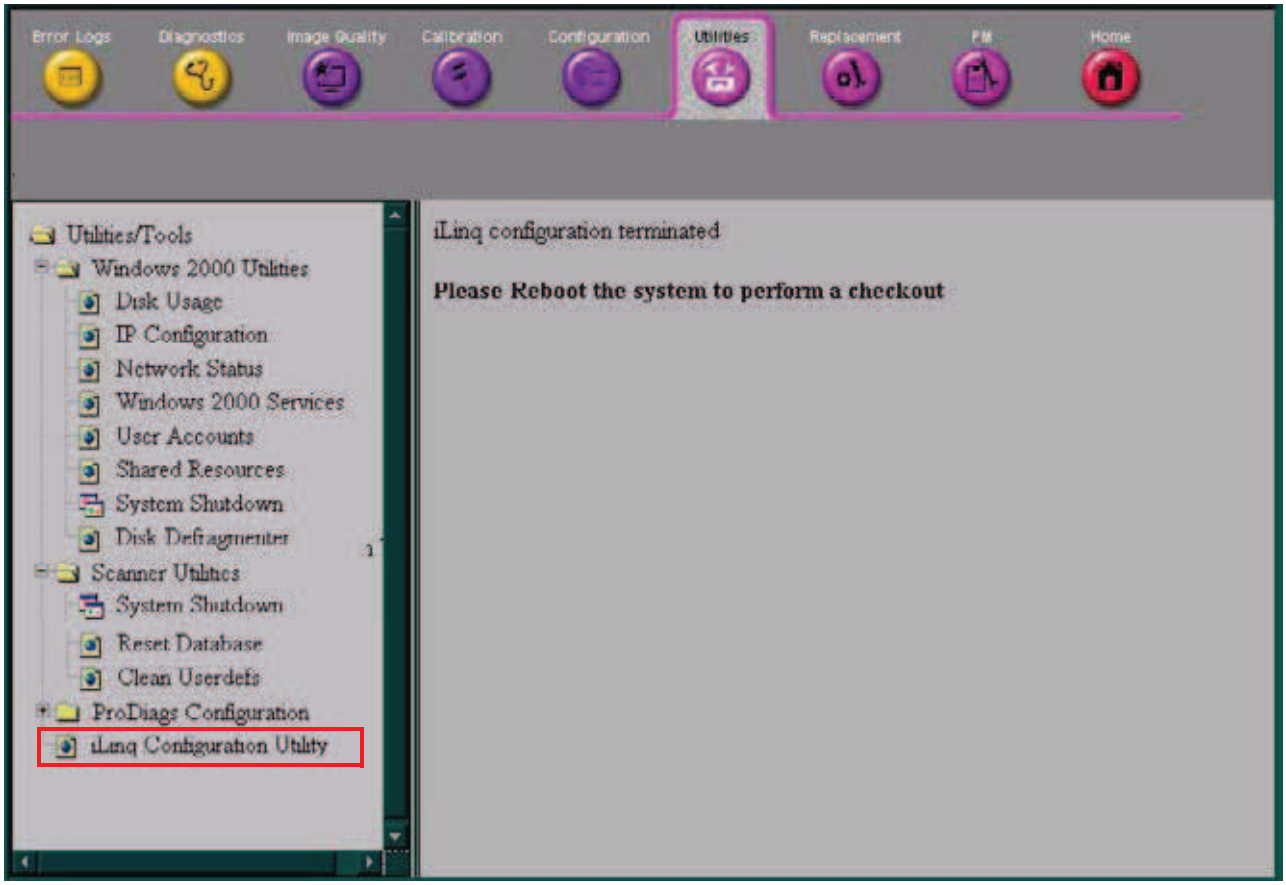


Figure 7-96 iLinq Configuration Utility

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Click **Accept** and select the modem device as the communication device to the OLC in the **Device Connection** tab, also shown below.

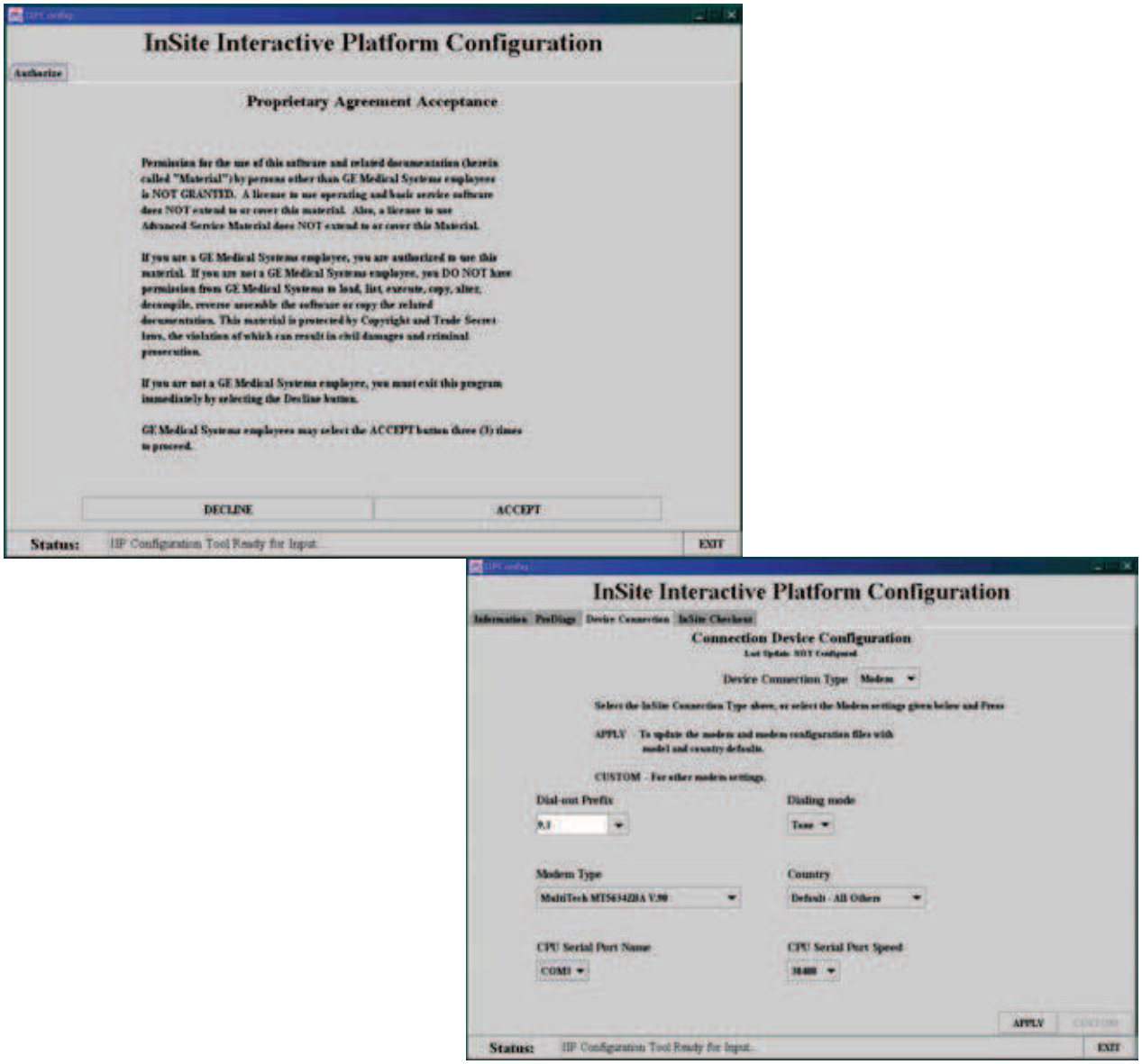


Figure 7-97 InSite Interactive Platform Configuration

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Contact the OLC to receive all the setup information required for the **InSite Checkout** tab, as shown below. When all the settings have been entered, click the **CHECKOUT NOW** button twice. The OLC will attempt to communicate with your ultrasound unit via the modem. The unit should be connected to a direct telephone line, so that the OLC can dial in directly to the scanner.

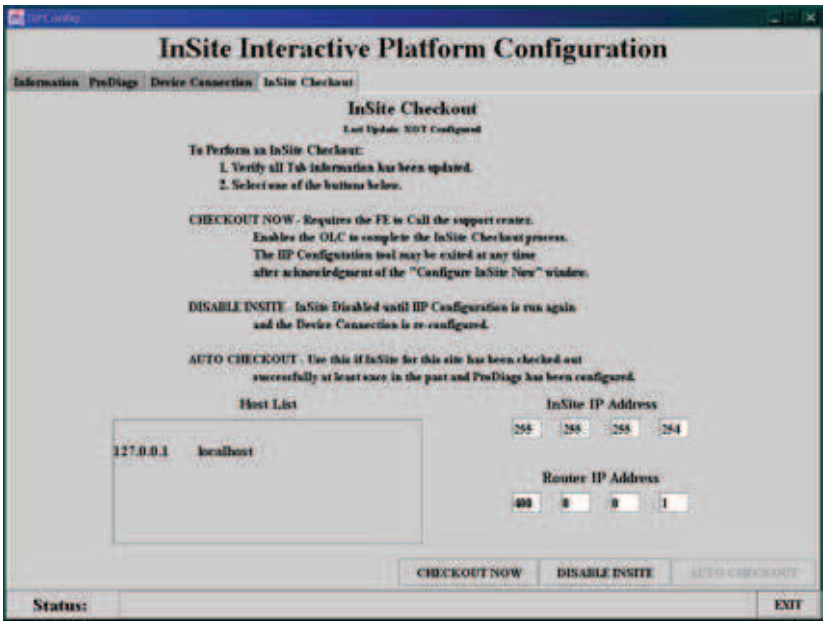


Figure 7-98 InSite Checkout Tab

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iLinq IP Save/Restore

The **iLinq IP Save/Restore** utility, which is accessed from the *System Configuration* window (under the *Technical Support* Tab), will allow you to save the iLinq IP settings to the hard disk, as described below.

iLinq IP Save Procedure:

1) In the System Configuration window, click on the **Technical Support** tab - see Figure 7-99 below.

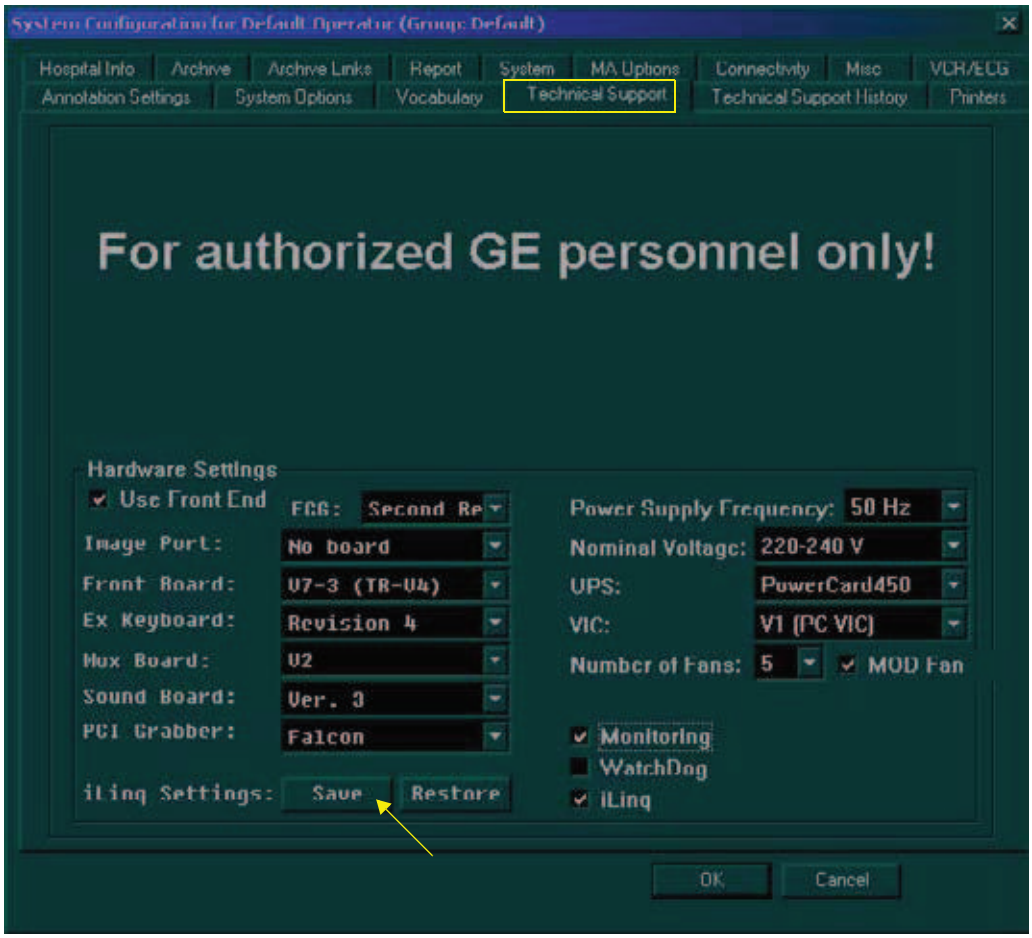


Figure 7-99 Technical Support Tab

2) Trackball to **iLing Settings: Save** and press **Select**.

   The system saves the presets to the disk.

3) TRACKBALL to **OK** and press **Select**. The scanning screen is re-displayed.

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iLinq IP Restore Procedure:

When required (for example, after software re-installation), you can perform Restore of iLinq IP settings from the hard disk, as follows:

1) From the System Configuration window (under the *Technical Support* Tab - refer to Figure 7-99, above) trackball to **iLinq Settings: Restore** and press **Select.**

   A blank screen appears; wait for a while until the *phone and modem options* message is displayed then TRACKBALL to **OK** and press **Select**.

2) Wait while the restore process is running - this may take a while.
   When complete, a message is displayed prompting for system shutdown.

3.) Perform a full system shutdown, then re-start the Vivid™ 3 system.

   The restored iLinq IP settings will now be operational.

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7-5-9 Replacement Page

When the *Replacement* page is selected, as shown below, part replacement details and ordering information is displayed, as described in *Chapter 9 - Renewal Parts*.

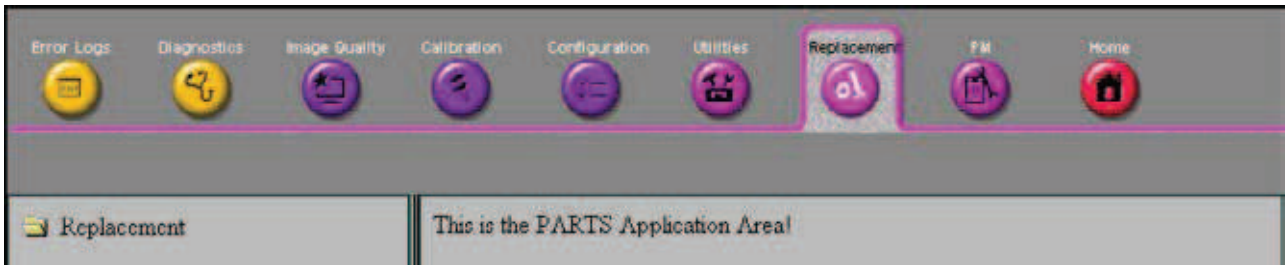


Figure 7-100 Replacement Page

Note: This page is not populated in this version.

7-5-10 PM Page

When the *PM* page is selected, as shown below, information about planned, proactive and preventive maintenance is displayed, as described in *Chapter 10 - Periodic Maintenance*.



Figure 7-101 PM Page

Note: This page is not populated in this version.

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Section 7-6
Automatic Error Log

The Vivid™ 3 automatically logs the software activity, sequences and error messages that occur during normal operation. Each day's activity is compressed into a single daily logger report, with a time stamp appearing in each line of the report. Additional user comments and screen captures, can also be included in the report. Each day's report is saved in the system for 90 days, during which time they can be recalled and saved to disk.

7-6-1 Adding Comments to the Daily Logger Report

In addition to automatic activity logging, you can also enter your own comments, as well as screen captures pertaining to system functionality. These comments are saved as part of the daily logger report.

1) When an error occurs, press **<Ctrl+F>** (or **<Alt+D>**) on the alphanumeric keyboard. The *Failure Report* window is displayed, as shown below:

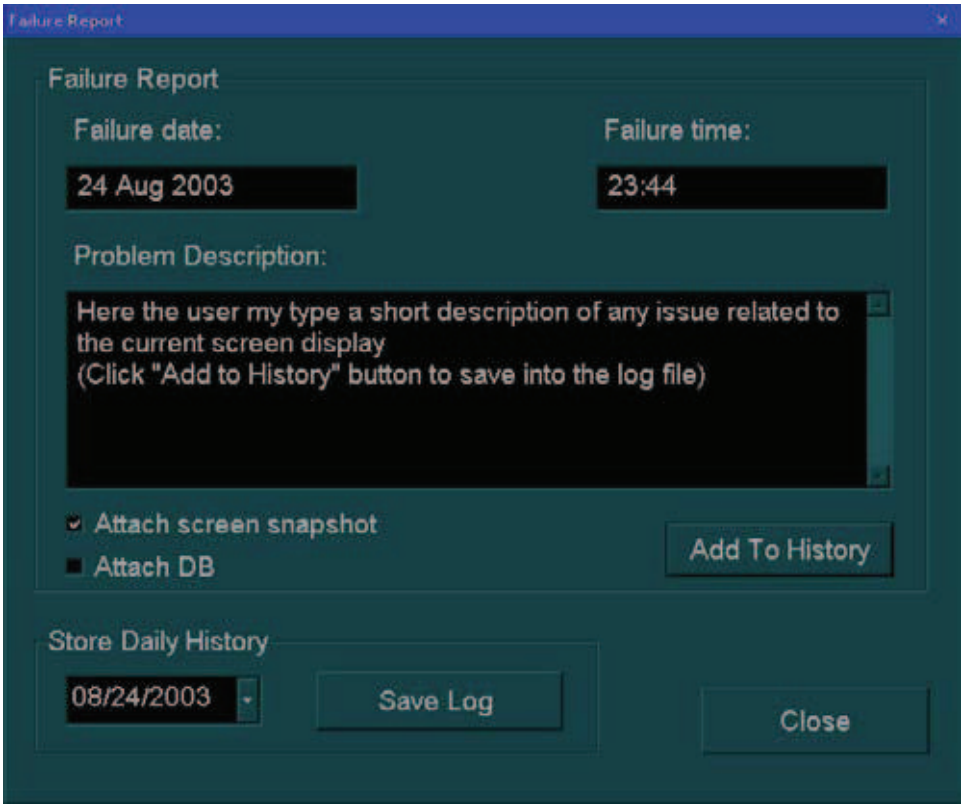


Figure 7-102 Failure Report Window

2) In the **Problem Description** area, enter a description of the problem, and any additional comments. If required, select the **Attach screen snapshot** checkbox to include a snapshot of the screen as it appeared before the *Failure Report* window was accessed.

3.) If required, select the **Attach DB** checkbox to attach information about the system archive and database to the report. This information will be added to the zip file.

4) Trackball to the **Add To History** button and press **Select**.

5) Trackball to the **Close** button and press **Select**.

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7-6-2 Saving the Logger Report

The daily logger reports are retained in the system for 90 days, during which time they can be recalled. In addition, each report can be downloaded to a floppy disk, for example in order to be sent to the servicing center.

1) Press **<Ctrl+F>** (or **<Alt+D>**) on the alphanumeric keyboard. The *Failure Report* window is displayed, as shown in Figure 7-102 on page 7-126.

2) Select the date on which the report that you want to save was generated from the calendar displayed when you expand the drop-down list in the **Store Daily History** area, as shown below. By default, the current date is displayed.

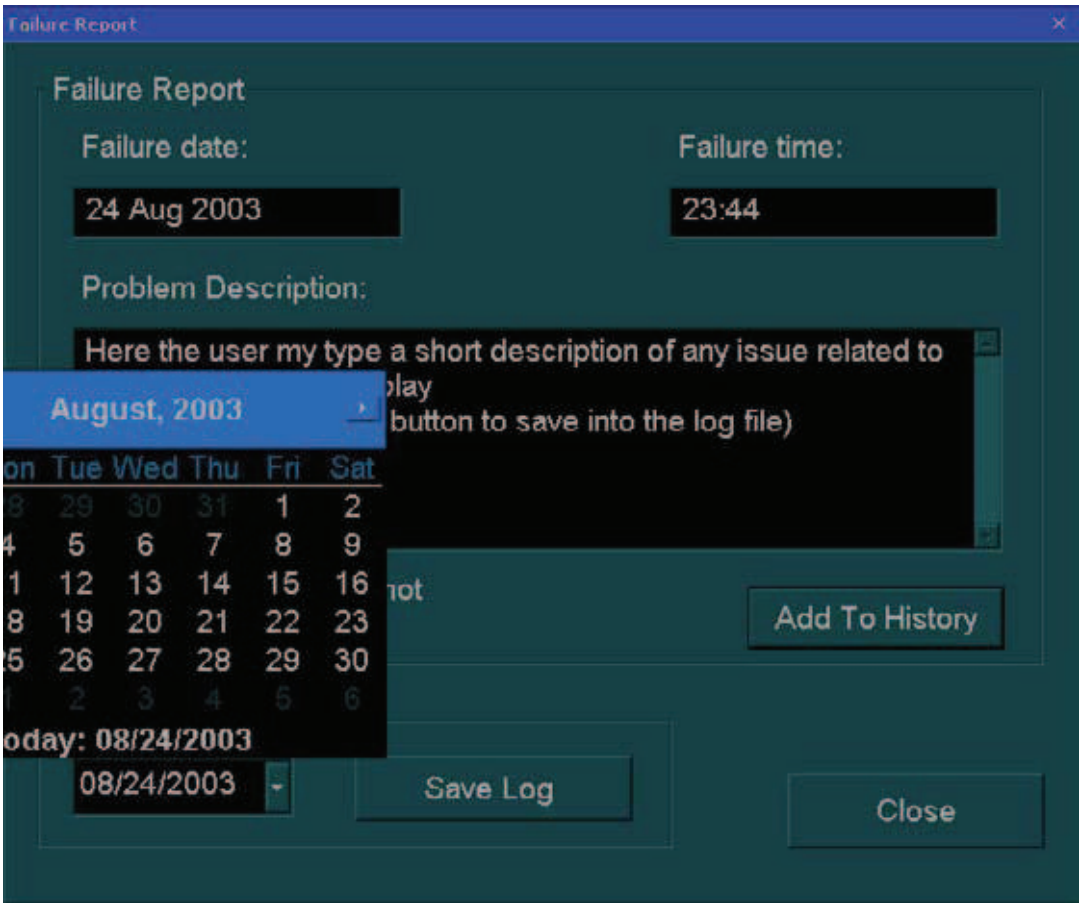


Figure 7-103 Failure Report Calendar

3) Insert an empty PC formatted diskette.

Note: An individual empty diskette is required for each report.

4) Trackball to the **Save To Diskette** button and press **Select**. The report is copied to the diskette as a single zipped file. If the file is too large for the diskette, insert additional diskettes as indicated. The file name will be identical on each diskette. When sending the report, send each file in a separate e-mail, indicating the correct order of the files.

7-6-3 Sending the Logger Report

Send the zipped file as an attachment to an e-mail message. In the e-mail message, briefly describe the problem and indicate approximately what time of day it occurred.

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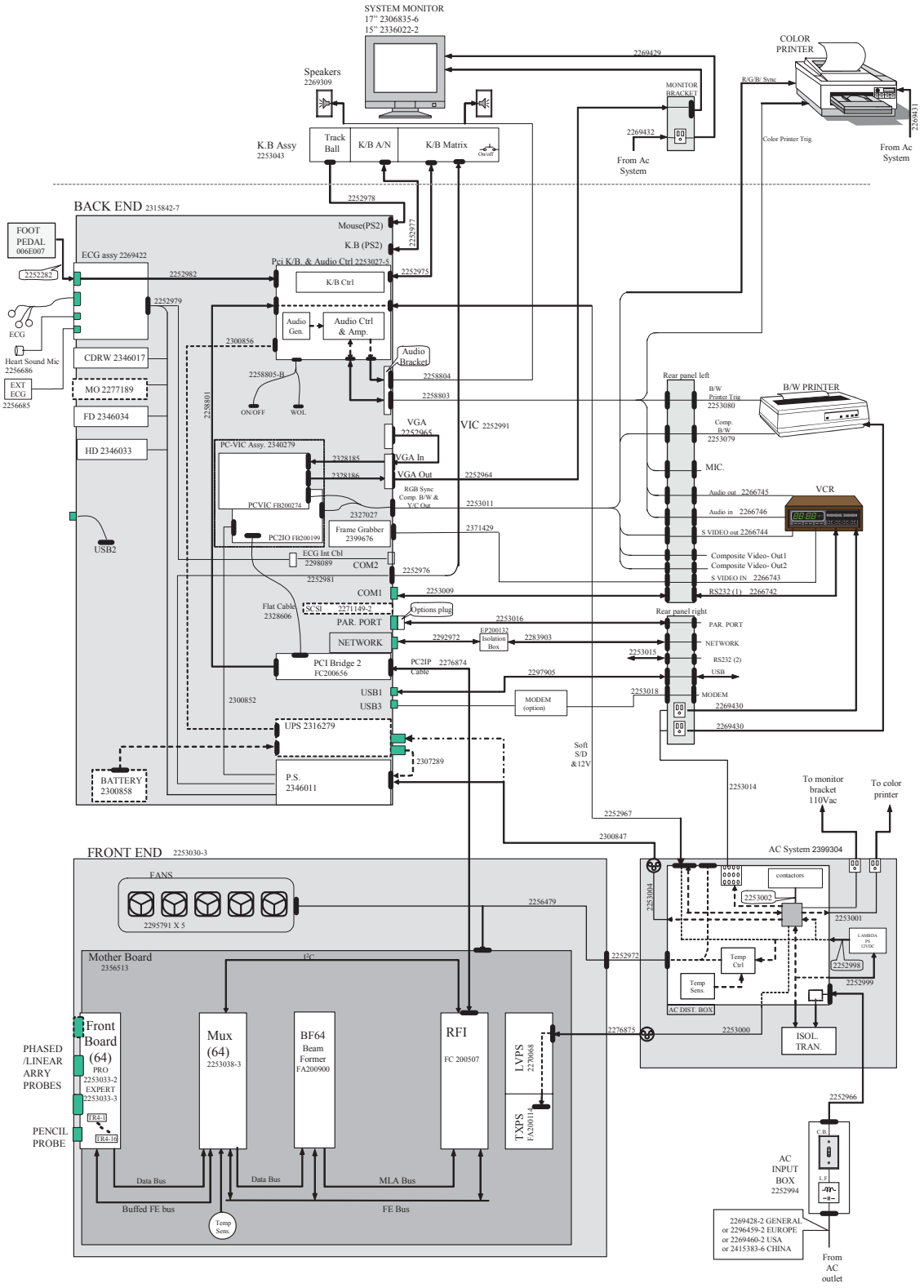


Figure 7-104 System Cabling Diagram - Vivid™ 3 BT03 (RFI Configuration)

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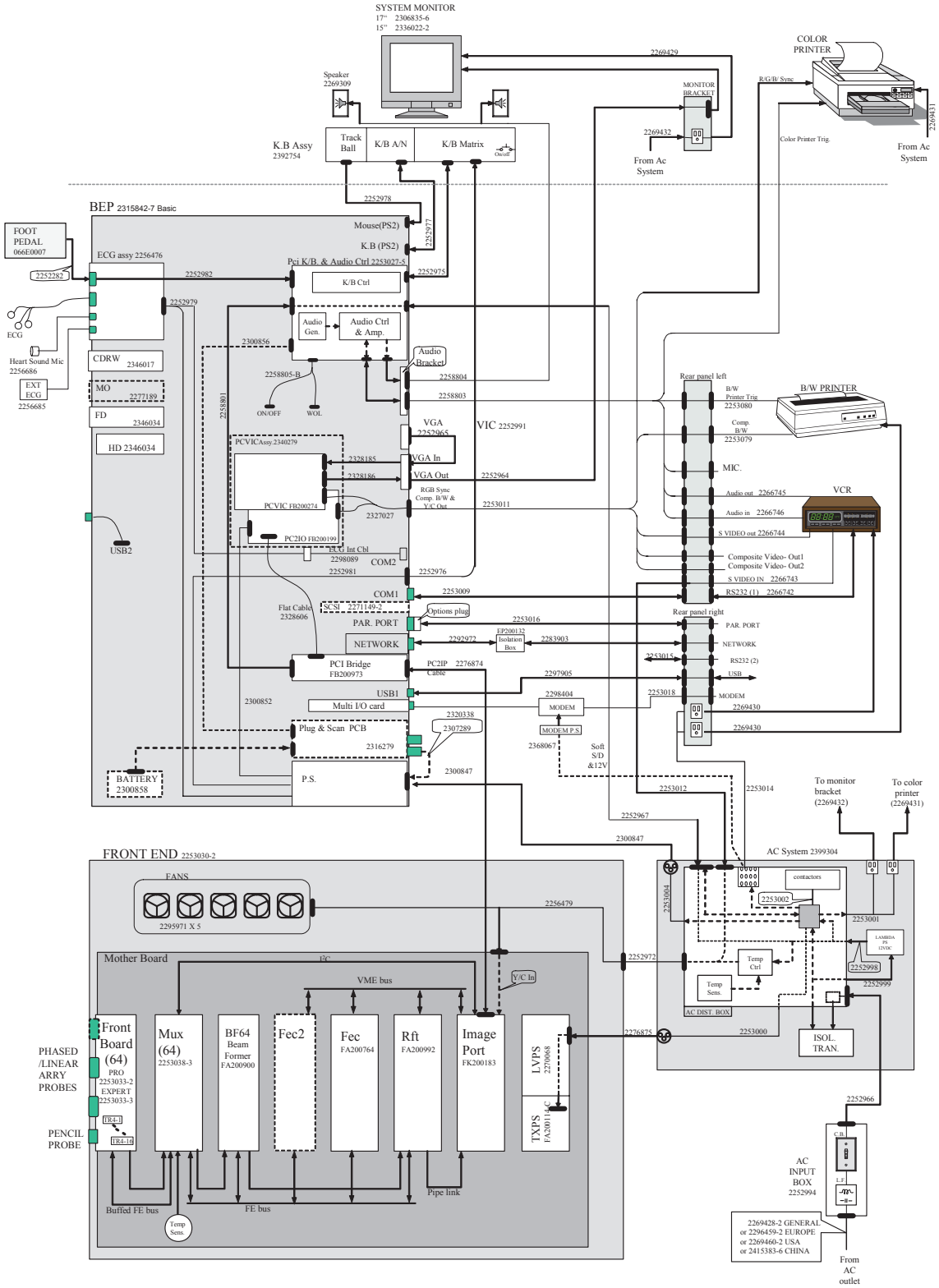


Figure 7-105 System Cabling Diagram - Vivid™ 3 BT03 (RFT Configuration)

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Chapter 8
Replacement Procedures

Section 8-1
Overview

8-1-1 Purpose of Chapter 8

This chapter provides replacement procedures for system parts.

Table 8-1 Contents in Chapter 8

Section	Description	Page Number
8-1	Overview	8-1
8-2	Cover Replacement Procedures	8-2
8-3	Control Console Components Replacement	8-27
8-4	Front End Parts Replacement	8-44
8-5	Back End Parts Replacement	8-54
8-6	Lower Section Components Replacement	8-99
8-7	Software Loading	8-121
8-8	Peripherals	8-123

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Section 8-2
Cover Replacement Procedures

8-2-1 Overview of Covers

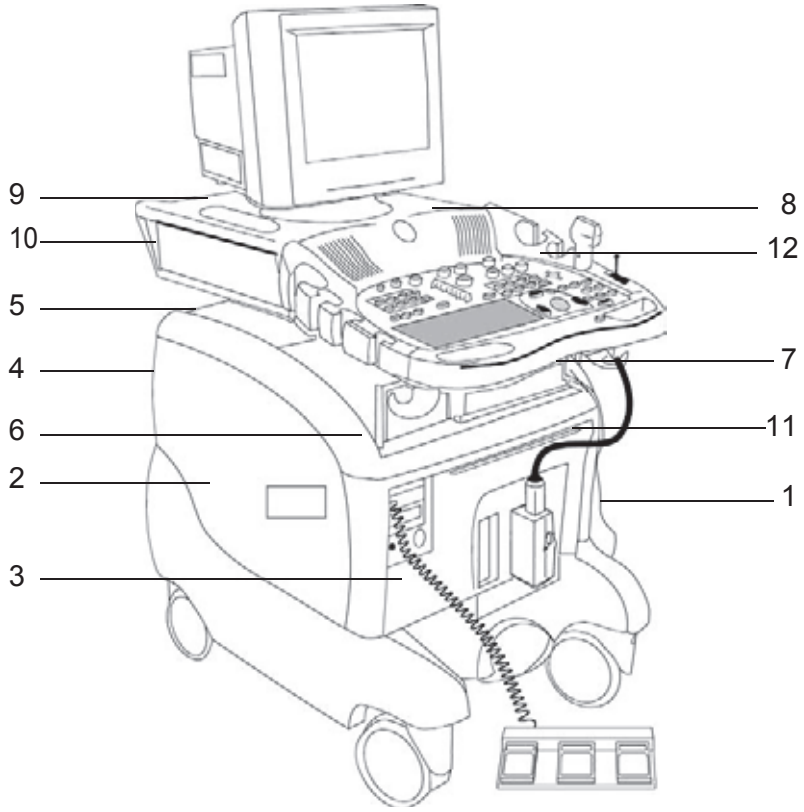


Figure 8-1 Vivid™ 3 Ultrasound Unit

Table 8-2 Vivid™ 3 Ultrasound Unit Covers (Figure 8-1)

Label	Item	Label	Item
1	Right Side Cover	7	Bottom Keyboard Cover (not shown)
2	Left Side Cover	8	Speakers Cover
3	Front Cover	9	Control Console Top Cover
4	Rear Cover (not shown)	10	Control Console Bottom Cover
5	Connector Panels Cover	11	Air Filter
6	Top Cover (Lower Section)	12	Probe Holders

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8-2-1-1 Preparations

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



DANGER: Electrical hazards exist at several points in the system. Familiarize yourself with all hazardous voltages and high current levels before removing any of the covers.



DANGER: DO NOT wear the ESD wrist band strap when removing parts from the power supply unit. Before removing any part of the power unit, turn the power OFF and disconnect the power cord.



CAUTION: Before removing circuit boards, turn the power OFF and wear the ESD wrist band strap.

8-2-1-2 Order of Cover Removal

Remove the side covers in the following order:

- Side Covers, as described on page 8-4.
- Front Cover, as described on page 8-5.
- Rear Cover, as described on page 8-7.
- Connector Panels, as described on page 8-8.
- Top Cover (lower section), as described on page 8-9.
- Gas Spring Cover, as described on page 8-13.
- Bottom Keyboard Cover, as described on page 8-14.
- Speakers Cover, as described on page 8-16.
- Control Console Bottom Cover, as described on page 8-17.
- Control Console Top Cover, as described on page 8-20.

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8-2-2 Side Covers Replacement Procedures

8-2-2-1 Tools

Use the appropriate Phillips-type screw drivers, as indicated in the side cover replacement procedures.

8-2-2-2 Preparations

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

8-2-2-3 Side Covers Removal Procedure

1) Remove the screw from each of the wheel arches of the two side covers (four in total), an example of which is shown below. To easily access the screws, turn the wheels inwards by 90 degrees.

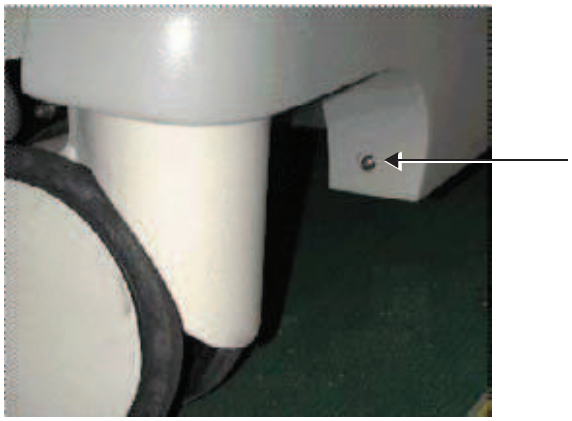


Figure 8-2 Wheel Arch Screw

2) Slide the *right* side cover down and outwards until it is free from its holders.
3) Slide the *left* side cover down and outwards until it is free from its holders.

8-2-2-4 Side Covers Installation Procedure

1) Slide the *right* side cover up and inwards until it fits in place.
2) Slide the *left* side cover up and inwards until it fits in place.
3) Fasten the screw in each of the wheel arches of the two side covers (four in total), an example of which is shown in Figure 8-2, above. To easily access the screws, turn the wheels inwards by 90 degrees.

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8-2-3 Front Cover and Air Filter Replacement Procedures

8-2-3-1 Tools

Use the appropriate Phillips-type screw drivers, as indicated in the front cover and air filter replacement procedures.

8-2-3-2 Preparations

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

8-2-3-3 Front Cover Removal Procedure

1) Pull out and remove the air filter, as shown below:



Figure 8-3 Air Filter

2) Remove the side covers, as described Side Covers Replacement Procedures on page 8 - 4.

3) The front cover is secured to the base of the main metal frame by a metal bracket on each side. Remove the upper screw from each bracket, and loosen the lower screw securing the bracket to the metal frame, as shown below:

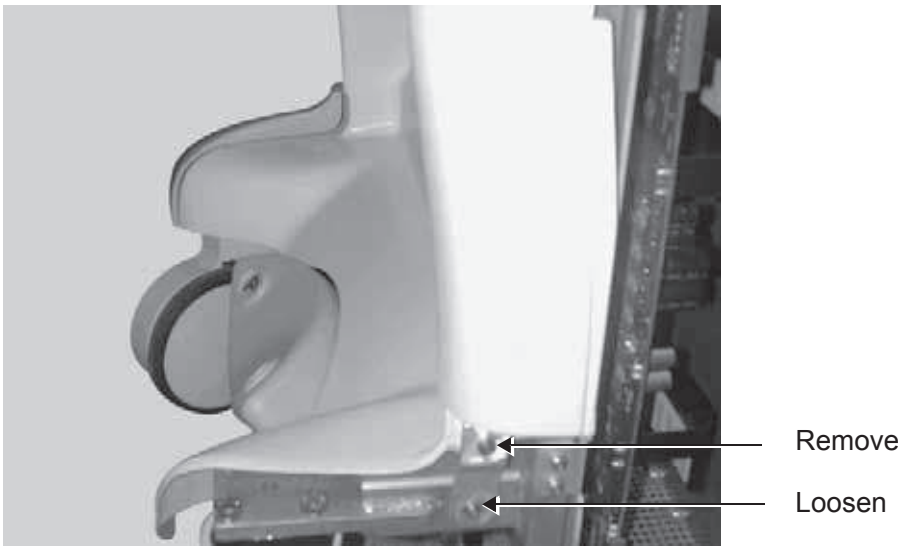


Figure 8-4 Front Cover Bracket Screws

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4) Remove the three screws located across the front of the top cover, shown below:

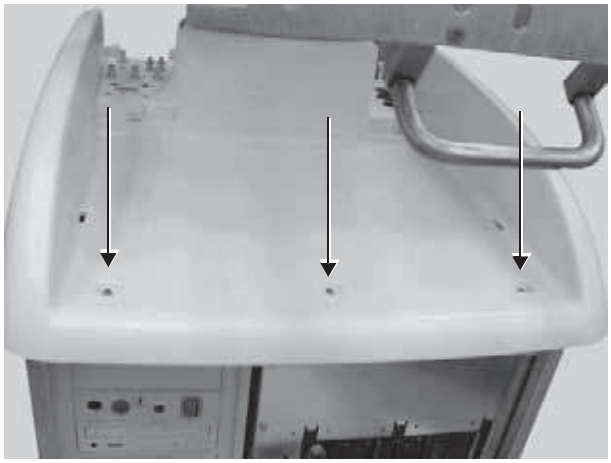


Figure 8-5 Top Cover Screws (Lower Section)

5) In order to free the front cover, grip the cover by its lower sides, and push upwards while pulling it towards you.

8-2-3-4 Front Cover Installation Procedure

1) Return the front cover to its original position at the front of the unit, taking care to first insert its upper edge under the top cover.
2) Fasten the front cover with the three screws at the edge of the top cover, as shown in Figure 8-5, above.
3) Fasten the left and right brackets at the lower end of the front cover, one each side, by tightening each bracket with its two screws to the main metal frame, as shown in Figure 8-4 on page 8-5.
4) Install the side covers, as described Side Covers Installation Procedure on page 8 - 4.
5) Insert the air filter to 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*.

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8-2-4 Rear Cover Replacement Procedures

8-2-4-1 Tools

Use the appropriate Phillips-type screw drivers, as indicated in the rear cover replacement procedures.

8-2-4-2 Preparations

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

8-2-4-3 Rear Cover Removal Procedure

1) Remove the side covers, as described in the Side Covers Replacement Procedures on page 8 - 4.
2) Remove the four screws that secure the rear cover in position. Two screws are located on the sides of the rear cover, as shown below. The other two screws are located in the AC Input Box Unit, as shown in Figure 8-7 below.



Figure 8-6 Rear Cover Screws



Figure 8-7 Rear Cover Screws in AC Input Box Unit

3.) Remove the rear cover.

8-2-4-4 Rear Cover Installation Procedure

1) Return the rear cover in its original position.
2) Insert the four screws and secure the rear cover in position. Two screws are located on the sides of the rear cover, as shown in Figure 8-6, above. The remaining two screws are located in the AC Input Box Unit, as shown in Figure 8-7, above.
3) Install the side covers, as described in the Side Covers Installation Procedure on page 8 - 4.

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8-2-5 Connector Panels Cover Replacement Procedures

8-2-5-1 Tools

Use the appropriate Phillips-type screw drivers, in indicated in the connector panels cover replacement procedures.

8-2-5-2 Preparations

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

8-2-5-3 Connector Panels Cover Removal Procedure

1) Remove the two screws, located one on either side of the cover.
2) Lift and remove the cover.



Figure 8-8 Connector Panels Cover

8-2-5-4 Connector Panels Cover Installation Procedure

1) Return the cover to its original position above the connector panels.
2) Insert the two screws, located one on either side of the cover, and tighten them firmly.

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8-2-6 Top Cover (Lower Section) Replacement Procedures

8-2-6-1 Tools

Use the appropriate Phillips-type screw drivers, and a wire cutter as indicated in the replacement procedures for the lower section of the top cover.

8-2-6-2 Preparations

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

8-2-6-3 Top Cover Lower Section Removal Procedure

1) Remove the side covers, as described in the Side Covers Replacement Procedures on page 8 - 4.
2) Remove the rear cover, as described in the Rear Cover Replacement Procedures on page 8 - 7.
3) Raise the control console to its *maximum* height.
4) Remove the two screws located in the brackets underneath the lower section of the top cover, one on either side of the unit, as shown below:

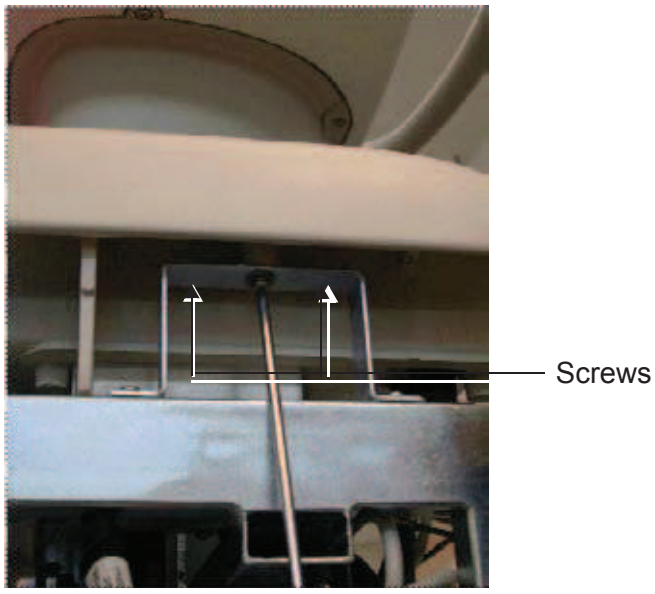


Figure 8-9 Top Cover (Lower Section) Screws

5) Remove the connectors panels cover, as described the Connector Panels Cover Replacement Procedures on page 8 - 8.
6) Unplug all the peripheral cables connected to the rear connector panels.

Note: Pay attention to the location of each cable, as each one must be reconnected to its original location during the installation process.

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7) Cut the cable tie holding the AC cable (P/N 2253013) to the other cables, and unplug the AC cable from the AC Outlet in the AC Distribution Box, as shown below:

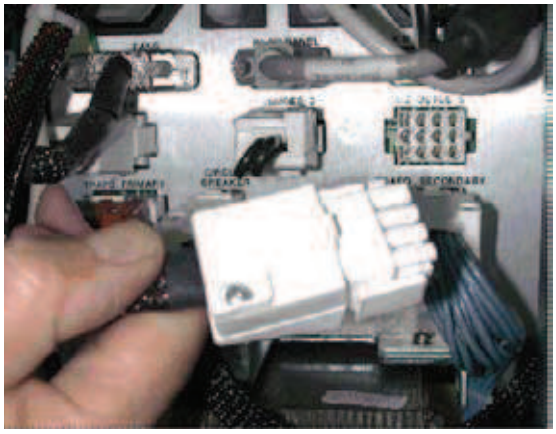


Figure 8-10 AC Distribution Box Cables

CAUTION: Do not unplug any cables from below the rear panels, except for those indicated in this procedure.

8) Viewing the unit from behind, there are two small metal plates at the back of the top cover, each with two screws. Remove only the outer screw from each plate, releasing the small section of the collar with its two metal plates attached, as shown below:



Figure 8-11 Top Cover Collar

9) Remove the section of the collar released in the previous step, leaving an open gap at the rear of the top cover, as shown below:



Figure 8-12 Top Cover with Collar Removed

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10) Remove the four screws that secure each connector panel to the top cover.

11) Gently pull the rear panels backwards, leaving them hanging loosely on their cables, as shown below:

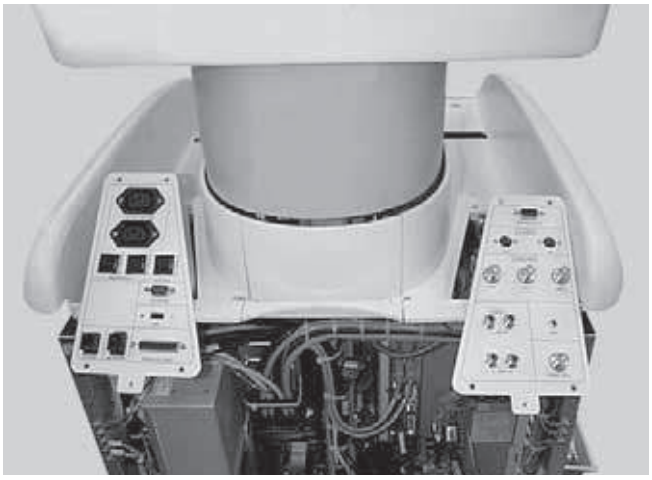


Figure 8-13 Connector Panels - Loosened

12) Remove the two screws securing the rear section of the gas spring cover, and then remove this cover.

13) Remove the three screws securing the remaining section of the gas spring cover, shown below, and lower it into the collar of the top cover.



Figure 8-14 Gas Spring Cover Screws

CAUTION: The remaining section of the gas spring cover cannot be removed at this stage. Do not attempt to remove it.

14) Remove the three screws located at the front edge of the top cover, and allow it to sink down into the top cover collar.

15) Slightly lift the top cover, together with the remaining section of the gas spring cover, and turn them 90 degrees *clockwise*.

16) Keep the opened gap of the gas spring cover parallel to the opened gap of the top cover's collar, and pull them out together in a *clockwise* direction.

17) Remove the gas spring cover section from the top cover.

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8-2-6-4 Top Cover Lower Section Installation Procedure

1) Return the gas spring cover section back to its original position in the top cover.
2) Align the opened gap of the gas spring cover to be in parallel with the opened gap of the top cover collar.
3) Hold the top cover and the gas spring cover section so that they are at a 90-degree angle to the front of the unit, then insert them from the *left* side of the unit through their opened gap.
4) Insert and screw the three screws located at the top edge of the top cover, shown in Figure 8-5 on page 8-6.
5) Lift the gas cover spring cover from the top cover and fasten it with the three screws in its original location.
6) Return the rear section of the gas spring cover to its original position and fasten it with the two screws shown in Figure 8-14 on page 8-11.
7) Gently fit the left and right connector panels back to their original position on the top cover and fasten each with its four screws.
8) Mount the small section of the top cover collar, closing the open gap at the rear of the top cover, and fasten it to the top cover with the two screws shown in Figure 8-11 on page 8-10.
9) Plug in the AC cable (P/N 2253013) to the AC Dis. Box, shown in Figure 8-10 on page 8-10, and secure the cable to the other cables with a tie-wrap.
10) Plug all peripheral cables into their original locations in the connector panels.
11) Return the connectors panels cover, as described in the Connector Panels Cover Installation Procedure on page 8 - 8.
12) Fasten the top cover with the two screws located in the brackets underneath the top cover, on either side of the unit, as shown in Figure 8-9 on page 8-9.
13) Return the rear cover, as described in the Rear Cover Installation Procedure on page 8 - 7.
14) Return the side covers, as described in the Side Covers Installation Procedure on page 8 - 4.

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8-2-7 Gas Spring Cover Replacement Procedure

8-2-7-1 Tools

Use the appropriate Phillips-type screw drivers, as indicated in the gas spring cover replacement procedures.

8-2-7-2 Preparation

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

8-2-7-3 Gas Spring Cover Removal Procedure

The procedure for removing the gas spring cover is identical to the procedure for removing the lower section of the top cover, as described in the Top Cover Lower Section Removal Procedure on page 8 - 9.

8-2-7-4 Gas Spring Cover Installation Procedure

The procedure for installing the gas spring cover is identical to the procedure for installing the lower section of the top cover, as described in the Top Cover Lower Section Installation Procedure on page 8 - 12.

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8-2-8 Bottom Keyboard Cover Replacement Procedure

8-2-8-1 Tools

Use the appropriate Phillips-type screw drivers, as indicated in the bottom keyboard cover replacement procedures.

8-2-8-2 Preparation

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

8-2-8-3 Bottom Keyboard Cover Removal Procedure

1) Raise the control console monitor to its *maximum* height.
2) Remove the screws in each of the probe cable hooks located underneath the keyboard, and then remove the cable hooks.



Figure 8-15 Removing Probe Cable Hooks under Keyboard Cover

3) With one hand, hold the Up/Down (height adjustment) handle, while pulling the cover down towards you with your other hand until the cover is free.
4) Lower the rear end of the bottom keyboard cover and free it from the Up/Down handle by passing the handle through the slot on the cover, as shown Figure 8-16 below.

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Figure 8-16 Removing the Bottom Keyboard Cover

8-2-8-4 Bottom Keyboard Cover Installation Procedure

1) Raise the control console monitor to its *maximum* height.
2) Position the bottom keyboard cover so that the Up/Down (height adjustment) handle is correctly aligned with the slot on the cover.
3) With one hand, lift the bottom keyboard cover upwards while using the other hand to guide the Up/Down handle down through the slot in the cover. Push the cover all the way up to return it to its original location (refer to Figure 8-16, above).
4) Return the cable hooks to their original position underneath the keyboard and fasten them securely with their screws - refer to Figure 8-15 on page 8-14.

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8-2-9 Speaker Cover Replacement Procedure

8-2-9-1 Tools

Use the appropriate Phillips-type screw drivers, as indicated in the speakers cover replacement procedures.

8-2-9-2 Preparation

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

8-2-9-3 Speaker Cover Removal Procedure

1) Remove the bottom keyboard cover, as described in the Bottom Keyboard Cover Removal Procedure on page 8 - 14.
2) Remove the two screws located beneath the keyboard on either side, and the fastening bracket in the middle, that secure the speaker cover.

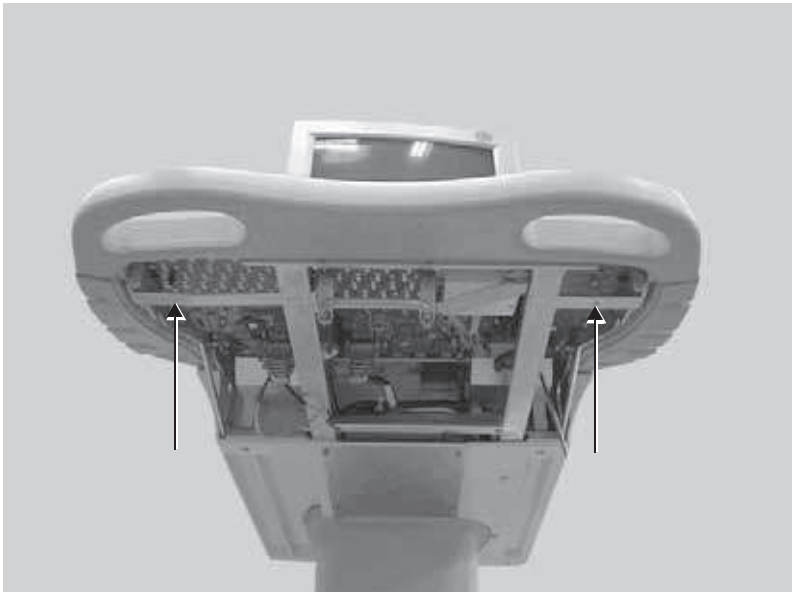


Figure 8-17 Speaker Cover Screws

3) Remove the speaker cover.

8-2-9-4 Speaker Cover Installation Procedure

1) Return the speaker cover to its original position.
2) Fasten the cover with two screws and bracket in the middle, beneath the keyboard. Before tightening the fastening screws, adjust the speaker cover to fit properly and symmetrically.
3) Install the bottom keyboard cover, as described in the Bottom Keyboard Cover Installation Procedure on page 8 - 15.

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8-2-10 Control Console Bottom Cover (Upper Section) Replacement Procedure

8-2-10-1 Tools

Use the appropriate Phillips-type screw drivers, as indicated in the replacement procedures of the upper section of the control console's bottom cover.

8-2-10-2 Preparation

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

8-2-10-3 Control Console Bottom Cover (Upper Section) Removal Procedure

1) Raise the control console to its *maximum* height.
2) Remove any peripherals.
3) Unplug the AC cable and VGA cable from the rear of the control console, as shown below:

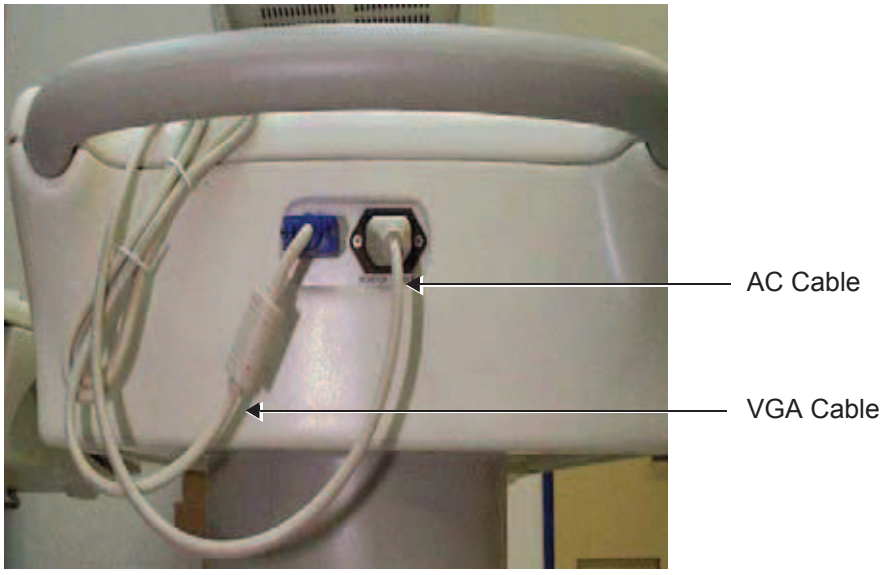


Figure 8-18 AC and VGA Cables at Rear of Control Console

4) Remove the two screws that fasten the rear section of the gas spring cover, and remove this section.
5) Remove the three screws that fasten the front section of the gas spring cover, and allow this section to sink down into the top cover collar.
6) Remove the two screws located on the white painted metal shelf inside the compartment that is located on the left side of the control console, and remove this shelf.

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7) Loosen the two screws fastening the AC/VGA connectors box. These screws can be accessed from the opened space at the rear of the gas spring using a long screw driver, as shown below:



Figure 8-19 Removing Screws from the AC/VGA Connectors Box

8) Remove the four screws fastening the metal cover under the front part of the control console, and remove this cover.

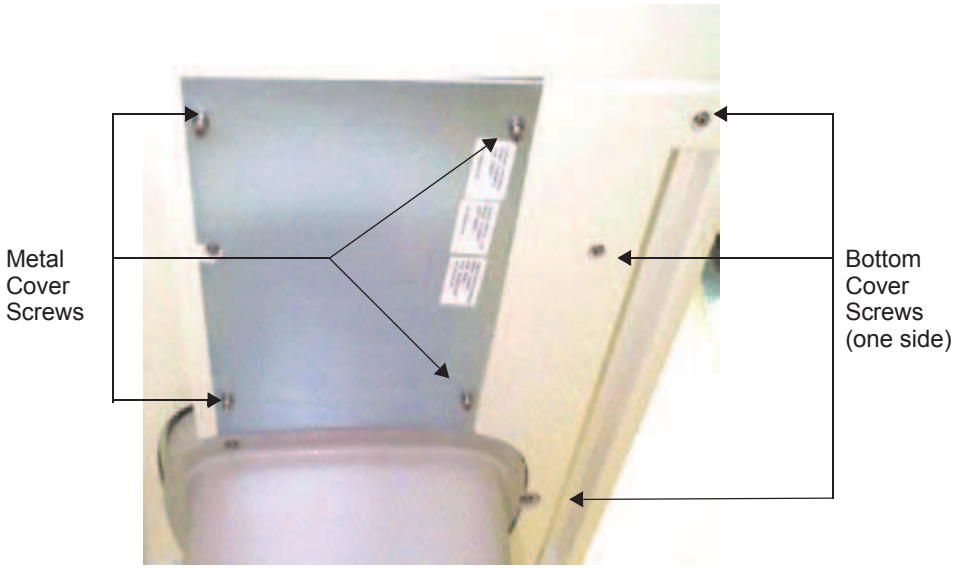


Figure 8-20 Removing the Metal Cover and Bottom Cover Screws

9) Remove the six screws fastening the bottom cover, three on either side.

10) Remove the bottom cover towards the rear of the machine.

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8-2-10-4 Control Console Bottom Cover (Upper Section) Installation Procedure

1) Raise the control console to its *maximum* height.
2) Return the bottom cover to its original position at the rear of the machine.
3) Fasten the bottom cover with its six screws, three on either side.
4) Fasten the bottom metal cover in its original position with its four screws.
5) Tighten the two fastening screws of the AC/VGA connectors box. These screws can be accessed from the opened space at the back of the gas spring, using a long screw driver.
6) Return the white painted metal shelf to its original position inside the compartment located on the left side of the control console and fasten it at its base with its two screws.
7) Lift the front section of the gas spring cover from the top cover collar and fasten it with its three screws, as shown in Figure 8-14 on page 8-11.
8) Return the rear section of the gas spring cover to its original position and fasten it with its two screws.
9) Plug the AC cable and VGA cable in to the rear of the control console, as shown in Figure 8-18 on page 8-17.
10) Return all peripherals to their original positions.

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8-2-11 Control Console Top Cover Replacement Procedure (Upper Section)

8-2-11-1 Tools

Use the appropriate Phillips-type screw drivers, as indicated in the replacement procedures for the upper section of the control console's top cover.

8-2-11-2 Preparation

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

8-2-11-3 Control Console Top Cover Removal Procedure (Upper Section)

1) Raise the control console to its *maximum* height.
2) Remove any peripherals.
3) Unplug the AC cable and VGA cable from the rear of the control console, as shown in Figure 8-18 on page 8-17.
4) Remove the monitor, as described in the Vivid™ 3 Monitor 15" Replacement Procedure (Samsung; P/N 2336022-2) on page 8 - 27.
5) Remove the two screws that fasten the rear section of the gas spring cover, and remove this section.
6) Remove the three screws that fasten the front section of the gas spring cover, and allow this section to sink down into the machine's top cover collar.
7) Remove the two fastening screws of the AC/VGA connectors box. These screws can be accessed from the opened space at the rear of the gas spring using a long screw driver, as shown in Figure 8-19 on page 8-18. Move the AC/VGA box away, to free it from the top cover.
8) Using a short screw driver, remove six of the eight screws that fasten the top cover to the metal frame. The remaining two screws are located next to the AC/VGA connectors box, and can be accessed from the opened space at the rear of the gas spring using a long screw driver.

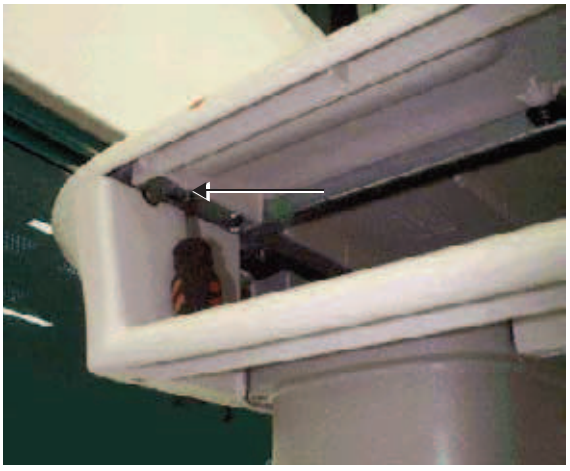


Figure 8-21 Removing Top Cover Screws (1)

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Figure 8-22 Removing Top Cover Screws (2)

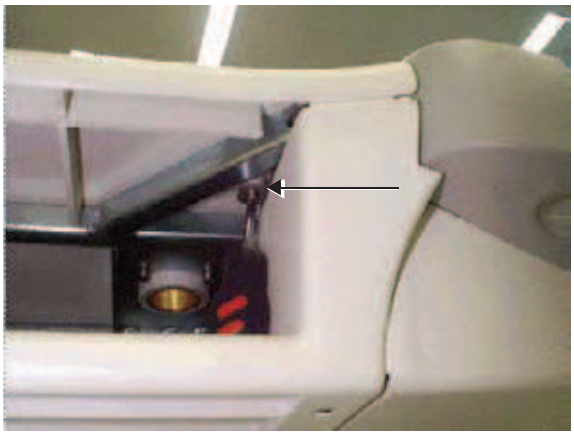


Figure 8-23 Removing Top Cover Screws (3)

9) Lift and remove the top cover.

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8-2-11-4 Control Console Top Cover Installation Procedure (Upper Section)

1) Raise the control console to its *maximum* height.
2) Return the top cover to its original position and fasten it with six of its eight screws using a short screw driver. The remaining two screws are located next to the location of the AC/VGA connectors box, and can be accessed from the opened space at the rear of the gas spring using a long screw driver.
3) Mount the AC/VGA connectors box into its original position and fasten it with its two screws. These screws can be accessed from the opened space at the rear of the gas spring using a long screw driver, as shown in Figure 8-19 on page 8-18.
4) Lift the front section of the gas spring cover from the top cover collar and fasten it with its three screws, as shown in Figure 8-14 on page 8-11.
5) Return the rear section of the gas spring cover into its original position and fasten it with its two screws.
6) Install the monitor, as described in the Vivid™ 3 Monitor 15" Replacement Procedure (Samsung; P/N 2336022-2) on page 8 - 27.
7) Plug the AC cable and VGA cable to the rear of the control console, as shown in Figure 8-18 on page 8-17.
8) Return all peripherals to their original locations.

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8-2-12 Right and Left Probe Holders Replacement Procedure

8-2-12-1 Tools

Use the appropriate Phillips-type screw drivers and an 8mm wrench, to replace the *right* and *left* probe holders.

8-2-12-2 Preparation

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

8-2-12-3 Right and Left Probe Holders Removal Procedure

1) Remove the bottom keyboard cover, as described in the Bottom Keyboard Cover Removal Procedure on page 8 - 14.
2) Remove the two 8mm securing nuts (located below the keyboard) that fasten each of the probe holders to the metal frame, as shown below:

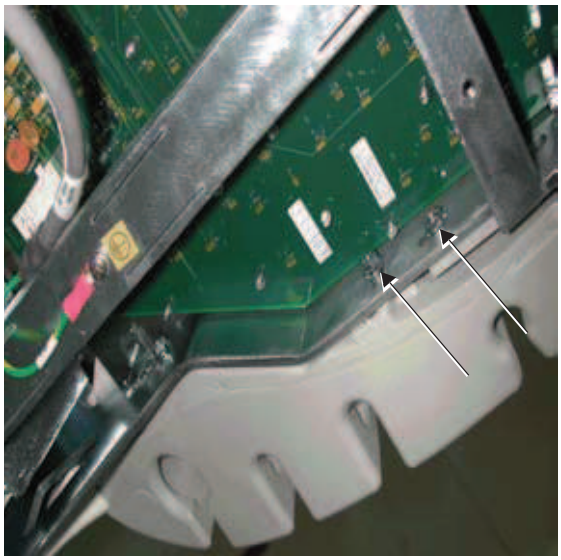


Figure 8-24 Probe Holder Nuts

3) Remove the probe holders.

8-2-12-4 Right and Left Probe Holders Installation Procedure

1) Return the probe holders to their original position on either side of the keyboard.
2) Fasten each probe holder beneath the keyboard with its two 8 mm securing nuts.
3) Return the bottom keyboard cover to its original position, as described in the Bottom Keyboard Cover Installation Procedure on page 8 - 15.

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8-2-13 Front Handle Replacement Procedure

8-2-13-1 Tools

Use the appropriate Phillips-type screw drivers and an 8mm wrench, to replace the *right* and *left* probe holders.

8-2-13-2 Preparation

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

8-2-13-3 Front Handle Removal Procedure

1) Remove the bottom keyboard cover, as described in the Bottom Keyboard Cover Removal Procedure on page 8 - 14.
2) Remove the two 8mm securing nuts (located below the keyboard) that fasten each of the probe holders to the metal frame - refer to Figure 8-24 on page 8-23.
3) Remove the probe holders.

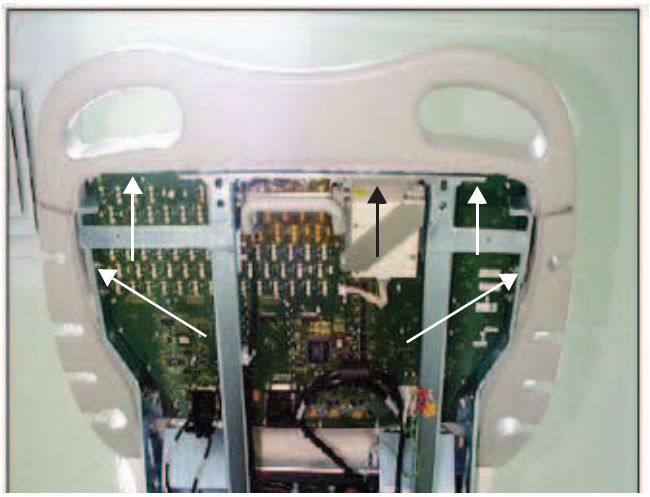


Figure 8-25 Front Handle Securing Nuts

4.) Remove the five 8mm securing nuts (located below the keyboard) that fasten Front Handle to the metal frame, as shown in Figure 8-25, above.
5) Remove the Front Handle.

8-2-13-4 Front Handle Installation Procedure

1) Return the Front Handle to its original position on the front of the machine.
2) Fasten each side of the Front Handle beneath the keyboard with its 8 mm securing nuts (five in total), as seen in Figure 8-25, above.
3) Return the probe holders to their original position on either side of the keyboard.
4) Fasten each probe holder beneath the keyboard with the two (8 mm) securing nuts, shown in Figure 8-24 on page 8-23.
5) Return the bottom keyboard cover to its original position, as described in the Bottom Keyboard Cover Installation Procedure on page 8 - 15.

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8-2-14 Rear Handle Replacement Procedure

NOTE: This procedure describes the replacement procedure for the Vivid 3 Rear Handle (P/N 225392-5)

8-2-14-1 Tools

Use the appropriate Phillips-type screw drivers and a combination wrench, as described in the procedures below.

8-2-14-2 Preparation

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

8-2-14-3 Rear Handle Removal Procedure

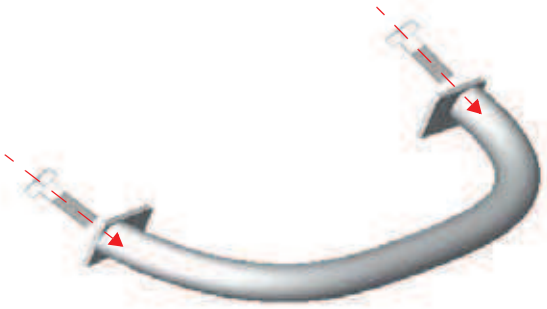


Figure 8-26 Vivid 3 Rear Handle

1) Carefully remove the monitor, as described in the Vivid™ 3 Monitor 15" Removal Procedure on page 8 - 28 or the Vivid 3 17" Monitor Removal - Procedure 1 on page 8 - 30 (as appropriate).
2.) Remove the control console lower cover, as described in the Control Console Bottom Cover (Upper Section) Removal Procedure on page 8 - 17.
3.) Remove the six screws from the metal service cover on the base assembly and remove the cover.
4.) Push the VGA connector slightly to allow the control console bottom cover (lower section) to slide down sufficiently to expose the rear handle securing screws (see Figure 8-27 below).
5.) Using a combination wrench, loosen and remove the two hexagon-head screws (one on each side) that secure the rear handle to the upper console cover, as shown in Figure 8-27.
6) Remove the Rear Handle.

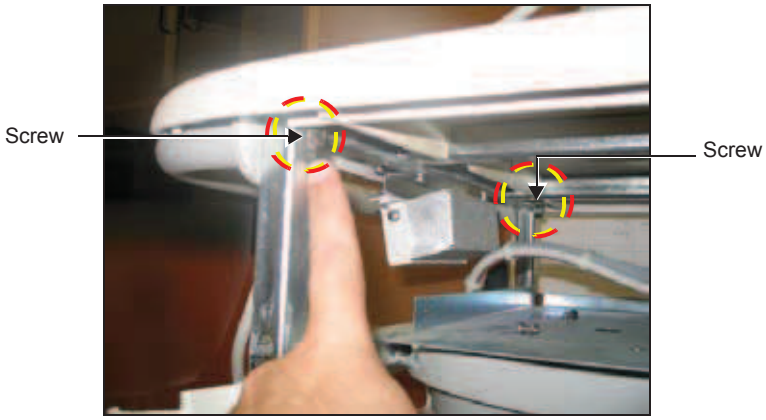


Figure 8-27 Rear Handle Securing Screws

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8-2-14-4 Rear Handle Installation Procedure

1) Return the Rear Handle to its original position on the rear of the control console.
2) Fasten each side of the Rear Handle to the rear of the upper console with the two hexagon-head screws previously removed (one on each side). Use a combination wrench to tighten the handle firmly in position (do not over-tighten the screws).
3.) Slide the control console bottom cover (lower section) *upwards* until back in the correct position
4.) Return the six screws previously removed from the metal service cover on the base assembly and fasten the cover firmly in position.
5.) Return the control console lower cover to its original position, as described in the Control Console Bottom Cover (Upper Section) Installation Procedure on page 8 - 19.
6.) Reinstall the monitor on the control console, as described in the Vivid™ 3 Monitor 15" Installation Procedure on page 8 - 28 or the Vivid™ 3 17" Monitor Installation - Procedure1 on page 8 - 31 (as appropriate).

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Section 8-3
Control Console Components Replacement

The Vivid™ 3 Control Console comprises various components, the replacement procedures for each of which is described as follows:

- **Vivid™ 3 15" Monitor**
  Newer type: refer to Vivid™ 3 Monitor 15" Replacement Procedure (Samsung; P/N 2336022-2), as described below.
- **Vivid™ 3 17" Monitor** - refer to either of the following:
  Samsung type:see Vivid™ 3 17" Monitor Replacement - Procedure 1 on page 8 - 30.
  Mag type: see Vivid™ 3 17" Monitor Replacement - Procedure 2 on page 8 - 34.
- **Keyboard** - see Keyboard Replacement Procedure on page 8 - 37.
- **Keypad** - see Keypad Replacement Procedure on page 8 - 38.
- **Trackball** - see Trackball Replacement Procedure on page 8 - 42.
- **Speakers** - see Speaker Replacement Procedure on page 8 - 43.

8-3-1 Vivid™ 3 Monitor 15" Replacement Procedure (Samsung; P/N 2336022-2)

*NOTE: This describes the procedure for replacing a Samsung (*SyncMaster 591S) *15" monitor.*

The Samsung 15" Monitor Assembly Kit (P/N: 2336022-2) contains the following items:

Item Part No.	Description	Quantity
2335250-2	Monitor “SAMSUNG” 15" Assy	1
2415943	Monitor “SAMSUNG” 15" Installation Instructions document	1
2306836	Monitor Base Cover	1
2269429	Pwr.Cord, Male/Female	1

NOTE: For the Samsung (SyncMaster 591S) 15" monitor operation and calibration instructions, refer to the information provided in the following sections:

- Vivid™ 3 Samsung 15" and 17" Monitor Operation on page 6 - 9.
- Image Quality Calibration for the Vivid™ 3 15" and 17" Samsung Monitors on page 6 - 12.

8-3-1-1 Tools

Use the appropriate Phillips-type screw drivers, as indicated in the Vivid™ 3 monitor 15" replacement procedures.

8-3-1-2 Preparation

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

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8-3-1-3 Vivid™ 3 Monitor 15" Removal Procedure

1.) Turn OFF the Vivid™ 3 main circuit breaker, located at the rear of the system (lower end).

2.) Disconnect the main AC power cable from the wall outlet.

3.) Unplug the VGA cable and AC power cable from the rear control console.

4.) Remove the four screws that fasten the plastic cover to the base assembly (two from each side). Remove the plastic cover.

5.) Loosen the securing screw located at the rear of the monitor base - see Figure 8-28 below. Once this screw is loosened, the monitor may be fully rotated and lifted *upwards*, away from the Vivid 3 scanner.



Figure 8-28 Releasing Screw at Base of Samsung 15" Monitor

6.) Carefully remove the monitor by pulling it *upwards*. While pulling upwards, swiveling it slightly to the *right* and *left* will ease removal.

NOTE: ***When removing the monitor, make sure that the Teflon washer remains in place on top of the monitor mounting base.***

8-3-1-4 Vivid™ 3 Monitor 15" Installation Procedure

NOTE: Before mounting the replacement monitor into position, make sure that the Teflon washer has remained in place on top of the monitor mounting base.

1.) In the upright position, carefully lift the replacement monitor and insert its pivot shaft (Figure 8-29) through the Teflon washer and into the hole on the monitor base.

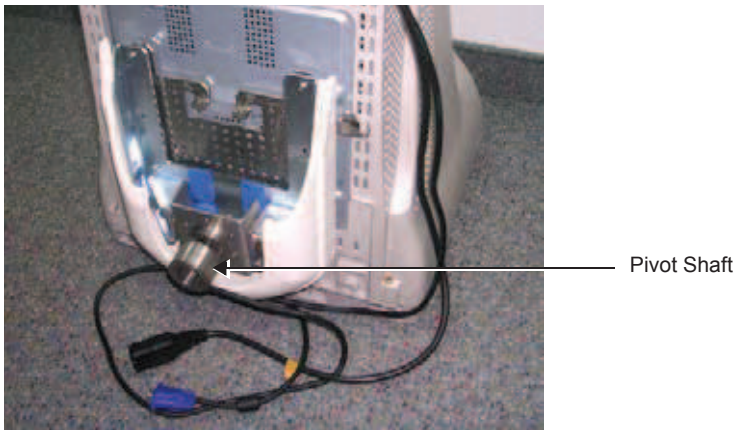


Figure 8-29 Samsung 15" Monitor - Viewed from Underside

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Note: While lowering the monitor downwards, swivel it slightly to the *right* and *left* to ease insertion.

2.) Check that the pivot shaft is fully inserted, and that the monitor base is resting on the Teflon washer.

3.) Position the monitor directly in line with the front of the control console and tighten the securing screw located at the rear of the monitor base (refer to Figure 8-28 on page 8-28).

4.) Mount the plastic cover of the base assembly back into position and secure with the four fastening screws provided (two on each side).

5.) Plug the VGA cable and AC power cable into the rear of the control console.

6.) Check that the monitor is sufficiently loose to enable swivelling slightly from *left* to *right*.

7.) Make sure the monitor can be tilted *up* and *down*, and that it maintains its set position.

8.) Adhere the appropriate Vivid™ 3 system label.

9.) For the next stage of the monitor installation procedure, proceed to the instructions for Image Quality Calibration for the Vivid™ 3 15" and 17" Samsung Monitors on page 6 - 12.

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8-3-2 Vivid™ 3 17" Monitor Replacement - Procedure 1

NOTE: This section describes the procedure for replacing a 17" monitor based on a Samsung 17" monitor type.

With this new type of monitor ordered as a spare part, the 17" Monitor Kit (P/N: 2306835-6) will include the following items:

P/N	Description	Quantity
2306835-3	Monitor “SAMSUNG” 17” Assy	1
2337694	Monitor “SAMSUNG” 17” Rear label	1
2337700	Monitor “SAMSUNG” 17” Right Label	1
2338047	VIC Correlation Box Module	1

8-3-2-1 Tools

Use the appropriate Phillips-type screw drivers as indicated in the Vivid™ 3 monitor replacement procedures.

8-3-2-2 Preparation

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

8-3-2-3 Vivid 3 17" Monitor Removal - Procedure 1

1.) Turn OFF the Vivid™ 3 main circuit breaker, located at the rear of the machine (lower end).
2.) Disconnect the main AC power cable from the wall outlet.
3.) Unplug the VGA cable and AC power cable from the rear control console.
4.) Remove the four screws that fasten the plastic cover to the base assembly (two from each side). Remove the plastic cover.
5.) Loosen the securing screw located at the rear of the monitor base - see Figure 8-30 on page 8-30.
Once this screw is loosened, the monitor may be fully rotated and lifted upwards, away from the machine.



Figure 8-30 Releasing Screw at Base of 17" Monitor

6.) Remove the monitor by pulling it upwards.
While pulling the monitor upwards, swiveling it slightly to the *right* and *left* will ease removal.

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NOTE: ***When removing the monitor, make sure that the Teflon washer remains in place on top of the monitor mounting base.***

You are now ready to install a new monitor, as described in the following procedure.

8-3-2-4 Vivid™ 3 17" Monitor Installation - Procedure1

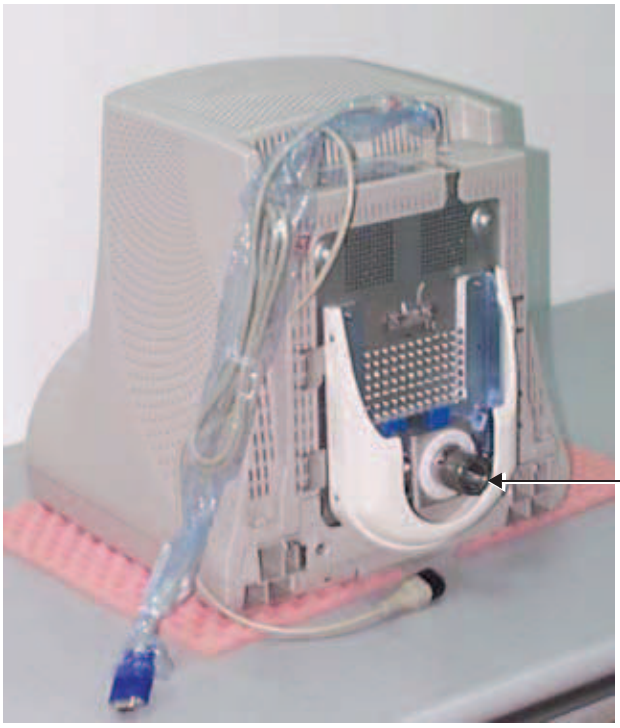


Figure 8-31 New Samsung 17" Monitor - Viewed from Underside

NOTE: ***Before mounting the new monitor into position, make sure that the Teflon washer has remained in place on top of the monitor mounting base.***

1.) In the upright position, carefully lift the new monitor and insert its pivot shaft (see Figure 8-31) through the Teflon washer and into the hole on the monitor base.

While lowering the monitor downwards, swivel it slightly to the *right* and *left* to ease insertion.

2.) Check that the pivot shaft is fully inserted, and that the monitor base is resting on the Teflon washer.

3.) Position the monitor directly in line with the front of the control console and tighten the securing screw located at the rear of the monitor base.

4.) Mount the plastic cover of the base assembly back into position and secure with the four fastening screws provided (two on each side).

5.) Plug the VGA cable and AC power cable into the rear of the control console.

6.) Check that the monitor is sufficiently loose to enable swivelling slightly from *left* to *right*.

7.) Make sure the monitor can be tilted *up* and *down*, and that it maintains its set position.

8.) Adhere the appropriate Vivid™ 3 system label.

For the next stage of the new monitor installation procedure, proceed to the instructions for Image Quality Calibration for the Vivid™ 3 15" and 17" Samsung Monitors on page 6 - 12.

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8-3-2-4-1 Installing a New VIC Correlation Box

NOTE: ***This procedure should be performed only when installing a Samsung 17" monitor, or when replacing an existing VIC Correlation box!***

NOTE: *Before commencing this procedure, check that system has been disconnected from the mains power as described in step 1 of Vivid 3 17" Monitor Removal - Procedure 1 on page 8 - 30.*

1.) Remove the machine's side covers see *Side Covers Removal Procedure* on page 8 - 4
2.) Unscrew and remove the two screws located on the upper BEP bracket.
3.) Unscrew and remove the two screws located at the top of the bracket that connects the VIC assembly to the metal frame - see Figure 8-32.

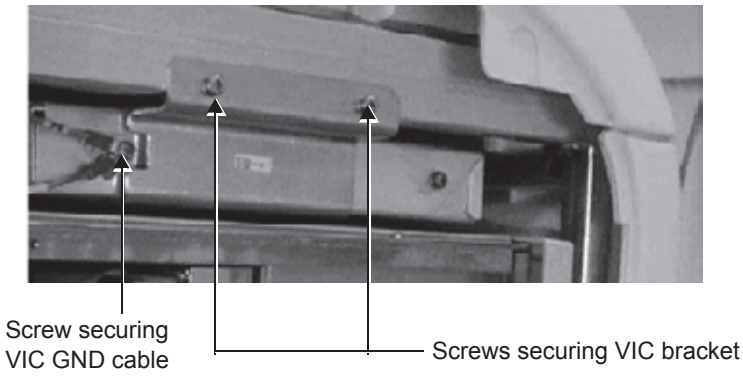


Figure 8-32 VIC Assembly

4.) Rotate the VIC sideways and pull out the VGA cable.
5.) Assemble the VIC correlation module (P/N: 2338047) and connect it to *VGA OUT* on the VIC module.
6.) Connect the cable (P/N: 2252964) to VIC correlation module (P/N: 2338047) and pass it through BEAM 3 energy chain (P/N: 2272900) and up into the VGA box.
7.) Return the VIC to its original position above the BEP - see Figure 8-33.

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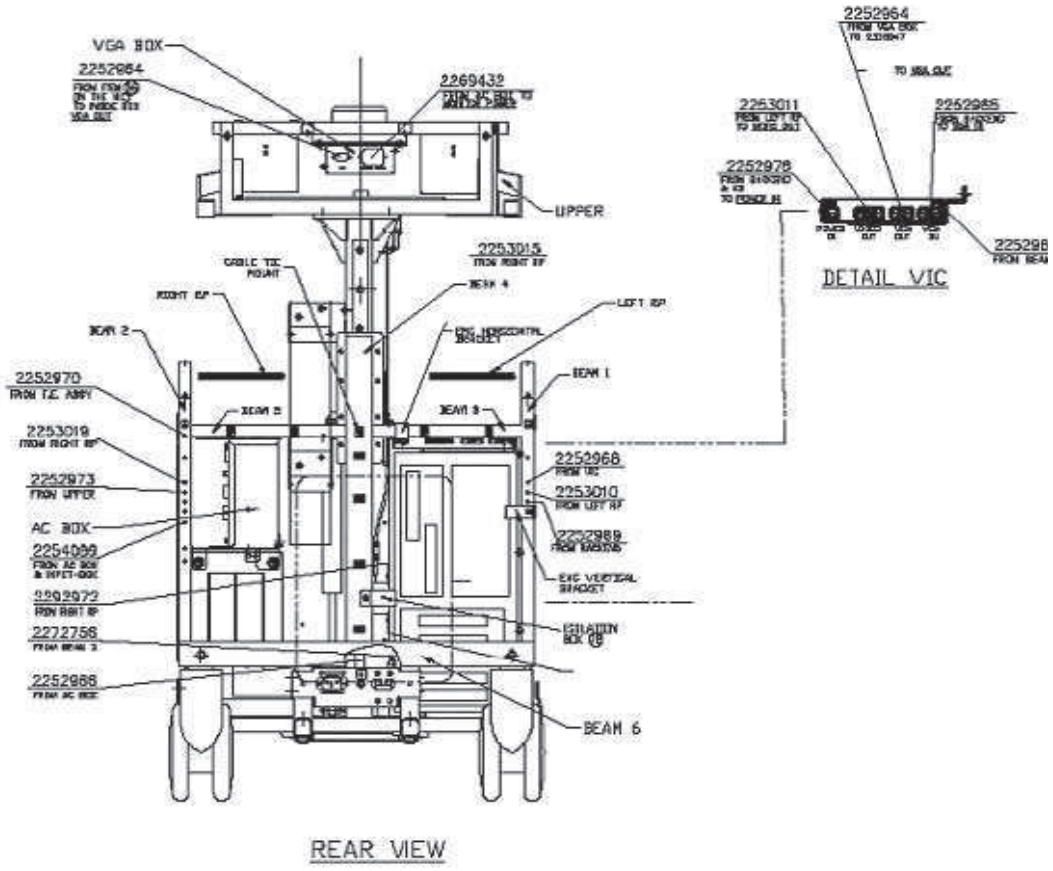


Figure 8-33 VIC Correlation Module in Position

8.) Fasten the VIC assembly to the metal frame, using the two screws removed in step 3.

9.) Fasten the upper back-end BEP bracket in position, using the two screws removed in step 2.

10.)Reassemble the side covers - see *Side Covers Installation Procedure* on page 8 - 4

11.)Check that all covers are fixed firmly in position.

For the next stage of the new monitor installation procedure, proceed to the instructions for Image Quality Calibration for the Vivid™ 3 15" and 17" Samsung Monitors on page 6 - 12.

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8-3-3 Vivid™ 3 17" Monitor Replacement - Procedure 2

NOTE: This section describes the procedure for replacing a 17" monitor based on a MAG 17" monitor type.

8-3-3-1 Tools

Use the appropriate Phillips-type screw drivers as indicated in the Vivid™ 3 monitor replacement procedures.

8-3-3-2 Preparation

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

8-3-3-3 Vivid™ 3 17" Monitor Removal - Procedure 2

1) Unplug the VGA cable and AC power cable from the rear control console.
2) Remove the four screws that fasten the plastic cover of the base assembly, two screws from either side. Remove the plastic cover.
3) Loosen the securing screw located at the rear of the monitor base. Once this screw is loose, you can fully rotate and lift the monitor out from the machine.

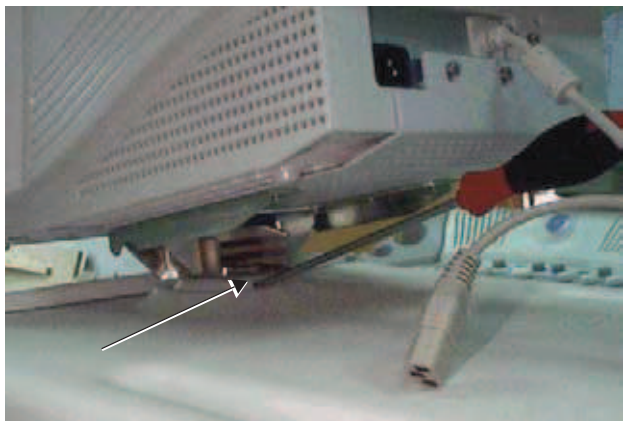


Figure 8-34 Vivid™ 3 Monitor Release Screw

4) Remove the monitor by pulling it upwards. You may need to swivel the monitor slightly *right* and *left* while pulling it upwards.

NOTE: Ensure that the Teflon washer remains in place when you remove the monitor.

5) Carefully lay the monitor on a soft surface and turn it upside down, so that its underside is accessible, as shown in Figure 8-35 on page 8-35.

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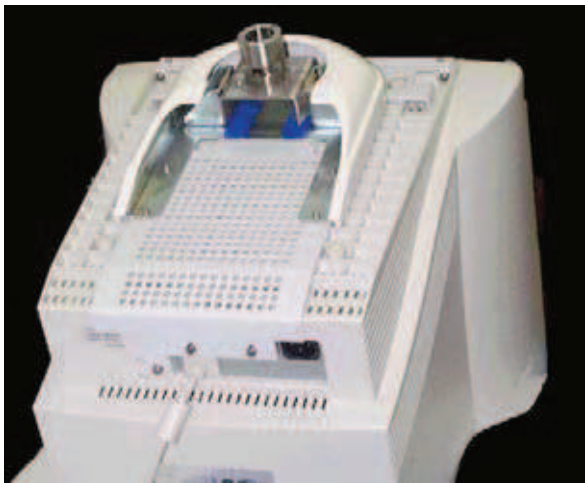


Figure 8-35 Vivid™ 3 Monitor showing Underside

6) Remove the three screws that fasten the bracket at the front of the monitor, and then remove the bracket.

7) Remove the screw located on the left of the VGA cable at the back of the monitor.

8) Remove the two remaining screws from the back of the monitor. This will release the space bar located between the back of the monitor and the monitor base assembly.

9) Remove the two screws securing the base assembly to the monitor, located one on either side of the bottom front of the monitor.

10) Push the base assembly towards the rear of the monitor until its hinges are released from the monitor's case to release the base assembly, which can then be removed, as shown below:

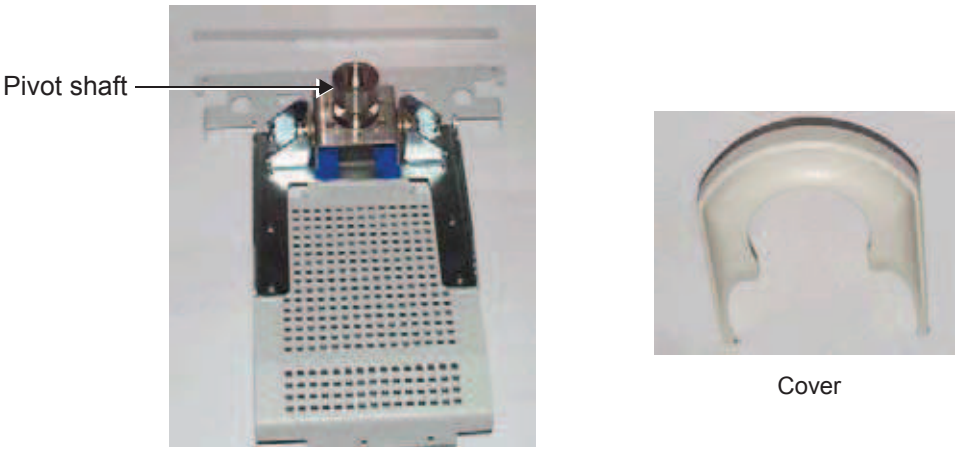


Figure 8-36 Vivid™ 3 Base Assembly and Cover

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8-3-3-4 Vivid™ 3 17" Monitor Installation - Procedure 2

1) Carefully lay the monitor on a soft surface and turn it upside down, so that its bottom is accessible.
2) Place the base assembly on the bottom of the monitor's case.
3) Push the base assembly towards the front of the monitor while ensuring that its hinges are inserted into their slots on the monitor case.
4) Insert the space bar between the back of the monitor and the monitor base assembly, and then fasten it loosely with its two screws. Do not tighten the screws.
5) Fasten the base assembly with its two screws, one on each side of the bottom front of the monitor.
6) Correct the positioning of the space bar and tighten it with its two screws.
7) Fasten the base assembly with the screw located to the left of the VGA cable at the back of the monitor.
8) Mount the bracket at the front of the monitor case with its three screws.

Note: ***Ensure that the Teflon washer is in place before you return the monitor to the control console***.

9) Carefully lift the monitor and insert its pivot shaft through the Teflon washer into the hole on the top of the control console. You may need to swivel the monitor slightly *right* and *left* while pushing it downwards. Check that the pivot shaft of the monitor base is fully inserted, and that the base is resting on the Teflon washer.
10) Position the monitor directly in line with the front of the control console and tighten the securing screw located at the rear of the monitor base.
11) Mount the plastic cover of the base assembly back in position with its four screws, two on either side.
12) Plug the VGA cable and AC power cable into the rear of the control console.
13) Check that the monitor can turn to the *left* and *right* to a limited degree. Also check that it can be tilted *upwards* and *downwards*, and that it holds its set position.

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8-3-4 Keyboard Replacement Procedure

8-3-4-1 Tools

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

8-3-4-2 Preparation

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

8-3-4-3 Keyboard Removal Procedure

1) Remove the bottom keyboard cover and cable hooks, as described in the Bottom Keyboard Cover Removal Procedure on page 8 - 14.
2) Unplug the three keyboard cables located at the bottom of the keyboard.
3) Remove the speaker covers, as described in the Speaker Cover Removal Procedure on page 8 - 16.
4) Remove the two nuts securing the probe holders to the keyboard, located beneath the keyboard on either side, and then remove the probe holders.
5) Remove the two M4 nuts securing the keyboard to the metal frame, located one on either corner of the far end of the keyboard.
6) Loosen the three M5 nuts and two M5 side screws securing the front handle and pull the front handle backwards to free the front edge of the keyboard.
7) Lift out the keyboard.

8-3-4-4 Keyboard Installation Procedure

1) Return the keyboard to its original position.
2) Push the keyboard as far in as it can go, and then fasten it to the metal frame from underneath at its far end corners with the two M4 nuts, one on either corner.
3) Push the front handle forwards to its original position so that it overlaps the front edge of the keyboard, and then fasten it to the metal frame with the three M5 nuts and the two M5 side screws.
4) Return the two probe holders to their positions on either side of the keyboard and fasten each with two nuts to the metal frame. Before tightening the nuts adjust each probe holder to fit properly and symmetrically on the sides of the keyboard.
5) Return the speakers cover to its original position, as described in the Speaker Cover Installation Procedure on page 8 - 16. Before tightening the screws, adjust the cover to fit properly and symmetrically.
6) Plug in the three keyboard cables, located at the bottom of the keyboard.
7) Return the bottom keyboard cover and cable hooks to their original location, as described in the Bottom Keyboard Cover Installation Procedure on page 8 - 15.

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8-3-5 Keypad Replacement Procedure

8-3-5-1 Tools

Use a small flat screw driver, as indicated in the keypad replacement procedure.

8-3-5-2 Preparation

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

8-3-5-3 Keypad Removal Procedure

1) Carefully place a small flat screw driver between the keypad you wish to remove and its neighboring keypad - see Figure 8-37 below.
2) Use the screw driver to gently lever off the defective keypad, until it is completely loosened from its base.
3.) Lift off and remove the defective keypad.



Figure 8-37 Keypad Replacement

NOTE: For Key Pad Part Numbers, refer to Table 9-8 on page 9-19.

8-3-5-4 Keypad Installation Procedure

1) Carefully place a new keypad into position on the keyboard, taking care to align the two notches on the base of the pad with those on the securing base plate.

NOTE: The notches must be vertically aligned with the base, otherwise the keypad will not sit at the correct height on the keyboard.

2) Gently push the keypad down until it snaps into position.

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8-3-6 Keycaps (External Keyboard) Replacement Procedure

NOTE: This section describes the replacement procedure for ATGC slider Keycaps on the external keyboard.

NOTE: ATGC Slider Keycaps are supplied in a Keycap Kit - for details of the Part Number, refer to Table 9-8 on page 9-19.

NOTE:

8-3-6-1 Tools

Use a small flat screw driver, as indicated in the keycaps replacement procedure.

8-3-6-2 Preparation

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

8-3-6-3 Keycaps Removal Procedure

1) Carefully place a small flat screw driver between the ATGC slider keycap you wish to remove and the surface of the keyboard.
2) Use the screw driver to gently lever off the defective keycap, until it is completely loosened from its base.
3.) Lift off and remove the defective keycap - see Figure 8-37 below.



Figure 8-38 ATGC Slider Keycap Replacement

8-3-6-4 Keycap Installation Procedure

1) Carefully place a new keycap into position on the securing pin, taking care to align the notches on the base of the keycap with those on the securing pin.

NOTE: The notches must be aligned correctly, otherwise the keycap will not sit at the correct height on the external keyboard.

2) Gently push the keycap down until it snaps into position.

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8-3-7 Rotary Knob (External Keyboard) Replacement Procedure

NOTE: This section describes the replacement procedure for a parameter adjustment Rotary Knob on the external keyboard.

NOTE: Rotary knobs are supplied as part of the Keycap Kit - for details of the Part Number, refer to Table 9-8 on page 9-19.

NOTE:

8-3-7-1 Tools

Use a small flat screw driver, as indicated in the rotary knob replacement procedure.

8-3-7-2 Preparation

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

8-3-7-3 Rotary Knob Removal Procedure

1) Carefully place a small flat screw driver between the rotary knob you wish to remove and the surface of the keyboard - see Figure 8-37 below.
2) Use the screw driver to gently lever off the defective rotary knob, until it is completely loosened from its base.
3.) Lift off and remove the defective knob - see Figure 8-39 below.

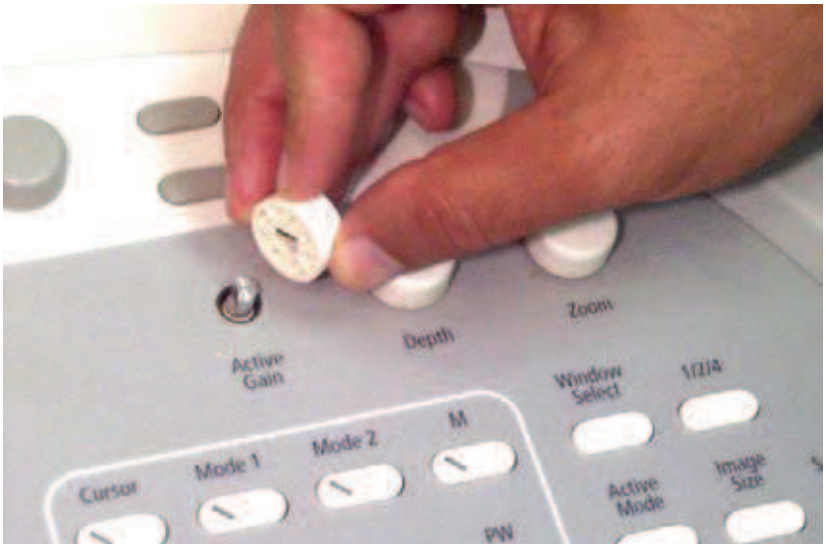


Figure 8-39 Rotary Knob Replacement

4.) Carefully take out the metal tension plate from the centre of the knob (refer to Figure 8-40 on page 8-41), before discarding the defective knob. *Do **not** discard the tension plate*.

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8-3-7-4 Rotary Knob Installation Procedure

1) Using a new rotary knob, insert the metal tension plate (removed in step 4 above) into the centre of the knob, aligning the plate correctly with the notches on each side of the hole. The plate, which is slightly curved (to provide tension), should be positioned with the curved surface facing towards the center of the hole, as shown in Figure 8-40 below.

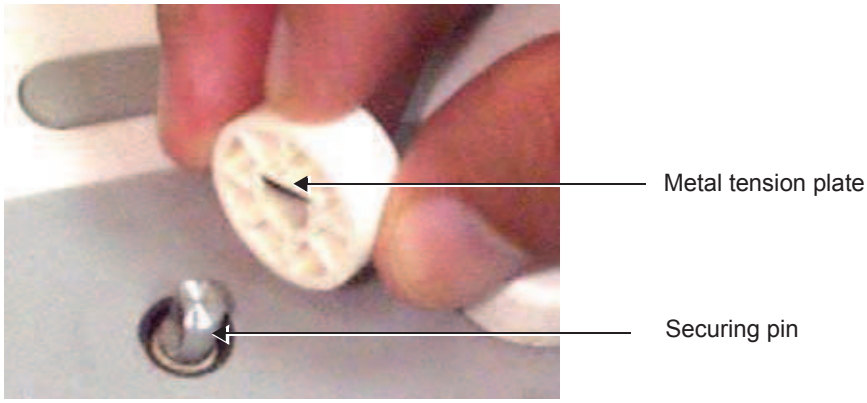


Figure 8-40 Tension Plate Fitted in Centre of Knob

2) Carefully place the new rotary knob into position on the securing pin, taking care that the tension plate remains in position inside the knob, while aligning the core of the knob base with the flat-sided notch on the securing pin - see Figure 8-40, above.

NOTE: The notch must be aligned correctly, otherwise the rotary knob will not sit at the correct height on the external keyboard.

3.) Gently push the rotary knob down until it snaps into position.

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8-3-8 Trackball Replacement Procedure

8-3-8-1 Tools

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

8-3-8-2 Preparation

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

8-3-8-3 Trackball Removal Procedure

1) Remove the bottom keyboard cover, as described in the Bottom Keyboard Cover Installation Procedure on page 8 - 15.
2) Disconnect the trackball cable from the trackball unit - see Figure 8-41 below.

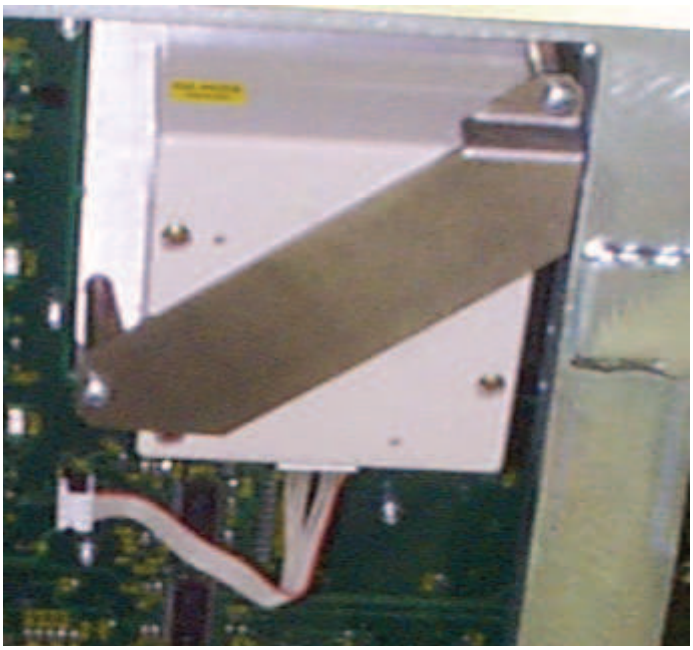


Figure 8-41 Trackball Removal

3) Remove the two screws located on the bracket on either side of the trackball unit, and then remove the trackball unit.

8-3-8-4 Trackball Installation Procedure

1) Return the trackball unit to its original location and insert the two screws located on the bracket on either side of the trackball unit.
2) Connect the trackball cable to the trackball unit.
3) Return the bottom keyboard cover to its original location, as described in the Bottom Keyboard Cover Installation Procedure on page 8 - 15.

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8-3-9 Speaker Replacement Procedure

8-3-9-1 Tools

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

8-3-9-2 Preparation

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

8-3-9-3 Speaker Removal Procedure

1) Remove the bottom keyboard cover, as described in the Bottom Keyboard Cover Removal Procedure on page 8 - 14.
2) Remove the speaker cover, as described in the Speaker Cover Removal Procedure on page 8 - 16.
3) Remove the four speaker screws, one from each corner of both of the speakers.
4) Gently pull the speakers towards you.
5) Disconnect the wires at the back of the speakers.

8-3-9-4 Speaker Installation Procedure

1) Reconnect the wires to the back of the new speakers.
2) Return the speakers to their original position, ensuring that the two connection legs of each speaker are facing the two connection legs of the opposite speaker, otherwise an electrical short may occur.
3) Fasten each speaker with the four screws at its corners.
4) Return the speaker cover to its original position, as described in the Speaker Cover Installation Procedure on page 8 - 16.
5) Return the bottom keyboard cover to its original position, as described in the Bottom Keyboard Cover Installation Procedure on page 8 - 15.

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Section 8-4
Front End Parts Replacement

8-4-1 Front End Boards Replacement Procedure

NOTE: The procedures below provide the instructions for replacing the following boards: FB, MUX, BF, FEC, RFT or IMP.

8-4-1-1 Tools

Use the appropriate flat and Phillips-type screw drivers and an ESD wrist band strap as indicated in the front end boards replacement procedures.

CAUTION: DO NOT TOUCH ANY BOARDS WITH INTEGRATED CIRCUITS PRIOR TO TAKING THE NECESSARY ESD PRECAUTIONS:

1.ALWAYS CONNECT YOURSELF, VIA AN ARM-WRIST STRAP, TO THE ADVISED ESD CONNECTION POINT LOCATED ON THE REAR OF THE SCANNER (TO THE RIGHT OF THE POWER CONNECTOR).

2.FOLLOW GENERAL GUIDELINES FOR HANDLING OF ELECTROSTATIC SENSITIVE EQUIPMENT.

8-4-1-2 Preparation

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

8-4-1-3 Front End Boards Removal Procedure

CAUTION: *FRONT END BOARDS ARE HEAVY!*

FAILURE TO TAKE PRECAUTIONS WHEN LIFTING , COULD RESULT IN PERSONAL INJURY AND/OR DAMAGE TO THE SYSTEM.

1) Remove the *left* side cover, as described in the *Side Covers Removal Procedure* on page 8 - 4.
2) Remove the front door of the crate by unscrewing the two large screws at the top of the door, and gently pulling the door down and lifting it off its hinges.
3) Release the plastic latches located at the top and the bottom of each card (board) - see Figure 8-42.

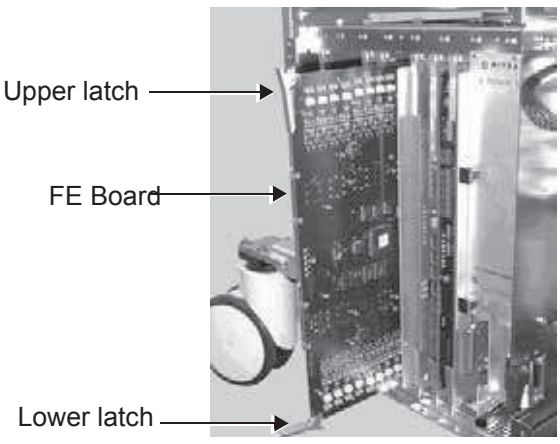


Figure 8-42 Front End Boards

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4) Gently pull the required card from the crate.



CAUTION: When removing the card, ESD may cause damage to the card. Always have the ESD hand strip connected to the machine chassis and to your hand.

8-4-1-4 Front End Boards Installation Procedure

1) Gently slide and push the required card to its original location, using the metal frame guiding tracks.
2) Use the plastic latches to firmly lock in the card in position, so that the connectors are firmly placed in their sockets.
3) Return the front door of the crate to its original position and tighten the two screws that secure the door in place.
4) Return the left side cover to its original position, as described in the Side Covers Installation Procedure on page 8 - 4.

Note: When you insert a Front End Board into the crate, ensure that the probe connector's metal frame slides into its tracks.

Note: The Beamformer Calibration procedure must be performed each time a Beamformer is replaced. Refer to the instructions on page 6-17

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8-4-2 TR4 Boards Replacement Procedure

NOTE: The procedure below provides the instructions for replacing any of the TR4 boards (P/N 2253036).

8-4-2-1 Tools

Use the appropriate flat and Phillips-type screw drivers and an ESD wrist band strap as indicated in the TR4 Boards replacement procedure.

CAUTION: DO NOT TOUCH ANY BOARDS WITH INTEGRATED CIRCUITS PRIOR TO TAKING THE NECESSARY ESD PRECAUTIONS:

1.ALWAYS CONNECT YOURSELF, VIA AN ARM-WRIST STRAP, TO THE ADVISED ESD CONNECTION POINT LOCATED ON THE REAR OF THE SCANNER (TO THE RIGHT OF THE POWER CONNECTOR).

2.FOLLOW GENERAL GUIDELINES FOR HANDLING OF ELECTROSTATIC SENSITIVE EQUIPMENT.

8-4-2-2 Preparation

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

8-4-2-3 TR4 Boards Removal Procedure

1) Remove the FE Board, as described in the *Front End Boards Removal Procedure* on page 8 - 44.

CAUTION: *FRONT END BOARDS ARE HEAVY!*

FAILURE TO TAKE PRECAUTIONS WHEN LIFTING , COULD RESULT IN PERSONAL INJURY AND/OR DAMAGE TO THE SYSTEM.

2.) Place the FE Board on a desk or a stable surface, on top of an ESD mat.

3.) Remove each of the four screws (two from each side) that hold the two brackets that secure the TR4 boards to the FE Board main plate, as shown in Figure 8-43 below.

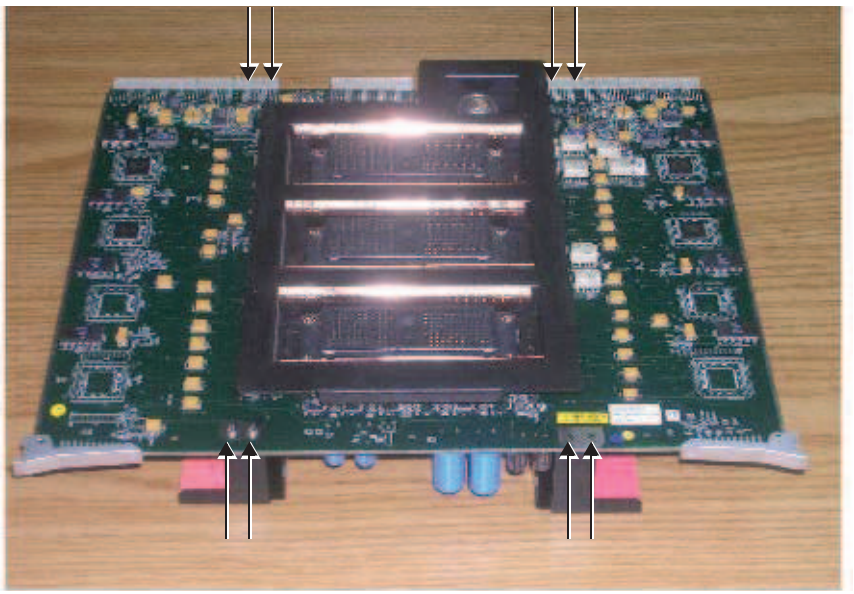


Figure 8-43 Location of Screws on Securing Brackets

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4.) Turn the FE Board over, then remove the brackets that secure the TR4 boards in place as shown in Figure 8-44 below.

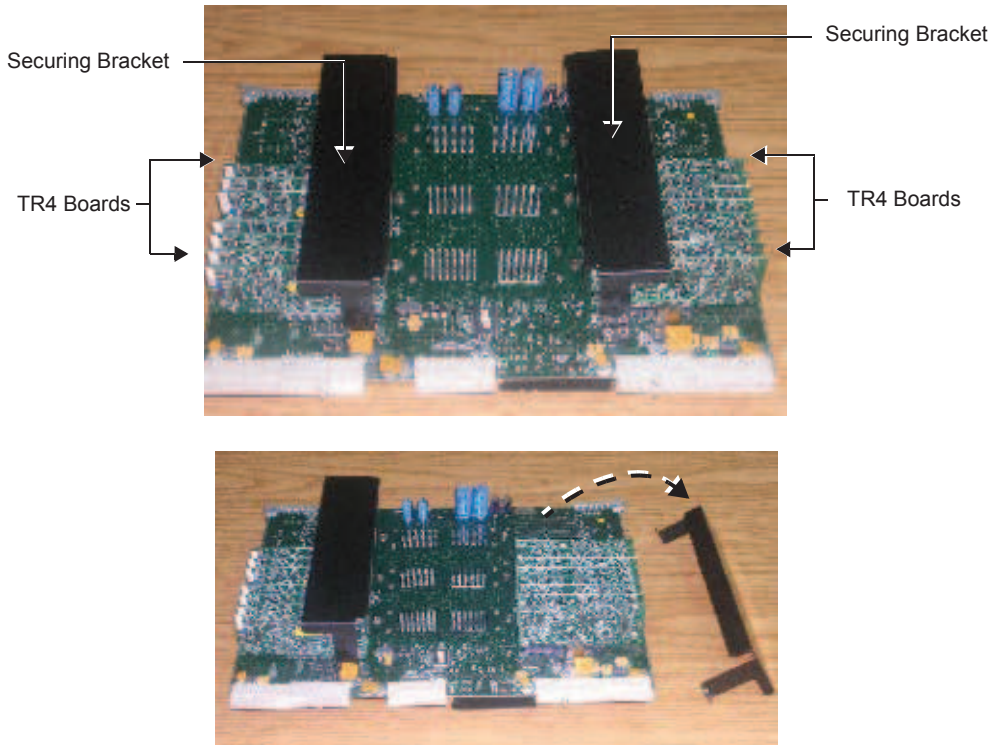


Figure 8-44 Removing the Securing Brackets

5.) Carefully pull *upwards* and gently remove the suspected faulty TR4 board.

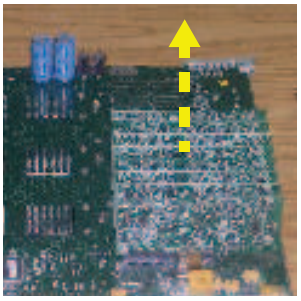


Figure 8-45 Removing the TR4 Board

8-4-2-4 TR4 Boards Installation Procedure

1.) Carefully insert the new TR4 board in position on the FE Board, making sure it is plugged firmly in place.

2.) Return the bracket (previously removed) that secures the TR4 boards to its original location above the TR4 boards.

3.) Return and tighten the four screws (two on each side) to fasten the bracket in position and secure the TR4 boards to the Front board main plate - refer to Figure 8-43 on page 8-46.

4.) Carefully return the FE Board to its original position in the FE crate, as described in the *Front End Boards Installation Procedure* on page 8 - 45.

NOTE: When you insert a Front End Board into the crate, ensure that the probe connector's metal frame slides into its tracks.

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8-4-3 DC Power Supply Replacement Procedure

8-4-3-1 Tools

Use the appropriate flat and Phillips-type screw drivers and a wire cutter, as indicated in the DC power supply replacement procedure.

8-4-3-2 Preparation

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

8-4-3-3 DC Power Supply Removal Procedure

1) Disconnect the PCI cable from the Image Port Board.
2) Release the securing clip and disconnect the AC power supply cable from the bottom of the DC power supply.
3) Disconnect the AC power supply cable that is connected to the Tx P.S (HV P.S.).
4) Remove the four small screws located one at each corner of the front panel of the power supply.
5) Remove the DC power supply by pulling it out using its handle on the front panel.

8-4-3-4 DC Power Supply Installation Procedure

1) Return the DC power supply to its original position.
2) Fasten the front panel of the power supply with its four small screws, one at each corner.
3) Reconnect the AC power cable to the Tx P.S.
4) Reconnect the AC power cable to the bottom of the DC power supply, and secure it with the clip.
5) Reconnect the PCI cable to the Image Port Board.

8-4-4 TX Power Supply Replacement Procedure

8-4-4-1 Tools

Use the appropriate flat and Phillips-type screw drivers, a wire cutter, and the appropriate Hex wrenches as indicated in the Tx power supply replacement procedure.

8-4-4-2 Preparation

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

8-4-4-3 TX Power Supply Removal Procedure

1) Remove the *right* cover, as described in the Side Covers Removal Procedure on page 8 - 4.
2) Remove the DC power supply - refer to the DC Power Supply Removal Procedure on page 8 - 48.
3) Remove the two screws located at the top of the Tx power supply unit.
4) Remove the Tx power supply unit by pulling it out by the handle on the front panel.

8-4-4-4 TX Power Supply Installation Procedure

1) Return the Tx power supply unit to its original position.
2) Fasten the Tx power supply unit with the two screws at its top.
3) Install the DC power supply, as described in the DC Power Supply Installation Procedure on page 8 - 48.
4) Reconnect the Tx power supply input cable.

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5) Return the right side cover to its original position, as described in the Side Covers Installation Procedure on page 8 - 4.

Note: When you install the Tx power supply unit, ensure that it slides into its guiding tracks.

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8-4-5 Front End Crate Replacement Procedure

8-4-5-1 Tools

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

8-4-5-2 Preparation

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

8-4-5-3 Front End Crate Removal Procedure

CAUTION: Support the crate while removing it. The crate is heavy, weighing approximately 16 Kg (35.2 lbs).

1) Pull out and remove the air filter from the front of the machine.
2) Disconnect all probes from the probe sockets.
3) Remove the *right* side cover, as described in the Side Covers Removal Procedure on page 8 - 4.
4) Remove the front door of the crate by unscrewing the two large screws at the top of the door, and gently pulling the door down and lifting it off its hinges.
5) Disconnect the AC power cable from the DC power supply.
6) Loosen the two wing nuts of the PCI flat cable spring clamp (located on the right wall of the crate) and release the cable from the wall.
7) Slide out the Image Port board and unplug the PCI cable from the board.
8) Remove the eight screws that secure the front end crate to the frame then gently slide the crate out towards you.
9) Disconnect the fan power cable, located on the upper part of the outside wall of the front end crate, as shown below:

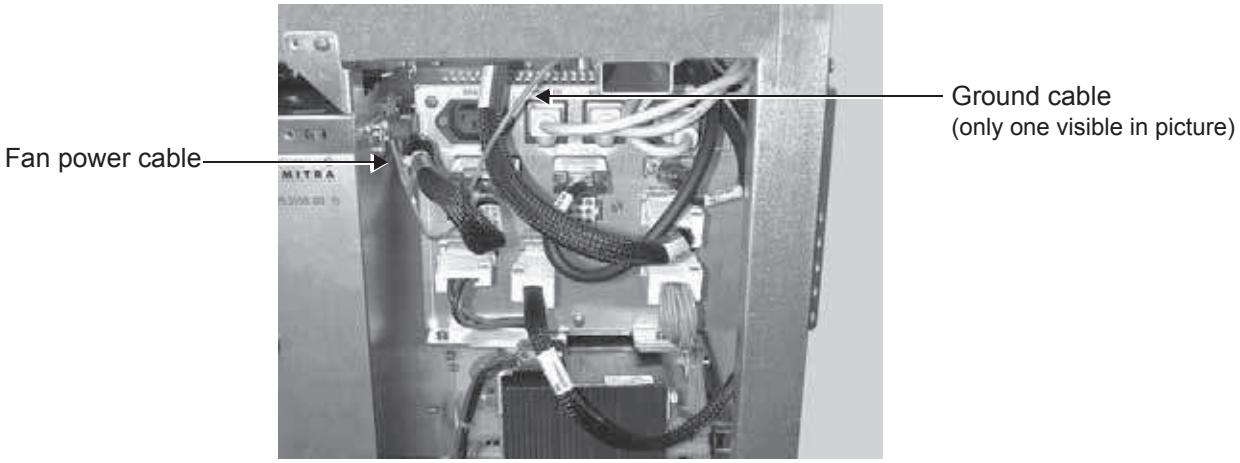


Figure 8-46 Fan Power Cable Connections

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10) Disconnect the two Ground cables from the crate - see Figure 8-46 on page 8-50.

11) Carefully remove the front end crate.

CAUTION: To avoid damaging the Ground cables, pull the crate out very slowly.

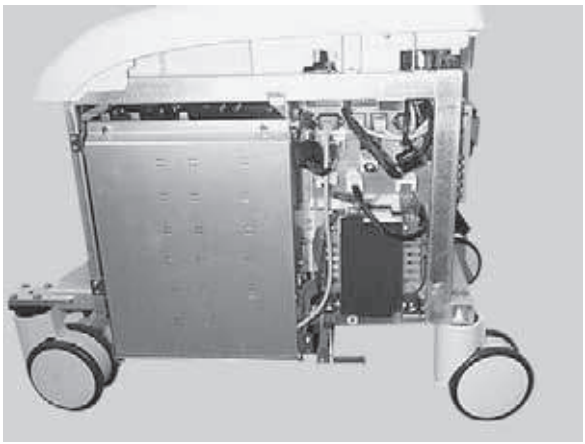


Figure 8-47 Front End Crate

8-4-5-4 Front End Crate Installation Procedure

1) Return the front end crate, but do not slide it to its final position.
2) Reconnect the two Ground cables to their original position on the front end crate.
3) Reconnect the front end fan power cable, located on the upper part of the outside wall of the front end crate.
4) Gently slide the front end crate back to its original position.
5) Fasten the front end crate to the frame with the eight screws.
6) Reconnect the PCI cable to the Image Port Board and slide it back to its original slot in the crate.
7) Mount the PCI flat cable under the spring clamp, and then tighten the two winding nuts to secure the cable to the right wall of the crate.
8) Reconnect the AC power cable to the DC power supply.
9) Return the front door of the crate and tighten the two screws that secure the door in place.
10) Return the left side cover to its original position, as described in the Side Covers Installation Procedure on page 8 - 4.
11) Ensure that the filter is clean, and then return it to its original position.

Note: Refer to *Chapter 10 - Periodic Maintenance* for filter cleaning procedures.

12) Reconnect the probes.

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8-4-6 Fan Replacement Procedure

8-4-6-1 Tools

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

8-4-6-2 Preparation

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

8-4-6-3 Fan Removal Procedure

1) Remove the front end crate, as described in the Front End Crate Removal Procedure on page 8 - 50.
2) Unscrew and remove the four screws that secure the fans to the top of the front end crate.

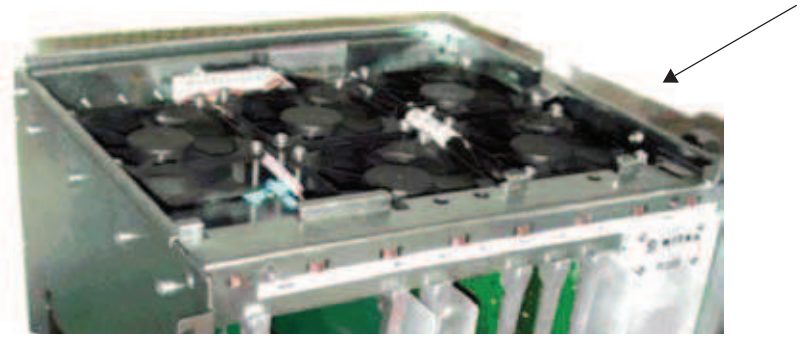


Figure 8-48 Fan Screws

Note: Mark the position at which the fan is attached to the connector, to ensure that the new fan is reconnected correctly.

3) Gently lift up the fan and disconnect its wires from the block terminal.
4) Unwrap the spiral wrapping around the harness and release the fan wires.
5) Remove the fan, together with its four Isodamp Grommets and Insulation Sleeves found under each corner.

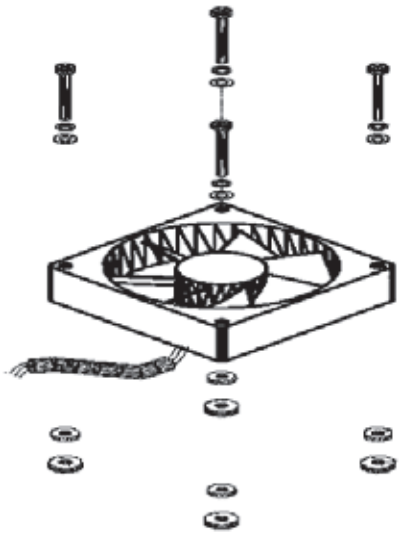


Figure 8-49 Fan Part Details

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8-4-6-4 Fan Installation Procedure

1) Wrap the spiral wrapping to hold the fan wires together.
2) Reconnect the fan wires to the block terminal using the same color coding as the fan that was removed.
3) Mount each fan with four Isodamp Grommets and Insulation Sleeves underneath the top of the crate, as shown in Figure 8-49 on page 8-52.

CAUTION: Ensure that you position the fan in the correct airflow direction (pushing air inwards into the crate) and that you connect the fan to the connector that was marked during the removal process.

4) Apply Loctite 24L® on each of the screw tips, then insert them with their appropriate spring washers and flat washers in the fan holes.
5) Tighten the screws to the point where the rubber Isodamp grommets stays a little flexible to absorb the vibrations of the fans, in order to reduce any noise they may cause.
6) Install the front end crate, as described in the Front End Crate Installation Procedure on page 8 - 51.

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Section 8-5
Back End Parts Replacement

Replacement of internal Back End Processor components should be done by qualified personnel *only*.

When replacing internal BEP components, ensure replacement is with new components of the same *type*, and hardware version and place them in the PCI slots as shown in the appropriate figure below.

Refer to Figure 8-50 or Figure 8-51, as appropriate.

CAUTION: ***Failure to follow this exact instruction will cause irreversible damage!***

8-5-1 Preparation

Furnished Materials

Confirm that the Back End Processor Kit (P/N: 2315842-7) contains the following items:

P/N	Description	Quantity
2406742	Backend (BEP) Assembly	1
2330026	BEP Front Panel for MOD	1
2344553	BEP Front Panel Basic	1
2344630	BEP Upper bracket	1
2343032	MO Drive Track	2
2399332	BEP Installation Instructions.	1
2347549-3	CD with SW VER 2.3.11	1
2419774	CD VGA Upgrade Patch	1
2413447	CD Patch 2.3.12	1
2413448	CDRW Patch	1
2400730	CD Probe Overheating Protection Patch	1
2418083	CD with SW VER 3.3	1
2418084	CD with SW VER 4.3	1
2418086	CD with SW VER 3.6	1
2418087	CD with SW VER 4.6	1
2366934	Help Files CD	1
2412393	CD Pouch Assy	1

Important: The BEP arrives inside packing box P/N 2328455. Make sure the returned BEP is shipped for return in the same packing box.

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NOTE: IMPORTANT - When replacing the BEP, the new Back End Processor will be supplied in a basic configuration with only the following components ready installed:

- CD-R driver
- Floppy driver
- HD driver
- Cables and Brackets
- Memory 512 MB

Therefore, the FE will need to remove some components from the removed BEP and install them in the new BEP (as part of the BEP Installation procedure - described below).

In addition, for BEP0 and BEP1 systems (only), it will be necessary to order certain additional parts in advance. These are listed in Table 8-3 below (and also described in the BEP Installation procedure).

Table 8-3 Additional Parts to be Ordered

BEP	P/N	Description	Quantity
BEP0	2340279	PC VIC Assembly	1
	2253027-5	PCB: Keyboard Ctrl. Card	1
	FB200973	PCB: PC2IP (required if existing board earlier than Rev C)	1
	2256476	ECG Patient I/O Module	1
BEP1	2340279	PC VIC Assembly	1
	FB200973	PCB: PC2IP (required if existing board earlier than Rev C)	1
	2256476	ECG Patient I/O Module	1

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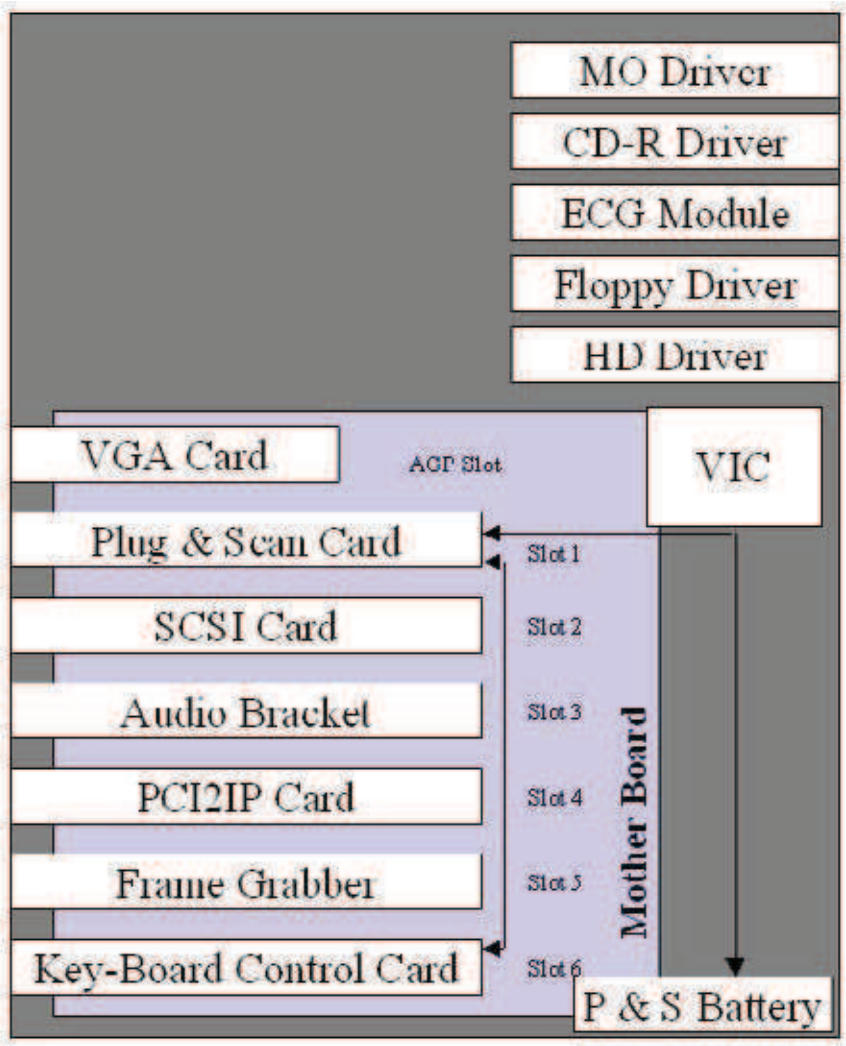


Figure 8-50 Back End Component Locations - BT02 and BT03 (RFI Configuration)

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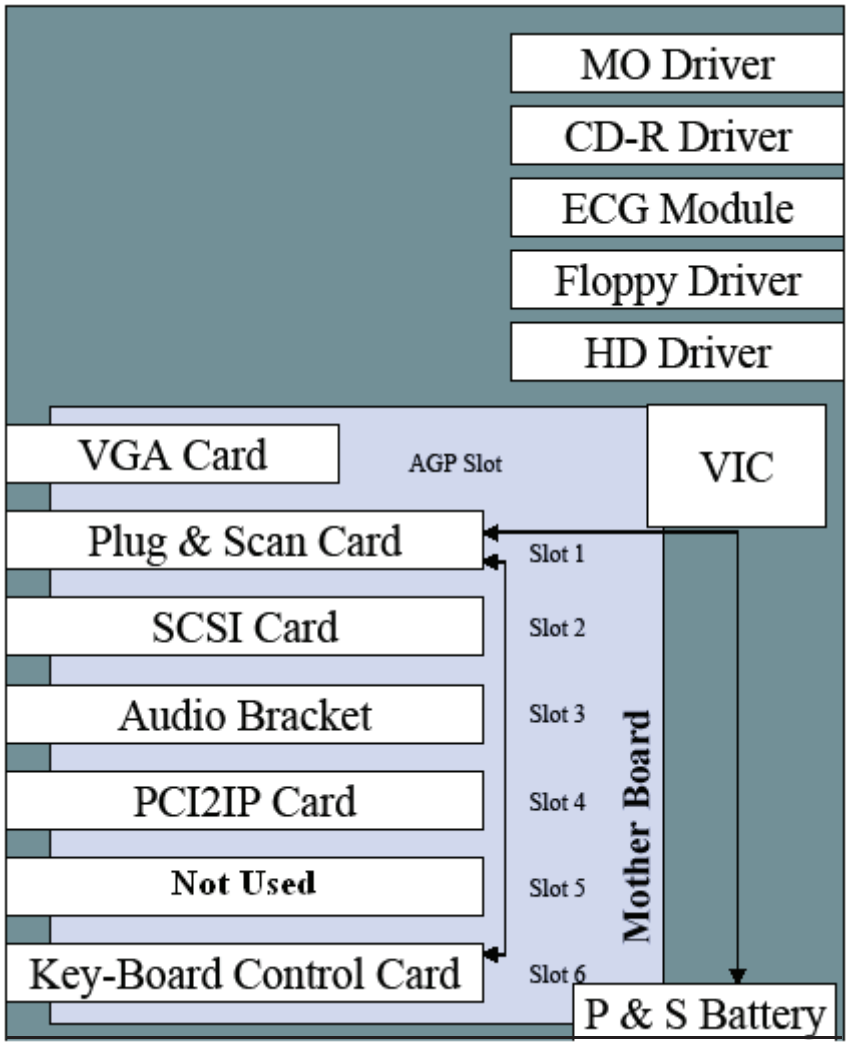


Figure 8-51 Back End Component Locations - BT02 and BT03 (RFT Configuration)

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8-5-2 Back End Processor Replacement Procedure

*NOTE: There are specific differences in the BEP Processor replacement procedure between replacing a **BEP1,** or **BEP 0** (Pentium III-based BEP, earlier type), or **BEP2,** with a newer type (Pentium 4-based) BEP. The variations between the types are clearly shown in the procedure steps.*

8-5-2-1 Tools

Use the appropriate flat and Phillips-type screw drivers and a wire cutter, as indicated in the back end processor replacement procedure.

8-5-2-2 Preparation

- **Presets**

Note: **Important:** When replacing Vivid 3 BT00 BEP, Presets cannot be loaded or transferred into the new BEP. Make sure an Application specialist arrives on site to set new presets.

- **Full Incremental Backup**

Note: **Important:** If it is necessary to transfer archive information into the new BEP, please perform a full incremental backup of the archive onto MO or CD ***before replacing BEP***.

Note: If the BEP is to be replaced, remember to perform a full incremental back-up of the Archive and User Presets - refer to the Software Installation/Upgrade Procedure on page 8 - 121.

1.) While the Vivid 3 system is powered ON, press Archive.
2.) Press **Utility** and select **Backup**.
3.) Start full incremental backup onto the removable media.
4.) When the backup procedure is completed, the yellow portion of the ”pie” chart will be 0%.

8-5-2-3 Back End Processor Removal Procedure

1) Shut down the **Vivid™ 3** ultrasound unit, as described in *Chapter 3 - Installation*.
2) Remove the Vivid™ 3 left and right side covers, as described in the Side Covers Removal Procedure on page 8 - 4.

Note: If the BEP only needs to be opened, remove only the *left* side cover.

3) Remove the rear cover, as described in the Rear Cover Removal Procedure on page 8 - 7.

Note: The following step is performed if removing a **BEP2** (Pentium 4-based BEP, newer type).

4) Remove the BEP2, as follows:
   a.) Remove the two screws of *upper* BEP bracket, see Figure 8-54 below.
   b.) Remove the screws of the *lower* left and *right* BEP brackets (Figure 8-54).
   c.) Disconnect all the cables from rear of the BEP, leaving the HASP key (option plug) connected.

Note: When replacing the BEP, the HASP key must be moved to the new BEP. You will need to connect the HASP key to the parallel port. Make sure you perform a full incremental back-up of the Archive and User Presets before replacing the BEP - refer to the Software Installation/Upgrade Procedure on page 8 - 121.

Note: When replacing a BEP, one must re-install software using the software provided with the system. **Do NOT use the software supplied with the BEP unless it is a version later than the software currently installed on the system**.

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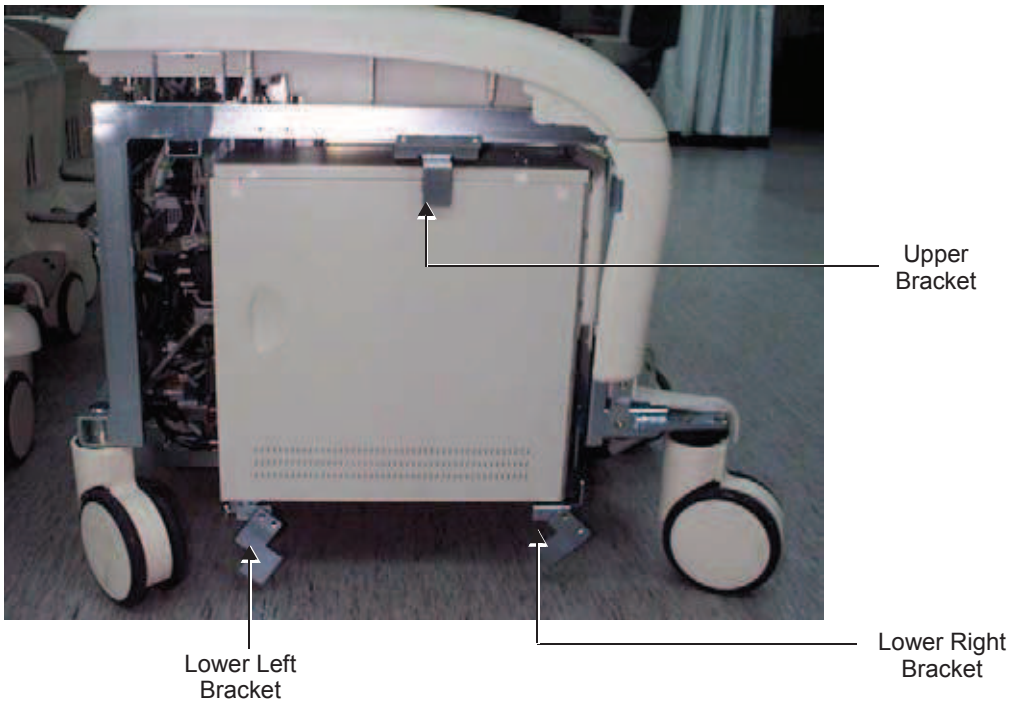


Figure 8-54 BEP - Position of Brackets on BEP2 Models

5) Place the BEP on a table and start removing the required parts (listed below), as applicable.

NOTE: When performing these procedures, handle boards carefully and take the following precautionary measures:

CAUTION: DO NOT TOUCH ANY BOARDS WITH INTEGRATED CIRCUITS PRIOR TO TAKING THE NECESSARY ESD PRECAUTIONS:

1.ALWAYS CONNECT YOURSELF, VIA AN ARM-WRIST STRAP, TO THE ADVISED ESD CONNECTION POINT LOCATED ON THE REAR OF THE SCANNER (TO THE RIGHT OF THE POWER CONNECTOR).

2.FOLLOW GENERAL GUIDELINES FOR HANDLING OF ELECTROSTATIC SENSITIVE EQUIPMENT.

- **For BEP2 (RFT) and (RFI) systems**:

  PC VIC Assembly - *see* *PC-VIC Removal Procedure* on page 8 - 87.

  ECG Box Assembly (Patient I/O Module) - *see* *BEP2 - ECG Module Removal Procedure* on page 8 - 85.

  Plug & Scan Battery - *see* *Plug & Scan Battery Removal Procedure* on page 8 - 70.

  PCB: Plug & Scan Card - *see* *Plug & Scan Board Removal Procedure* on page 8 - 69.

  PCB: SCSI Card - *see* *SCSI Board Removal Procedure* on page 8 - 73.

  MO Drive 5.25 - *see* *MO Drive Removal Procedure* on page 8 - 80.

  PCB: Frame Grabber (RFI systems only) - *see* *Frame Grabber Board Removal Procedure* on page 8 - 76.

  PCB: Keyboard Ctrl. Card - *see* *Keyboard Control Board Removal Procedure* on page 8 - 77.

  PCB: PC2IP Card - *see* *PC2IP Board Removal Procedure* on page 8 - 75.

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8-5-2-4 Back End Processor Installation Procedure

NOTE: When performing this procedure, handle boards carefully and take the following precautionary measures:



CAUTION: DO NOT TOUCH ANY BOARDS WITH INTEGRATED CIRCUITS PRIOR TO TAKING THE NECESSARY ESD PRECAUTIONS:



1.ALWAYS CONNECT YOURSELF, VIA AN ARM-WRIST STRAP, TO THE ADVISED ESD CONNECTION POINT LOCATED ON THE REAR OF THE SCANNER (TO THE RIGHT OF THE POWER CONNECTOR).

2.FOLLOW GENERAL GUIDELINES FOR HANDLING OF ELECTROSTATIC SENSITIVE EQUIPMENT.

NOTE: Care should also be taken to install the boards in the correct slots - refer to Figure 8-50 on page 8-56 and Figure 8-51 on page 8-57, as applicable.

1) Install the MO Driver into the new BEP, as described in the MO Drive Installation Procedure on page 8 - 81, if applicable.
2) Remove the Octopus Card Holder as described in the BEP2 - Octopus Card Holder Removal Procedure on page 8 - 68.
3) Install the SCSI Board, as described in the SCSI Board Installation Procedure on page 8 - 73, if applicable.
4) Install the ECG Module, as described in the BEP2 - ECG Module Installation Procedure on page 8 - 86.
5) Install the PC VIC Assembly, as described in the PC-VIC Installation Procedure on page 8 - 89.
6) Install the Plug and Scan Battery (if applicable), as described in the Plug & Scan Battery Installation Procedure on page 8 - 71.
7) Install the Plug and Scan Board (if applicable), as described in the Plug & Scan Board Installation Procedure on page 8 - 69.
8) Install the PC2IP Board, as described in the PC2IP Board Installation Procedure on page 8 - 75.
9.) Install the Frame Grabber Board (RFI systems only), as described in the Frame Grabber Board Installation Procedure on page 8 - 76.
10) Install the Keyboard Control Card, as described in the Keyboard Control Board Installation Procedure on page 8 - 77.
11) Install the Octopus Card Holder as described in the BEP2 - Octopus Card Holder Installation Procedure on page 8 - 68.
12.) Carefully return the new BEP to the original position on the machine chassis.

Note: When replacing a BEP, the HASP key must be moved to the new BEP. Ensure that the HASP key is connected to the parallel port. Make sure that the nominal voltage and range is set correctly in the Technical Support Tab under System Configuration. (This must be done by an authorized GE representative). Software version 2.3 or above must be re-installed - see the Software Installation/Upgrade Procedure on page 8 - 121.

Slide the BEP slightly outwards and proceed to reconnect all the cables at the rear of the BEP as described in the following steps (refer to Figure 8-55 on page 8-61). Make sure that the HASP key (option plug) is connected to the correct connector (parallel port).

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NOTE: For clarification, the numbers appearing in square brackets in the following steps correspond to the numbers shown in the illustration of the new BEP Rear Panel in Figure 8-55 below.

13.) Connect the VIC VGA OUT (Left) cable (Part No. 2252964) to the VGA OUT socket [**1**] on the BEP rear panel.

14.) Connect the VIC VGA IN (Right) cable (Part No. 2252965) to the VIC VGA IN socket [**2**].

15.) Connect the other end of this cable (Part No. 2252965) (i.e., the end labelled Back End) to the VIC VGA OUT socket [**2a**].

16.) Connect the trackball cable (Part No. 2252978) to the trackball socket [**4**].

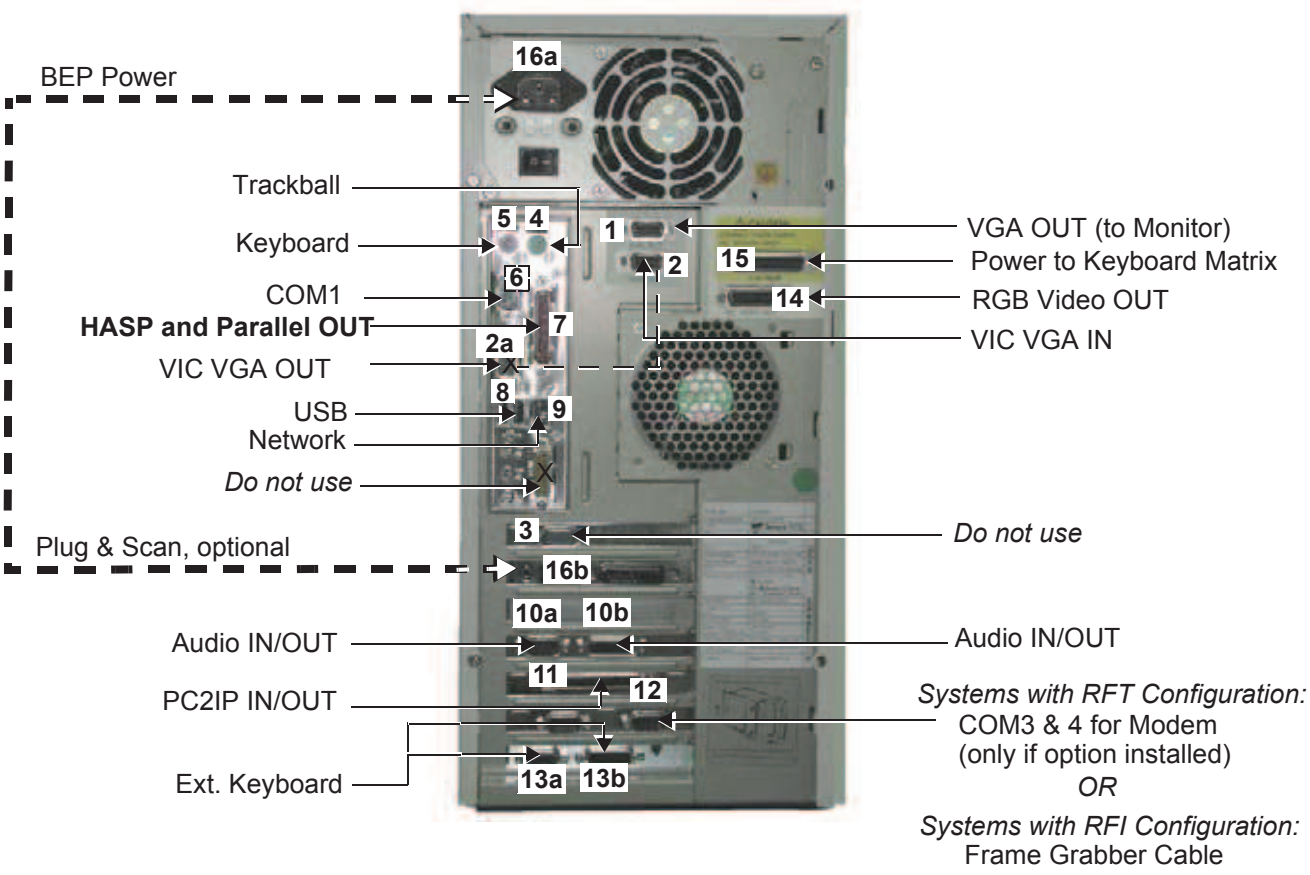


Figure 8-55 Cable Connections on new BEP Rear Panel

17.) Connect the keyboard cable (Part No.2252977) to the keyboard socket [**5**].

18.) Connect the cable (Part No. 2253009) to the COM 1 socket [**6**].

19.) Connect the cable (Part No. 2253016) to the **HASP and Parallel OUT** socket [**7**].

20.) If available on the system, connect the USB cable (Part No. 2297905) to the USB socket [**8**].

21.) If available on the system, connect the Network cable (Part No. 2292972) to the Network socket [**9**].

22.) Connect the Back End Audio BKT EXT cable (Part No. 2258803) to the Audio IN/OUT socket [**10b**].

23.) Connect the Back End Audio BKT EXT cable (Part No. 2258804) to the Audio IN/OUT socket [**10a**].

24.) Connect the PC2IP cable (Part No. 2276874) to the PC2IP IN/OUT socket [**11**].

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25.) If available on the system, connect the modem communication cable (Part No. 2320338) to the COM 3 and 4 socket [**12**], *OR* connect the frame grabber cable (Part No. 2371429) to the socket [**12**].

26.) Connect the Back End KB Cont P1 cable (Part No. 2252975) to the Ext Keyboard socket [**13b**].

27.) Connect the Back End KB Cont P2 cable (Part No. 2252976) to the Ext Keyboard socket [**13a**].

28.) Connect the VIC/ Rear Panel left connector cable (Part No. 2253011) to the RGB Video OUT socket [**14**].

29.) Connect the Keyboard/VIC External power cable (Part No. 2252976) to the power to Keyboard Matrix socket [**15**].

Note: **IMPORTANT - *Do NOT connect the HASP key to this socket!*** - refer to step 19 above [connection to socket **7**].

30.) **For systems *without* a UPS**:
Connect the BEP power cable (Part No. 2276876) to the power input socket [**16a**]

For systems using a UPS:
Connect the UPS power cable (Part No.2307289) to the Plug and Scan socket [**16b**]
and then connect the BEP/Modem power cable (Part No. 2300847) to the power input socket [**16a**].

31) Facing the side cover, push the BEP as far to the right as possible, and tighten first the left lower bracket, then the right lower bracket and finally the bracket on its upper left side. Use two screws to fasten each bracket.

32) Turn ON the system and boot-up in *Technical Support* mode - make sure the T-plug (dongle) is inserted into the parallel or USB port on the Vivid™ 3 rear connectors panel.

33.) Re-install the Software - see the Software Installation/Upgrade Procedure on page 8 - 121.
The system will perform four reboots before completing the software installation, after which the probe select screen will be displayed.

Note: When replacing a BEP, one must re-install software using the software provided with the system. **Do NOT use the software supplied with the BEP unless it is a version later than the software currently installed on the system**.

Note: IMPORTANT: During the software installation, the system will display a few messages; reply to all by selecting **OK**, or **Cancel** (all can be ignored).

34.) After a complete installation of the software and patches if applicable (in accordance with Table 8-4), boot-up the system.

Table 8-4 Software Installation Compatibility

Vivid 3 BT00 H/Ware	Vivid 3 RFT	Vivid 3 RFI
1. SW Version 2.3.11	SW Version 3.3	SW Version 3.6
2. VGA Upgrade Patch		
3. Patch 2.3.12		
4. CDRW Patch		
5. CD Probe Overheating Protection Patch		

35.) Press the **Config** button on the control console; the System Configuration dialog box is displayed.

36.) Trackball to the *Technical Support* tab and press **Select**.

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The dialog box displays the Technical Support Tab as shown in Figure 8-56.

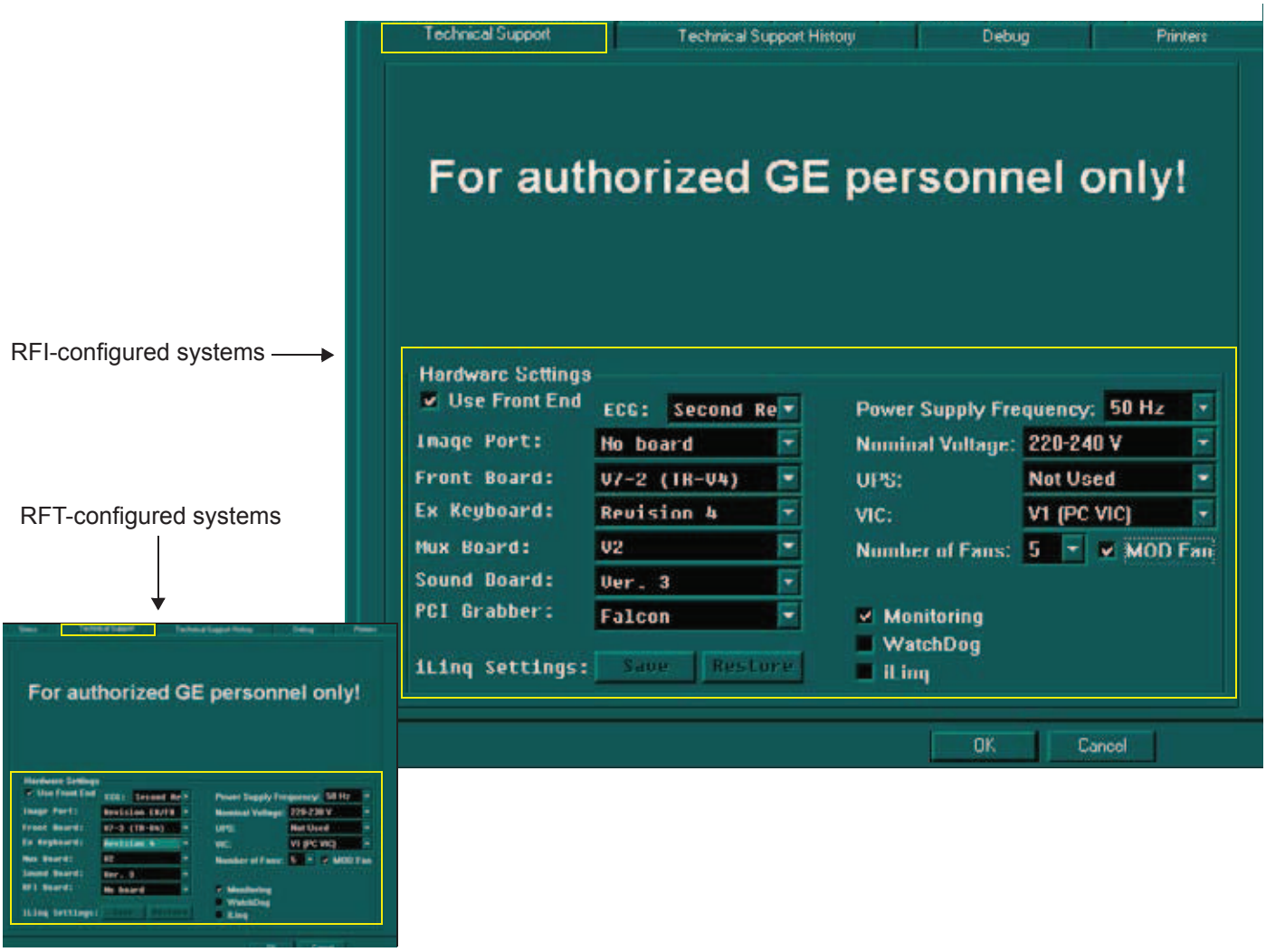


Figure 8-56 System Configuration - Technical Support Tab

37.)Select the appropriate settings, as follows:

* Ex Keyboard - **Revision 4**
* Sound Board - **Ver. 3**
* Number of Fans - Set to **7** for BT00 systems**;** set to **5** for other systems
* MOD Fan - Set to ON (checkbox activated)
* UPS - Change the UPS setting to **Used** or **Not Used**, as appropriate. If the *Plug & Scan* option was purchased, the UPS setting can be selected as **Used**. If this option not purchased, select **Not Used.**
* VIC - Set to **PC VIC**
* Nominal Voltage - Set to the appropriate local voltage setting.

38) Perform a complete functional check of the system, as described in *Chapter 4 - Functional Checks*.

39) Install the Vivid™ 3 rear, left and right covers - refer to the Side Covers Installation Procedure on page 8 - 4 and Rear Cover Installation Procedure on page 8 - 7.

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8-5-3 BEP1 Cover Replacement Procedure

NOTE: BEP1 refers to a Pentium III-based BEP (earlier type).

8-5-3-1 Tools

Use the appropriate flat and Phillips-type screw drivers, as indicated in the Cover & Octopus Card Holder replacement procedure.

8-5-3-2 Preparation

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

8-5-3-3 BEP1 - Left and Right Side Cover Removal Procedure

Note: The procedure is the same for *Left* and *Right* side covers.

1) Remove the two screws that hold the cover in position (refer to Figure 8-57 below).
2) Slide the side of the BEP1 *backwards* and *outwards* away from the BEP.

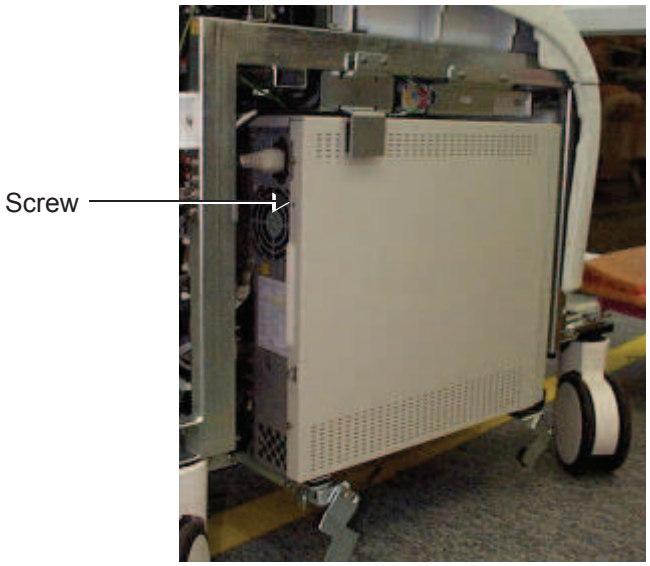


Figure 8-57 BEP1 - Side Cover Screws

8-5-3-4 BEP1 - Left and Right Side Cover Installation Procedure

Note: The procedure is the same for *Left* and *Right* side covers.

1) Return the cover and slide it into position on the side of the BE1P.
2.) Replace and tighten the two screws to hold the cover firmly in position (refer to Figure 8-57, above).

8-5-3-5 BEP1 - Front Cover Removal Procedure

1) Remove the screw that secures the front cover in position - see Figure 8-58 on page 8-65.
2) Press the two plastic latches, while pushing the front cover until it released.

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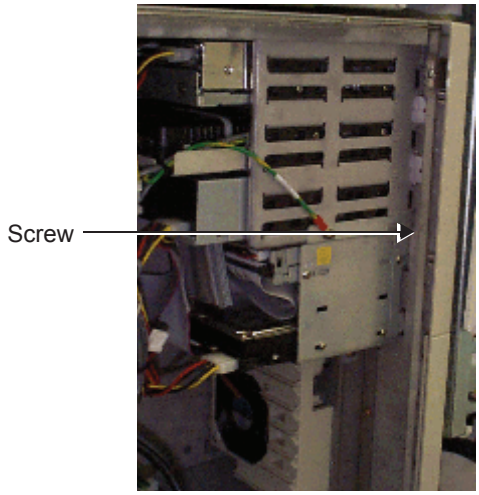


Figure 8-58 BEP1 - Front Cover Screw

8-5-3-6 BEP1 - Front Cover Installation Procedure

1) Return the front cover, pushing it into position on the front of the BEP1.
2) Replace and tighten the screw that secures the front cover in position - see Figure 8-58, above.

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8-5-4 BEP2 Cover and Octopus Card Holder Replacement Procedure

NOTE: BEP2 refers to a Pentium 4-based BEP (newer type).

8-5-4-1 Tools

Use the appropriate flat and Phillips-type screw drivers, as indicated in the BEP cover replacement procedure.

8-5-4-2 Preparation

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

8-5-4-3 BEP2 - Side Cover Removal Procedure

1) Remove the two screws (that secure the side cover in position) from the rear of the BEP (see Figure 8-59 below).
2) Slide the cover backwards and remove it.

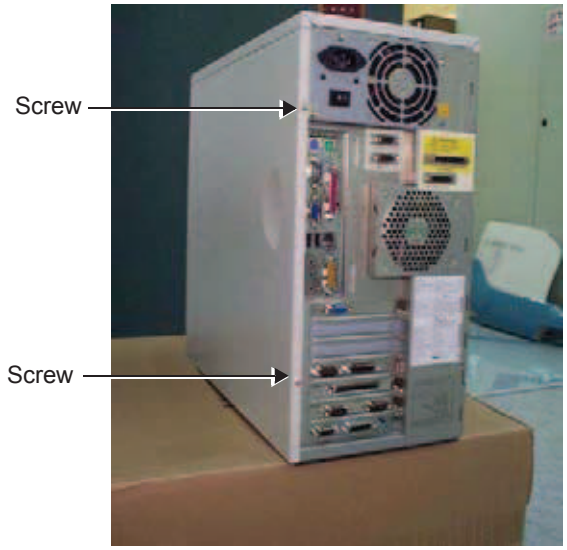


Figure 8-59 Side Cover - BEP2

8-5-4-4 BEP2 - Side Cover Installation Procedure

1) Return the cover to the side of the BEP and slide it forwards into position.
2) Replace and tighten the two screws to hold the cover firmly in position (Figure 8-59 on page 8-66).

8-5-4-5 BEP2 - Front Cover Removal Procedure

1) Remove the two screws that secure the BEP front cover in position - see Figure 8-60 on page 8-67.
2) Press on the two latches on the side to release the cover.
3.) Pull the cover forward (see Figure 8-61 on page 8-67) and remove it.

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Figure 8-60 Front Cover - BEP2



Figure 8-61 Front Cover Removal - BEP2

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8-5-4-6 BEP2 - Front Cover Installation Procedure

1) Return the front cover to the front of the BEP and press the two latches on the side, in order to push the cover back into position.

2) Replace and tighten the two screws to secure the BEP front cover in position - see Figure 8-60 on page 8-67.

8-5-4-7 BEP2 - Octopus Card Holder Removal Procedure

1) Remove the three screws that secure the Octopus Card Holder in position as shown in Figure 8-62 below.

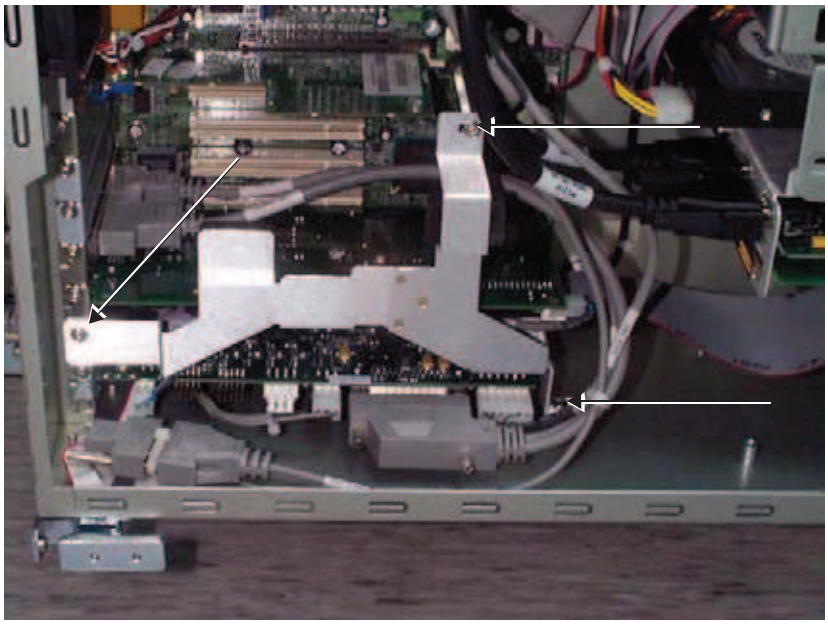


Figure 8-62 Octopus Card Holder - BEP1

2.) Remove the Octopus Card Holder.

8-5-4-8 BEP2 - Octopus Card Holder Installation Procedure

1) Place the Octopus Card Holder in position on the BEP part, holding it firmly in place.

2) Return the three screws and tighten them to hold the Octopus Card Holder securely in position, as shown in Figure 8-62, above.

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8-5-5 Plug & Scan Board Replacement Procedure

8-5-5-1 Tools

Use the appropriate flat and Phillips-type screw drivers and a wire cutter, as indicated in the Plug & Scan board replacement procedure.

8-5-5-2 Preparation

Shut down the Vivid™ 3 ultrasound unit, as described in *Chapter 3 - Installation*. Voltage may exist in the system when a Plug & Scan is present. Ensure that a full shutdown of the system is performed, otherwise voltage might be present that can cause injury and/or damage.

8-5-5-3 Plug & Scan Board Removal Procedure

1) Remove the machine's rear and left and right side covers, as described in Side Covers Removal Procedure on page 8 - 4 and Rear Cover Removal Procedure on page 8 - 7.
2) Disconnect the power cable from the rear of the BEP.
3) 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.
4) If applicable, remove the octopus card holder as described in the BEP2 - Octopus Card Holder Removal Procedure on page 8 - 68.
5) Disconnect all cables connected to the Plug & Scan board from the keyboard control card, the battery and the power supply.

Note: Counting from the top, the board is positioned in the first PCI slot.

6) Release the securing screw located on the left of the board bracket.
7) Gently remove the Plug & Scan board from the BEP.

8-5-5-4 Plug & Scan Board Installation Procedure

1) Gently insert the Plug & Scan board into its slot.

Note: Counting from the top, the board is positioned in the first PCI slot.

2) Fasten the board with the screw on the left of the bracket.
3) Reconnect the cables to the Plug & Scan board from the keyboard control card, the battery and the power supply.
4.) If applicable, mount the octopus card holder as described in the BEP2 - Octopus Card Holder Installation Procedure on page 8 - 68
5) Mount the BEP side cover as described in the appropriate procedure:
BEP1 - Left and Right Side Cover Installation Procedure on page 8 - 64, or BEP2 - Side Cover Installation Procedure on page 8 - 66.
6) Reconnect the power cable to the rear of the BEP.
7) Install the Vivid™ 3 rear, and left and right side covers, as described in the Side Covers Installation Procedure on page 8 - 4, and the Rear Cover Installation Procedure on page 8 - 7.

Note: Perform a complete functional check of the Plug & Scan, as described in *Chapter 4 - Functional Checks*.

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8-5-6 Plug & Scan Battery Replacement Procedure

NOTE: ***IMPORTANT*** *- If the Plug & Scan battery is replaced, ensure that you properly transport and dispose of the old battery according to the procedures established by your facility, company, or regional regulatory agency.*

8-5-6-1 Tools

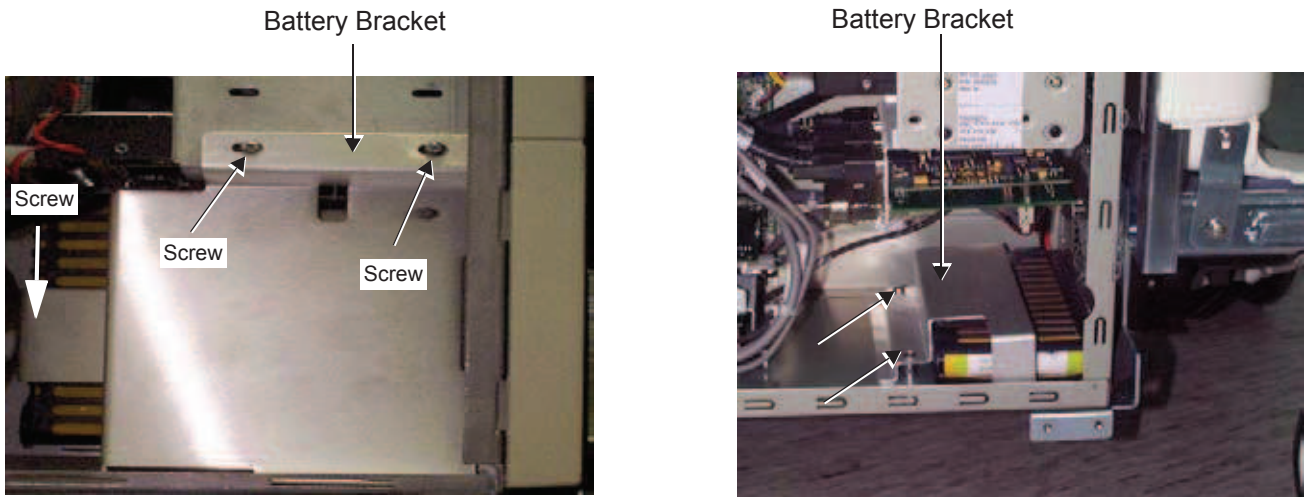
Use the appropriate flat and Phillips-type screw drivers, a wire cutter and the appropriate Hex wrenches, as indicated in the Plug & Scan battery replacement procedure.

8-5-6-2 Preparation

Shut down the Vivid™ 3 ultrasound unit, as described in *Chapter 3 - Installation*. Voltage may exist in the system when a Plug & Scan is present. Ensure that a full shutdown of the system is performed, otherwise voltage might be present that can cause injury and/or damage.

8-5-6-3 Plug & Scan Battery Removal Procedure

1) Remove the left cover, as described in the Side Covers Removal Procedure on page 8 - 4.
2) Disconnect the power cable from the rear of the BEP.
3) Remove the BEP cover as described Back End Processor Replacement Procedure on page 8 - 58. The Plug & Scan battery and its cover are located to the right of the BEP.
4) Remove the screws that secure the battery bracket in position (see Figure 8-63 below - BEP1 has *three* screws; BEP2 has *two*); remove the bracket.



BEP1
(third screw not visible)

BEP2

Figure 8-63 Plug & Scan Battery Bracket and Screws

5) Disconnect the battery cable from the Plug & Scan board.

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6) The battery is fastened with velcro strips to the inner wall of the BEP. Remove the battery by pulling it away from the velcro.



Figure 8-64 Plug & Scan Battery Removed

8-5-6-4 Plug & Scan Battery Installation Procedure

Note: When replacing the battery, first pull off and remove the top layer from the two velcro fastening strips on the rear of the battery, as shown below. These strips are not required because two similar strips from the old battery are already found on the inner wall of the BEP.

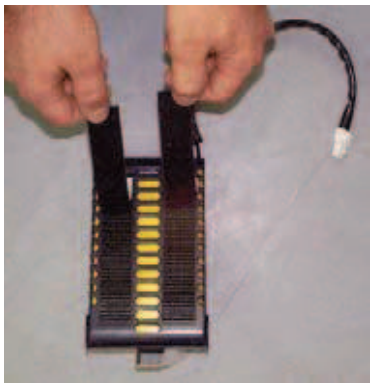


Figure 8-65 Removing Plug & Scan Velcro Strips

1) Place the battery inside the battery bracket. Ensure that the cable is positioned at the lower end and that the rear of the battery (with the two velcro strips) faces the inner wall of the BEP.
2) Mount the battery and bracket in its original location in the BEP, tightening the screws (two or three as shown in Figure 8-63 on page 8-70) to secure it firmly in position.
3) Reconnect the battery cable to the Plug & Scan board.
4) Mount the BEP side cover as described in the appropriate procedure:
BEP1 - Left and Right Side Cover Installation Procedure on page 8 - 64, or BEP2 - Side Cover Installation Procedure on page 8 - 66.
5) Reconnect the power cable to the rear of the BEP.
6) Return the left cover, as described in the Side Covers Installation Procedure on page 8 - 4.

Note: Perform a complete functional check of the Plug & Scan (see *Chapter 4 - Functional Checks*).

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8-5-7 VGA AGP Board Replacement Procedure



CAUTION: DO NOT TOUCH ANY BOARDS WITH INTEGRATED CIRCUITS PRIOR TO TAKING THE NECESSARY ESD PRECAUTIONS:



1.ALWAYS CONNECT YOURSELF, VIA AN ARM-WRIST STRAP, TO THE ADVISED ESD CONNECTION POINT LOCATED ON THE REAR OF THE SCANNER (TO THE RIGHT OF THE POWER CONNECTOR).

2.FOLLOW GENERAL GUIDELINES FOR HANDLING OF ELECTROSTATIC SENSITIVE EQUIPMENT.

8-5-7-1 Tools

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

8-5-7-2 Preparation

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

8-5-7-3 VGA AGP Board Removal Procedure

1) Remove the Vivid™ 3 rear and left and right side covers - see the Rear Cover Removal Procedure on page 8 - 7 and the Side Covers Installation Procedure on page 8 - 4.
2) Disconnect the power cable from the rear of the BEP.
3) Remove the BEP side cover, as described in the BEP2 - Side Cover Removal Procedure on page 8 - 66.
4) Remove the octopus card holder as described in the BEP2 - Octopus Card Holder Removal Procedure on page 8 - 68.
5) Disconnect the cable (Part No. 2252965) connected to the AGP board.

Note: Counting from the top, the AGP board is positioned in the first slot (AGP).

6) Release the securing screw located on the left of the board bracket.
7) Gently remove the AGP board from the BEP.

8-5-7-4 VGA AGP Board Installation Procedure

1) Gently insert the AGP board into its slot.

Note: Counting from the top, the AGP board is positioned in the first slot.

2) Fasten the board with the screw on the left of the bracket.
3) Reconnect the cable (disconnected in step 5 above) to the AGP board.
4.) Install the octopus card holder as described in the BEP2 - Octopus Card Holder Installation Procedure on page 8 - 68.
5) Install the BEP side covers, as described in the BEP2 - Side Cover Installation Procedure on page 8 - 66.
6) Reconnect the power cable to the rear of the BEP.
7) Return the Vivid™ 3 rear and left and right side covers - see the Rear Cover Installation Procedure on page 8 - 7 and the Side Covers Installation Procedure on page 8 - 4.

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8-5-8 SCSI Board Replacement Procedure

CAUTION: DO NOT TOUCH ANY BOARDS WITH INTEGRATED CIRCUITS PRIOR TO TAKING THE NECESSARY ESD PRECAUTIONS:



1.ALWAYS CONNECT YOURSELF, VIA AN ARM-WRIST STRAP, TO THE ADVISED ESD CONNECTION POINT LOCATED ON THE REAR OF THE SCANNER (TO THE RIGHT OF THE POWER CONNECTOR).

2.FOLLOW GENERAL GUIDELINES FOR HANDLING OF ELECTROSTATIC SENSITIVE EQUIPMENT.

8-5-8-1 Tools

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

8-5-8-2 Preparation

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

8-5-8-3 SCSI Board Removal Procedure

1) Remove the Vivid™ 3 rear and left and right side covers - see the Rear Cover Removal Procedure on page 8 - 7 and the Side Covers Installation Procedure on page 8 - 4.
2) Disconnect the power cable from the rear of the BEP.
3) Remove the BEP side covers, 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.
4) If applicable, remove the octopus card holder as described in the BEP2 - Octopus Card Holder Removal Procedure on page 8 - 68.
5) Disconnect the cable connecting the SCSI board to the MO.

Note: Counting from the top, the SCSI board is positioned in the second PCI slot.

6) Release the securing screw located on the left of the board bracket.
7) Gently remove the SCSI board from the BEP.

8-5-8-4 SCSI Board Installation Procedure

1) Gently insert the SCSI board into its slot.

Note: Counting from the top, the SCSI board is positioned in the second PCI slot.

2) Fasten the board with the screw on the left of the bracket.
3) Reconnect the cable from SCSI board to the MO.
4.) If applicable, install the octopus card holder as described in the BEP2 - Octopus Card Holder Installation Procedure on page 8 - 68.
5) Install the BEP side covers, 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.
6) Reconnect the power cable to the rear of the BEP.

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

Note: Perform a complete functional check of the MO, as described in *Chapter 4 - Functional Checks*.

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8-5-9 PC2IP Board Replacement Procedure

8-5-9-1 Tools

Use the appropriate flat and Phillips-type screw drivers and a wire cutter as indicated in the PC2IP board replacement procedure.

8-5-9-2 Preparation

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

8-5-9-3 PC2IP Board Removal Procedure

1) Remove the Vivid™ 3 left and right side covers, and rear cover - see the Rear Cover Removal Procedure on page 8 - 7 and the Side Covers Installation Procedure on page 8 - 4.
2) Disconnect the power cable from the rear of the BEP.
3) Remove the BEP side covers, 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.
4) If applicable, remove the octopus card holder as described in the BEP2 - Octopus Card Holder Removal Procedure on page 8 - 68.
5) Disconnect the PCI cable that is connected to the BEP.

Note: Counting from the top, the PC2IP board is positioned in the fourth slot.

6) Release the securing screw located on the left of the board bracket.
7) Gently remove the PC2IP board from the BEP.

8-5-9-4 PC2IP Board Installation Procedure

1) Gently insert the PC2IP board into its slot.

Note: Counting from the top, the PC2IP board is positioned in the fourth slot.

2) Fasten the board with the screw on the left of the bracket.
3) Reconnect the PCI cable that is connected to the BEP.
4.) If applicable, install the octopus card holder as described in the BEP2 - Octopus Card Holder Installation Procedure on page 8 - 68.
5) Reconnect the power cable to the rear of the BEP.
6.) Install the BEP side covers, 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 rear, left and right covers - see the Side Covers Installation Procedure on page 8 - 4 and Rear Cover Replacement Procedures on page 8 - 7.

Note: Perform a complete diagnostic check of the system, as described in *Chapter 7 - Diagnostics/Troubleshooting*.

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8-5-10 Frame Grabber Board Replacement Procedure

NOTE: The procedures described in this section are only applicable to Vivid™ 3 systems with the RFI configuration.

8-5-10-1 Tools

Use the appropriate flat and Phillips-type screw drivers and a wire cutter as indicated in the frame grabber board replacement procedure.

8-5-10-2 Preparation

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

8-5-10-3 Frame Grabber Board Removal Procedure

1) Remove the Vivid™ 3 left and right side covers, and rear cover - see the Rear Cover Removal Procedure on page 8 - 7 and the Side Covers Installation Procedure on page 8 - 4.
2) Disconnect the power cable from the rear of the BEP.
3) Remove the BEP side covers, as described in the BEP2 - Side Cover Removal Procedure on page 8 - 66.
4) If applicable, remove the octopus card holder as described in the BEP2 - Octopus Card Holder Removal Procedure on page 8 - 68.
5) Disconnect the frame grabber cable from the rear of the frame grabber board.

Note: Counting from the top, the frame grabber board is positioned in the fifth PCI slot.

6) Release the securing screw located on the left of the board bracket.
7) Gently remove the frame grabber board from the BEP.

8-5-10-4 Frame Grabber Board Installation Procedure

1) Gently insert the frame grabber board into its slot.

Note: Counting from the top, the frame grabber board is positioned in the fifth PCI slot.

2) Fasten the board with the screw on the left of the bracket.
3) Reconnect the frame grabber cable to the rear of the frame grabber board.
4.) If applicable, install the octopus card holder as described in the BEP2 - Octopus Card Holder Installation Procedure on page 8 - 68.
5) Reconnect the power cable to the rear of the BEP.
6) Install the BEP side covers, as described in the BEP2 - Side Cover Installation Procedure on page 8 - 66.
7) Return the Vivid™ 3 rear, left and right covers - see the Side Covers Installation Procedure on page 8 - 4 and Rear Cover Replacement Procedures on page 8 - 7.

Note: Perform a complete diagnostic check of the system, as described in *Chapter 7 - Diagnostics/Troubleshooting*.

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8-5-11 Keyboard Control Board Replacement Procedure

8-5-11-1 Tools

Use the appropriate flat and Phillips-type screw drivers and a wire cutter as indicated in the keyboard control board replacement procedure.

8-5-11-2 Preparation

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

8-5-11-3 Keyboard Control Board Removal Procedure

1) Remove the Vivid™ 3 left and right side covers, and rear cover - see the Rear Cover Removal Procedure on page 8 - 7 and the Side Covers Installation Procedure on page 8 - 4.
2) Disconnect the power cable from the rear of the BEP.
3) Remove the BEP side covers, 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.
4) If applicable, remove the octopus card holder as described in the BEP2 - Octopus Card Holder Removal Procedure on page 8 - 68.
5) Disconnect the two keyboard control cables that are connected at the rear of the BEP, and all the internal cables connected to the keyboard control board.

Note: Counting from the top, the keyboard control board is positioned in the sixth PCI slot.

6) Release the securing screw located on the left of the board bracket.
7) Gently remove the keyboard control board from the BEP.

8-5-11-4 Keyboard Control Board Installation Procedure

1) Gently insert the keyboard control board into its slot.

Note: Counting from the top, the keyboard control board is positioned in the sixth PCI slot.

2) Fasten the board with the screw on the left of the bracket.
3) Reconnect the two keyboard control cables that are connected at the rear of the BEP, and connect the other internal cables to the keyboard control board.

4.) If applicable, install the octopus card holder as described in the BEP2 - Octopus Card Holder Installation Procedure on page 8 - 68.

5) Install the BEP side covers, 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.
6) Reconnect the power cable to the rear of the BEP.
7) Return the Vivid™ 3 rear, left and right covers - see the Side Covers Installation Procedure on page 8 - 4 and Rear Cover Replacement Procedures on page 8 - 7.

Note: Perform a complete diagnostic of the system, as described in *Chapter 7 - Diagnostics/ Troubleshooting*.

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8-5-12 CDRW Drive Replacement Procedure

8-5-12-1 Tools

Use the appropriate flat and Phillips-type screw drivers and a wire cutter.

When installing a new CDRW Drive on systems that have software versions earlier than 3.1, it is necessary to install the CD-RW patch (P/N 2413448) that is supplied as part of the CD-RW Kit, as shown below.

CD-RW Kit part number 2413449 consists of the following items:

ITEM PART NO.	DESCRIPTION
2346017	CD-RW Drive
2413448	CD-RW Patch
2413450-100	CD Patch CD-RW Installation Instructions

8-5-12-2 Preparation

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

8-5-12-3 CDRW Drive Removal Procedure

1) Remove the Vivid™ 3 left and right side covers, and rear cover - see the Rear Cover Removal Procedure on page 8 - 7 and the Side Covers Installation Procedure on page 8 - 4.
2) Disconnect the power cable from the rear of the BEP.
3) Remove the BEP left and right side covers, 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.
4) Remove the BEP front cover as described in the appropriate procedure: BEP1 - Front Cover Removal Procedure on page 8 - 64, or BEP2 - Front Cover Removal Procedure on page 8 - 66.
5) Remove the cables (data and power) that connect to the rear of the CDRW Drive.
6.) Carefully slide the CDRW Drive out from the front of the BEP as shown in Figure 8-66 below.

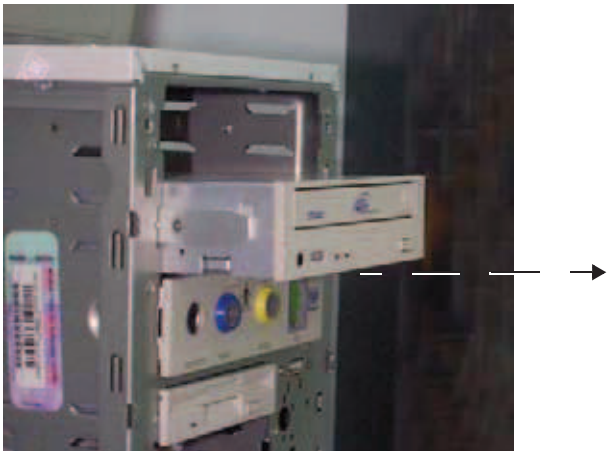
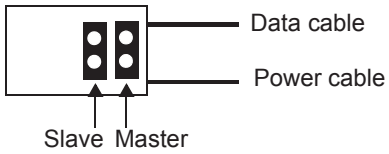


Figure 8-66 CDRW Drive Removal

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8-5-12-4 CDRW Drive Installation Procedure

Note: Before installing the new CDRW Drive, make sure the jumper settings closest to the data cable are shorted as follows:



1.) *For BEP1*:
Assemble the black *plastic* slides provided with the CDRW drive, or use those from the drive previously removed.

For BEP2:
Use the *metal* slides provided with the CDRW drive, or use those from the drive previously removed.

2) Carefully slide the CDRW Drive into the front of the BEP (refer to Figure 8-66 on page 8-78).

3) Reconnect the cables (data and power) to the rear of the CDRW Drive.

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

5.) Reconnect the power cable to the rear of the BEP.

6) Return the Vivid™ 3 rear, left and right covers - see the Side Covers Installation Procedure on page 8 - 4 and Rear Cover Replacement Procedures on page 8 - 7.

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8-5-13 MO Drive Replacement Procedure

8-5-13-1 Tools

Use the appropriate flat and Phillips-type screw drivers and a wire cutter.

8-5-13-2 Preparation

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

8-5-13-3 MO Drive Removal Procedure

1) Disconnect the mains AC power cable for the mains power wall outlet.
2) Remove the Vivid™ 3 left and right side covers - refer to the Side Covers Removal Procedure on page 8 - 4.
3.) Remove the Vivid™ 3 rear cover - refer to the Rear Cover Removal Procedure on page 8 - 7.
4) Remove the BEP left and right side covers, 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.
5) Remove the BEP front cover as described in the appropriate procedure: BEP1 - Front Cover Removal Procedure on page 8 - 64, or BEP2 - Front Cover Removal Procedure on page 8 - 66.
6) Remove the cables (data and power) that connect to the rear of the MO Drive.
7.) For BEP2, remove the two screws from each side of the MO that hold the MO Drive inside the BEP.



Figure 8-67 MO Drive Removal

8.) Carefully slide the MO Drive out from the front of the BEP.

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8-5-13-4 MO Drive Installation Procedure

Note: Before installing the new MO Drive, make sure the MO Drive jumper settings are shorted as shown below:

Settings required:
A2 to B2
A9 to B9
A11 to B11



SCSI and DC Power Connector

1.) *For BEP1*:
Assemble the black *plastic* slides provided with the MO drive, or use those from the drive previously removed.

For BEP2:
Use the *metal* tracks provided with the MO drive, or use those from the drive previously removed. See note below.

2) Carefully slide the MO Drive into the front of the BEP (refer to Figure 8-67 on page 8-80). For BEP2 systems, secure the MO Drive in position with the four screws (two on each side).

3) From the BEP rear, remove the empty panel (2nd from the top) and insert the SCSI card see SCSI Board Installation Procedure on page 8 - 73.

4) Connect the data cable between the SCSI card and the rear of the MO Drive.

5.) Connect the power cable to the rear of the MO Drive. Make sure that Pin 1 is aligned with the red line on the flat cable.

6.) If applicable, install the octopus card holder as described in the BEP2 - Octopus Card Holder Installation Procedure on page 8 - 68.

7) Install the BEP left and right side covers, as described in the BEP2 - Side Cover Removal Procedure on page 8 - 66.

Note: If this MO Drive installation is newly-installed hardware for this system, the kit should have been provided with a set of sliders (one set for BEP1 and one for BEP2), and also a front cover for BEP2. Refer also to the SCSI card installation instructions in the SCSI Board Installation Procedure on page 8 - 73.

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8-5-14 ECG Module Replacement Procedure

NOTE: In this section, the replacement procedure for an ECG Module for BEP1/BEP0 and BEP2 systems are provided in separate sub-sections.

8-5-14-1 Tools

Use the appropriate flat and Phillips-type screw drivers and a wire cutter.

8-5-14-2 Preparation

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

When ordered as a spare part (P/N: 22556476), the ECG kit will include the following items:

P/N	Description	Quantity
2334537	Patient I/O Assy. Box	1
2552982	Internal Foot Switch Cable	1
2274035	Slider Left	1
2274036	Slider Right	1
280A0306	P.H.P Screw M3XL6	4
280P0003	Spring Washer Int. M3	4
2298089	ECG Adaptor to COM2 Cable	1
22771878	Purpose Gaskets 10 cm strip	1
2334537INS	ECG Module Replacement Instructions	1

8-5-14-3 BEP1 and BEP0 - ECG Module Removal Procedure

NOTE: BEP1 refers to a Pentium III-based BEP (earlier type).

1) Disconnect the mains AC power cable for the mains power wall outlet.
2) Remove the Vivid™ 3 left and right side covers - refer to the Side Covers Removal Procedure on page 8 - 4.
3.) Remove the Vivid™ 3 rear cover - refer to the Rear Cover Removal Procedure on page 8 - 7.
4) Disconnect all cables from the rear of the BEP.
5) Remove the BEP from the machine as described Back End Processor Replacement Procedure on page 8 - 58.
6) Remove both BEP side covers as described in the BEP1 - Left and Right Side Cover Removal Procedure on page 8 - 64.
7) Remove the BEP front cover as described in the BEP1 - Front Cover Removal Procedure on page 8 - 64.

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8) Disconnect the power cable and COM2 cable from the rear of the ECG Module - see Figure 8-68 below.

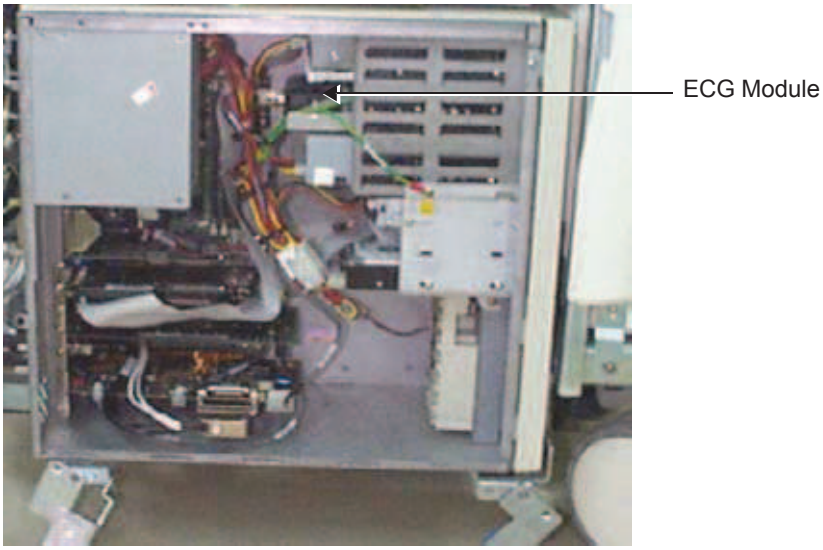


Figure 8-68 ECG Module - BEP1

9) Carefully slide out the ECG Module from the front of the BEP.

8-5-14-4 BEP1 and BEP0 - ECG Module Installation Procedure

NOTE: BEP1 refers to a Pentium III-based BEP (earlier type).

1) If necessary, assemble the side rails onto the new ECG Module as shown in Figure 8-69 below.

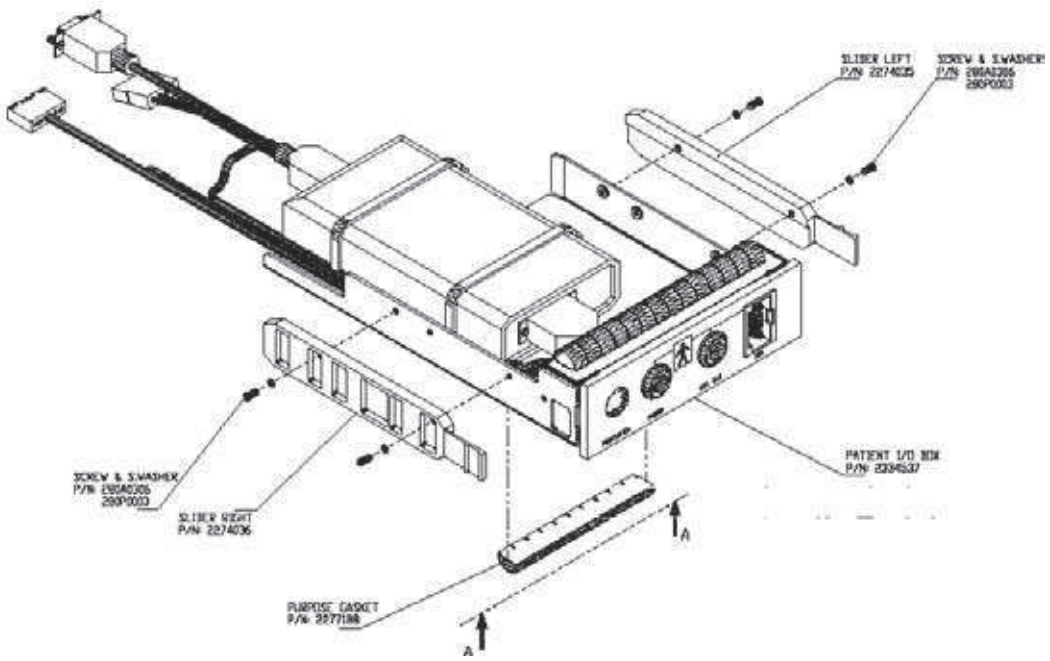


Figure 8-69 ECG Module with Rail Attached

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Note: In the event that screws or side rails are misplaced, one can use the screws, slides, and rails from the ECG Module that was removed from the BEP.

2) Remove the protective layer from the Purpose Gaskets, and affix the gaskets in line with the existing Purpose Gaskets on the bottom of the new ECG module.

3) Slide the new ECG Module into the front of the BEP, pushing it in until it is properly aligned with the other modules at the front of BEP.

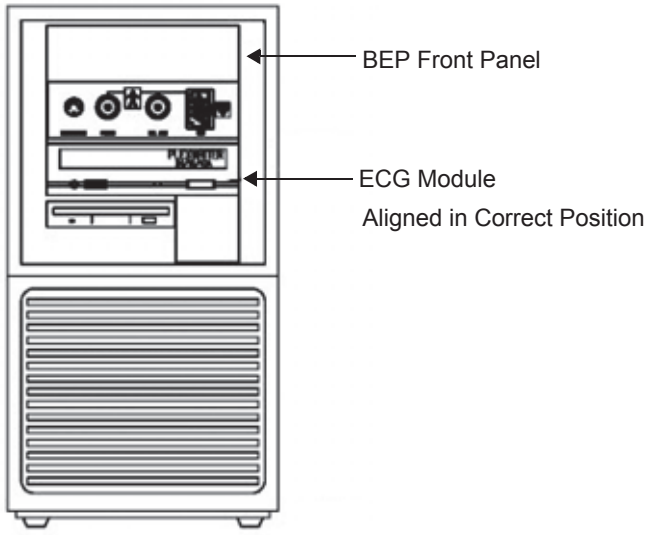


Figure 8-70 New ECG Module inside BEP1

4) Reconnect the power cable and the COM 2 cable to the rear of the new ECG Module.

5) Replace the BEP Front Panel and secure it with the screw that was previously removed.

6) Carefully return the BEP to its original position.

7) Return both BEP side covers as described in the BEP1 - Left and Right Side Cover Removal Procedure on page 8 - 64.

8) Push the BEP as far to the right as possible; tighten first the *left lower* bracket, then the *right lower* bracket, and finally the *upper left* side bracket. Use two screws to fasten each bracket securely.

9) Reconnect all cables at the rear of the BEP.

10) Return the Vivid™ 3 rear cover to its original position - see Rear Cover Replacement Procedures on page 8 - 7.

11) Return the Vivid™ 3 side covers, as described in Side Covers Installation Procedure on page 8 - 4.

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

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

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

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8-5-14-5 BEP2 - ECG Module Removal Procedure

NOTE: BEP2 refers to a Pentium 4-based BEP (newer type).

1) Disconnect the mains AC power cable for the mains power wall outlet.
2) Remove the Vivid™ 3 left and right side covers - refer to the Side Covers Removal Procedure on page 8 - 4.
3.) Remove the Vivid™ 3 rear cover - refer to the Rear Cover Removal Procedure on page 8 - 7.
4) Disconnect all cables from the rear of the BEP.
5) Remove the BEP from the machine as described Back End Processor Replacement Procedure on page 8 - 58.
6) Remove both BEP side covers as described in the BEP2 - Side Cover Removal Procedure on page 8 - 66.
7) Remove the BEP front cover as described in the BEP2 - Front Cover Removal Procedure on page 8 - 66. A left view of the exposed BEP showing the location of the ECG module is seen in Figure 8-71 below:

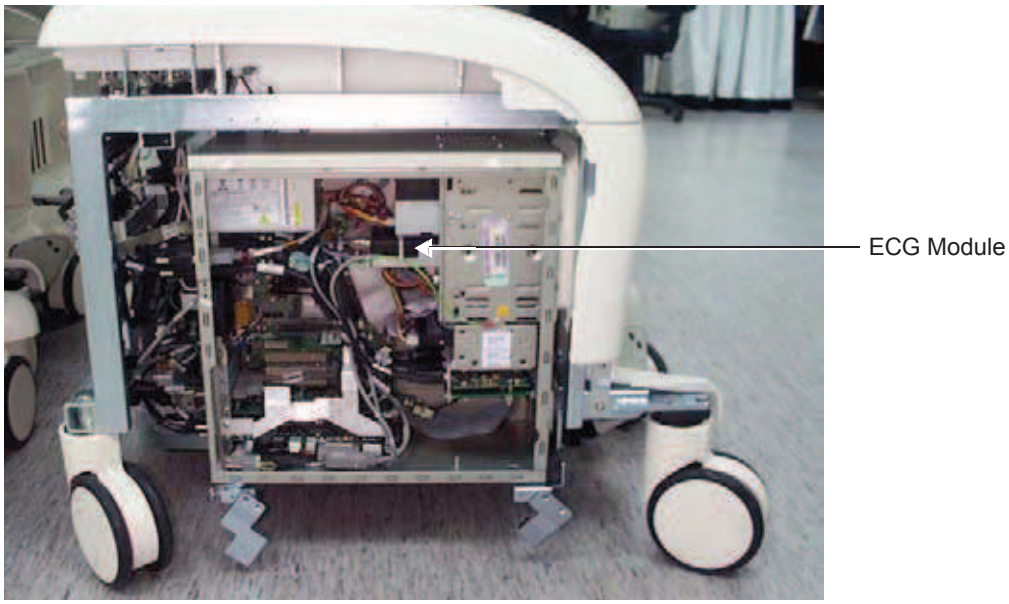


Figure 8-71 ECG Module - BEP2

8) Remove the four screws that secure the ECG Module in position (two from each side of the exposed BEP as shown in Figure 8-72 on page 8-86).

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Figure 8-72 ECG Module Removal- BEP2

9) Disconnect the footswitch cable from the KB Controller card.

10.) Disconnect the COM2 cable from the rear of the ECG Module.

11) Carefully slide out the ECG Module from the front of the BEP.

8-5-14-6 BEP2 - ECG Module Installation Procedure

NOTE: BEP2 refers to a Pentium 4-based BEP (newer type).

1.) Slide the new ECG Module into the front of the BEP, pushing it in until it aligns with other modules at the front of BEP.

2) Secure the ECG Module with four screws, two from each side of the BEP (see Figure 8-72, above).

3.) Replace the BEP Front Panel and secure it with the two screws previously removed.



Figure 8-73 ECG Module inside BEP2

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4) Reconnect the power cable and the COM 2 cable to the rear of the new ECG Module.

5) Install the BEP left and right side covers, as described in the BEP2 - Side Cover Installation Procedure on page 8 - 66.

6.) Carefully return the BEP to its original location and secure all brackets by tightening the screws.

7) Reconnect all cables at the rear of the BEP.

8) Return the Vivid™ 3 rear cover to its original position - see Rear Cover Replacement Procedures on page 8 - 7.

9) Return the Vivid™ 3 side covers, as described in the Side Covers Installation Procedure on page 8 - 4.

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

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

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

8-5-15 PC-VIC Replacement Procedure

NOTE: This procedure is performed for systems with a BEP2 (Pentium 4-based BEP, newer type).

8-5-15-1 Tools

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

8-5-15-2 Preparation

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

8-5-15-3 PC-VIC 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 BEP2 - Side Cover Removal Procedure on page 8 - 66.

3.) Remove the screw that holds the Ground cable and PC-VIC in position (as shown in Figure 8-74

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below).

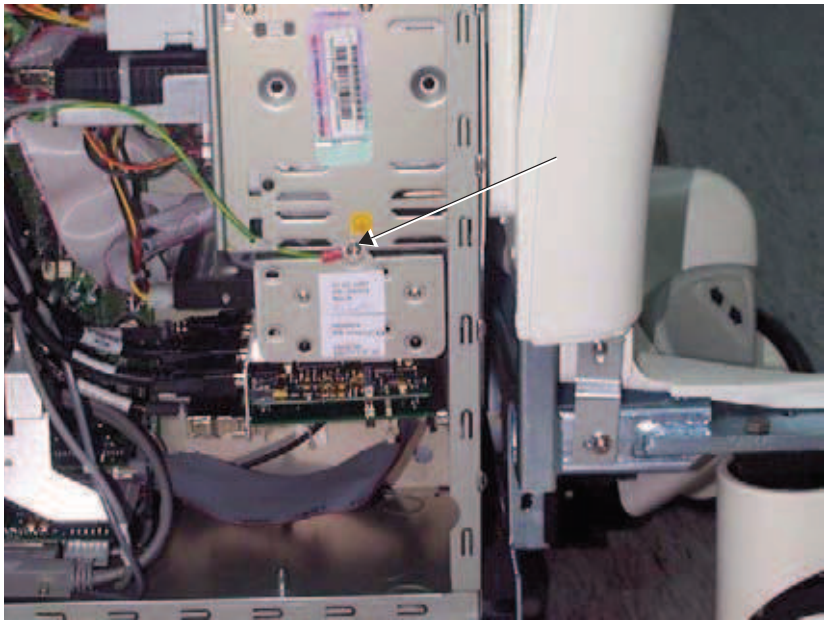


Figure 8-74 PC-VIC

4) Carefully slide the PC-VIC out from the unit.

5.) Disconnect all the cables at the rear of the PC-VIC module and the hard disk.

6.) Remove the four screws (two on each side) from the side of the PC-VIC module holder as shown in Figure 8-75 on page 8-88.

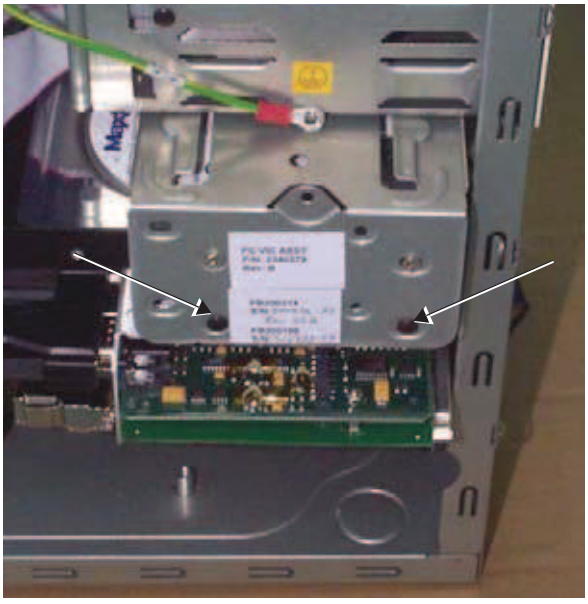


Figure 8-75 PC-VIC Removal

7.) Remove the PC-VIC.

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8-5-15-4 PC-VIC Installation Procedure

1) Place a new PC-VIC in the PC-VIC module holder.
2) Return and tighten the four screws (two each side) on the side of the holder - refer to Figure 8-75, above.
3.) Reconnect all the cables at the rear of the PC-VIC module and the hard disk.
4.) Carefully slide the PC-VIC into position in the same location as that of the removed PC-VIC.
5.) Return and tighten the screw that holds the PC-VIC in position (as shown in Figure 8-74 on page 8-88).
6.) Connect the flat cable between the PC2IP and the PC-VIC.
7) Replace the BEP side cover as described in the BEP2 - Side Cover Installation Procedure on page 8 - 66.
8) Remove the Vivid™ 3 left cover, as described in the Side Covers Installation Procedure on page 8 - 4.

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8-5-16 BEP2 Power Supply Replacement Procedure

NOTE: This procedure is performed for systems with a BEP2 (Pentium 4-based BEP, newer type).

8-5-16-1 Tools

Use the appropriate flat and Phillips-type screw drivers and a wire cutter as indicated in the BEP2 Power Supply replacement procedure.

8-5-16-2 Preparation

Shut down the Vivid™ 3 ultrasound unit, as described in *Chapter 3 - Installation*. Voltage may exist in the system when a Plug & Scan is present. Ensure that a full shutdown of the system is performed, otherwise voltage might be present that can cause injury and/or damage.

8-5-16-3 BEP2 Power Supply Removal Procedure

1) Disconnect the mains AC power cable for the mains power wall outlet.
2) Remove the Vivid™ 3 left and right side covers - refer to the Side Covers Removal Procedure on page 8 - 4.
3.) Remove the Vivid™ 3 rear cover - refer to the Rear Cover Removal Procedure on page 8 - 7.
4) Remove the BEP2 from the Vivid™ 3 ultrasound unit, as follows:
   a.) Remove the two screws of *upper* BEP bracket, see Figure 8-54 on page 8-59.
   b.) Remove the screws of the *lower* left and *right* BEP brackets (Figure 8-54).
   c.) Disconnect all the cables from rear of the BEP, leaving the HASP key (option plug) connected.
   d.) Completely remove the BEP2 from the unit.
5) Remove the BEP2 side covers, as described in the BEP2 - Side Cover Removal Procedure on page 8 - 66. Refer also to Figure 8-76 below.



Figure 8-76 BEP2 with Side Cover Removed

6.) Remove the one screw, as shown in Figure 8-76.
7.) Remove the BEP front cover as described in the BEP2 - Front Cover Removal Procedure on page 8 - 66.

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8.) From the rear of the BEP2, remove the four screws that fasten the power supply in position on the BEP, as shown in Figure 8-77.



Figure 8-77 BEP2 Rear View

Note: For the next steps, it is recommended to carefully lie the BEP2 on its side, to provide easier access.

9.) Cut any cable ties holding the power supply cable in place, as shown in Figure 8-78 below.

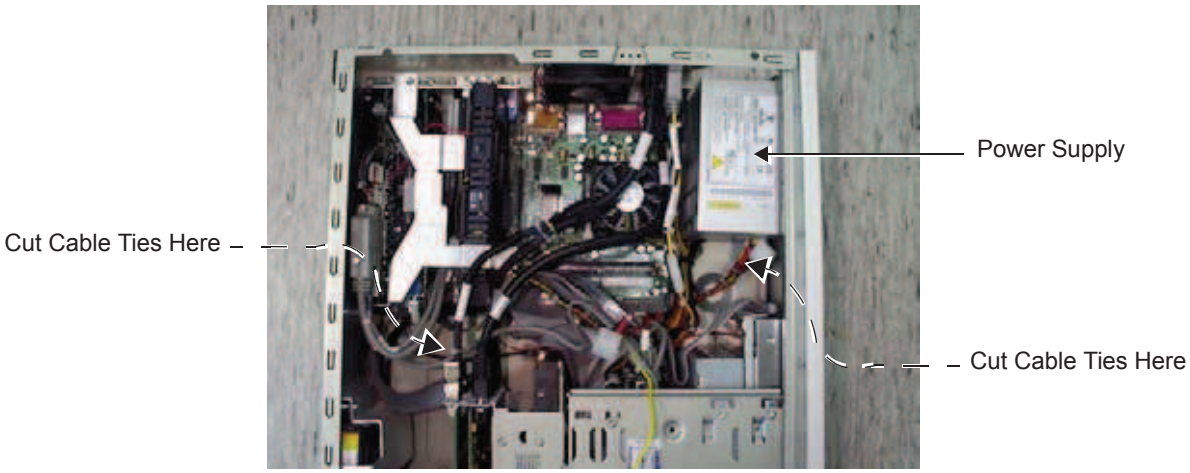
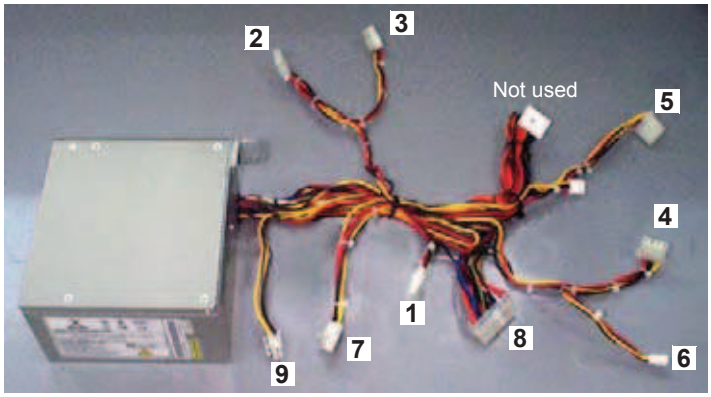


Figure 8-78 BEP2 Power Supply and Cable Ties

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10.) Gently slide the power supply a short distance backwards (away from the BEP casing), while tilting it downwards and pulling it to the side.

NOTE: For clarification, the numbers appearing in square brackets in the following steps correspond to the numbers shown in the illustration of the BEP2 Power Supply and cable connectors in Figure 8-81 below.



Cable Connections	
1	ECG
2	MOD
3	CD-RW
4	Hard Disk
5	PC-VIC
6	Floppy Disk
7	BEP rear
8	Motherboard (beside ECG)
9	Motherboard (beside CPU)

Figure 8-79 BEP2 Power Supply with Cable Loom and Connectors

11.) Carefully remove the ECG Module from the front of the BEP, sliding it out and disconnecting the power cable [**1**] from the rear of the ECG Module. (Refer to the BEP2 - ECG Module Removal Procedure on page 8 - 85).

12.) Disconnect the power cables from the media drives (MOD [**2**] and CD-RW [**3**]).

13.) Remove the screw that fastens the Ground cable and PC-VIC in position, as shown in Figure 8-80 below.

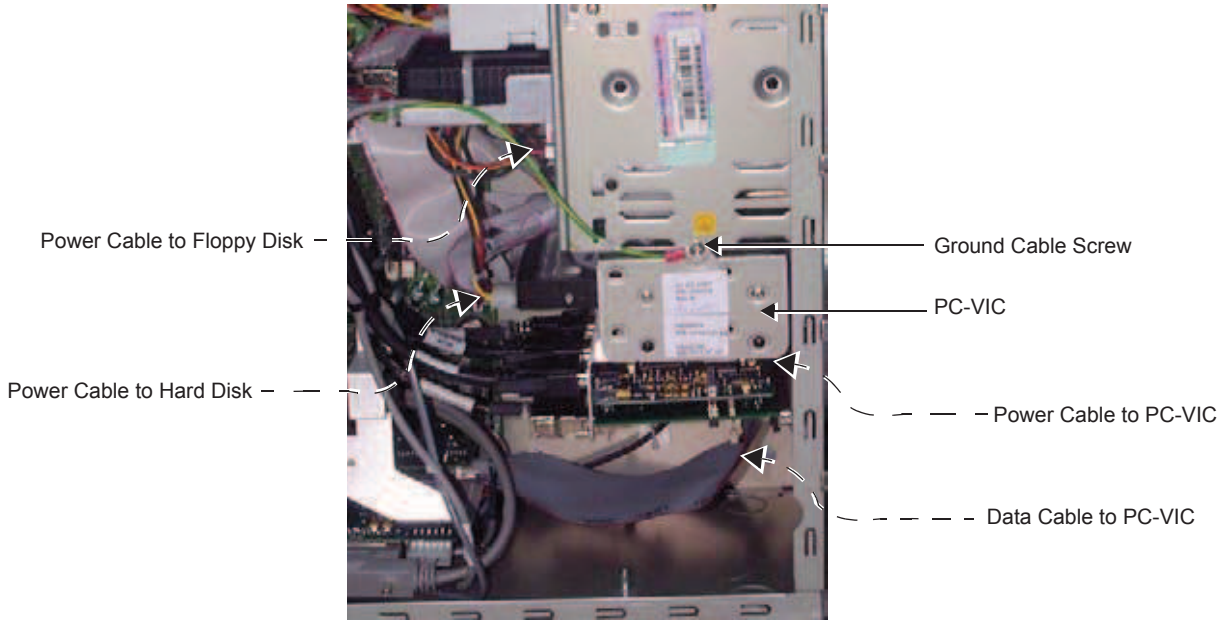


Figure 8-80 Disconnecting Cables

14.) Disconnect the power cable from the Hard Disk (labelled [**4**] in Figure 8-79); refer also to Figure 8-80.

15.) Disconnect the data cable from the PC-VIC (refer to Figure 8-80, above).

16.) Slide the PC-VIC & hard disk out sufficiently to be able to cut any cable ties and disconnect the power cable (labelled [**5**] in Figure 8-79) from the PC-VIC; refer also to Figure 8-80, above.

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17.) Disconnect the power cable from the Floppy Disk (labelled [**6**] in Figure 8-79); refer also to Figure 8-80, above.

18.) Disconnect the mains power cable (4-pin flat connector [**7**] - Part No. 2252981) from the rear of the BEP, cutting any cable ties as necessary.

19.) Disconnect the mains power cable [**8**] from the motherboard (beside the ECG location).

20.) Gently slide the power supply further downwards and then out of the BEP casing sufficiently to be able to cut any remaining cable ties.

21.) Remove the power supply from the BEP, together with the attached cable loom, as shown in Figure 8-81 below.

22.) Disconnect the 4-pin external connector [**9**] from the motherboard (beside the CPU).



Figure 8-81 Removing the BEP2 Power Supply with Cable Loom and Connectors

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