ImaCor Zura-Evo™
Service Manual

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Chapter 1: General Information

1.1 Audience

The intended audience of this service manual is properly trained field and in-house service personnel. This system is a medical device containing several circuit boards, extensive service diagnostics, and complex operating software. For these reasons, ImaCor recommends that only trained, certified technical support representatives service this ultrasound system.

1.1.1 Prescription Device

⚠ **Caution:** United States law restricts this device to sale or use by, or on the order of a Physician.

1.2 Voltage Disclaimer

The system voltage setting is configured in the factory.

It is the user's responsibility to ensure the system is used only under the electrical conditions dictated by ImaCor Corp. Failure to comply with these conditions may result in damage to the system which is not covered by the ImaCor warranty.

⚠ **Caution:** For users running the 100V–120V system, always ensure the utility supply voltage is 100V–120V @ 50/60 Hz. For users running the 200V–240V system, always ensure the utility supply voltage is 200V-240V @ 50/60 Hz.

1.3 Connectivity Disclaimer

⚠ **Caution:** For users running the 100V-120V system, always ensure the utility supply voltage is 100V–120V @ 50/60 Hz. For users running the 200V–240V system, always ensure the utility supply voltage is 200V-240V @ 50/60 Hz.

⚠ **Caution:** For details on FCC regulations as they apply to the wireless adapter, please refer to the manufacturer's User Guide included with the system.

1.4 Privacy Disclaimer

To protect patient data, ImaCor strongly recommends regular patient/image file back-up and purging of older patient files stored on the system. Refer to Chapter 9 in the *relevant* user manual for details on transferring patient data.

⚠ **IMPORTANT:** The contents of the system hard drive may include Personal Health Information that must be protected as dictated by local or state laws (for example, Federal Privacy Act or the Health Insurance Portability & Accountability Act (HIPAA)). In order to ensure regulatory compliance, ImaCor will not remove the system hard drive – and the patient data it contains – from the customer site.

In the event the hard drive must be removed from the system, it will be returned to the customer. Final disposition of the hard drive and its data will remain the customer's responsibility.

1.5 Service Disclaimer

ImaCor systems are configured with a variety of options that may not be available on all platforms. Therefore, some service instructions will apply only to specific models/configurations.

1.6 System Handling

⚠ **Warning:** Although the ImaCor Zura-Evo is portable, it weighs more than 30 lbs (13+ kg). To avoid injury, be sure to follow proper workplace/ergonomic lifting techniques when transporting the system.

1.7 License Agreement

Portions of the ImaCor Zura-Evo computer programs have been patented by ImaCor or are patent pending, and are licensed under the following software license agreement:

ImaCor, or its suppliers, retain(s) ownership of and title to any computer program supplied with the Equipment and to the trade secrets embodied in such computer programs. Subject to the Buyer's acceptance and fulfillment of the obligations in this paragraph, ImaCor grants the Buyer a personal, non-transferable, perpetual, non-exclusive license to use any computer program supplied with the Equipment that is necessary to operate the Equipment solely on the medium in which such program is delivered for the purpose of operating the Equipment in accordance with the instructions set forth in the operator's manuals supplied with the Equipment and for no other purpose whatsoever. Buyer may not reverse – assemble, reverse – compile or otherwise reverse – engineer such computer programs nor may Buyer make a copy of such program or apply any techniques to derive the trade secrets embodied therein. In the event of a failure by Buyer to comply with the terms of this license, the license granted by this paragraph shall terminate. Further, because unauthorized use of such computer programs will leave ImaCor without an adequate remedy at law, Buyer agrees that injunctive or other equitable relief will be appropriate to restrain such use, threatened or actual. Buyer further agrees that (i) any of the ImaCor suppliers of software is a direct and intended beneficiary of this end-user sublicense and may enforce it directly against Buyer with respect to software supplied by such supplier, and (ii) NO SUPPLIER OF IMACOR SHALL BE LIABLE TO BUYER FOR ANY GENERAL, SPECIAL, DIRECT, INDIRECT, CONSEQUENTIAL INCIDENTAL OR OTHER DAMAGES ARISING OUT OF THE SUBLICENSE OF THE COMPUTER PROGRAMS SUPPLIED WITH THE EQUIPMENT.

1.8 Trademarks and Patents

ImaCor Zura-Evos systems are protected under U.S. and International Patents.

Windows© is a trademark of Microsoft Corporation.

DICOM® (Digital Imaging and Communications in Medicine) is the registered trademark of the National Electrical Manufacturers Association (NEMA) for its standards publications relating to digital communications of medical information.

All other products and brand names mentioned in this document are trademarks of their respective companies.

1.9 System Overview

The ImaCor Zura-Evo is a software driven, ergonomic, diagnostic medical device. It uses state of the art technologies to acquire, process and display ultrasound data (**Figure 1-1**).

The system has several major field serviceable components including: LCD display with built-in speakers and a multi-position, articulated lift system, operator console, modulo, transducers and UPS.

Figure 1-1: ImaCor Zura-Evo

Table 1-1: ImaCor Zura-Evo

1	LCD Display/Touch Screen
2	Folding Carry Handle (top)
3	Side Connectivity Panel (power and Network connections, USB and sound ports) and Hard Drive access
4	Speaker

⚠ **Warning:** Do not place the device on any surface that blocks/restricts ventilation (e.g., do not set the device on a soft surface such as a bed). Failure to comply with this directive could inhibit system airflow and cause the system to overheat, which is not covered by the system warranty.

1.10 Physical Description

1.10.1 LCD Display/Touch Screen

The monitor is a Liquid Crystal Display (LCD display) with an operating resolution of 1152x864 pixels @ 60Hz (Hertz) and a built-in speaker. The monitor is a Liquid Crystal Display (LCD display) with an operating resolution of 1024x768 pixels @ 60Hz (Hertz) and built-in speakers.

1.10.2 Operator Console

All system controls are touch screen-based. Optional USB mouse and keyboard can be provided.

1.10.3 Modulo

The modulo, which is the heart of the system, is enclosed in the case with the LCD display/touch screen. The modulo is the heart of the system. The system CPU as well as the ultrasound module – in the form of

system boards and electronics – are encased in an aircraft grade aluminum composite case for ease of service.

1.10.4 Transducers

Refer to **Table 6-1: Transducer** for a complete list of transducers available with the system.

Chapter 2: System Specifications

2.1 Dimensions

Table 2-2: SystemDimensions

Measurement	Metric Value	U.S.s Value
Width	45 cm	17.7 in
Depth	17 cm	6.9 in
Height	41 cm	16.1 in
Weight	14.77 kg	32.5 lbs
Power Pack Size (W x L X H)	10.4 cm x 40 cm x 5.8 cm	4.1 in x 15.75 in x 2.3 in
Power Pack Weight	2.7 kg	6.95 lbs

2.2 Electrical Ratings

Table 2-3: Electrical Ratings

Input	100V–120V @ 50/60 Hz 200V–240V @ 50/60 Hz
Power Rating	120 VAC @ 7.0A 240 VAC @ 4.0A

Table 2-4: Fuses, Two (2) Required

Fuse Type	7A/250V SLO-BLO
Fuse Size	6.4 mm x 31.8 mm

2.3 Voltage Adjustment

The standard voltage rating for North America is 110–125V. The system is equipped to operate at 100–120V (±10%) and 200–240V (±10%).

Note: Section 2.2 has details on electrical ratings and fuses. Table 2-5 lists international electrical voltage ratings. Refer to Sections 3.3.1.1 and 3.3.2.3 for instructions on configuring voltage and changing fuses.

Table 2-5: International Electrical Voltage Ratings

Afghanistan	220V	Granada	220V	Oman	220V
Algeria	110/220V	Greece	220V	Pakistan	220V
Angola	220V	Greenland	220V	Panama	110V
Antigua	220V	Guatemala	110V	Paraguay	220V
Argentina	220V	Guinea	220V	Peru	110/220V
Aruba	110V	Guyana	110V	Philippines	110/220V
Australia	240V	Haiti	110V	Poland	220V
Austria	220V	Honduras	110V	Portugal	110/220V
Azores	110/220V	Hong Kong	220V	Puerto Rico	110V
Bahamas	110V	Hungary	220V	Qatar	220V

Table 2-5: International Electrical Voltage Ratings (Continued)

Bahrain	220V	Iceland	220V	Romania	220V
Bangladesh	220V	India	220V	Russian Federation	220V
Barbados	110V	Indonesia	110/220V	Saudi Arabia	110/220V
Belgium	110V/220V	Iran	220V	Senegal	110V
Belize	110/220V	Iraq	220V	Seychelles	220V
Bermuda	110V	Ireland	220V	Singapore	220V
Bolivia	110/220V	Israel	220V	South Africa	220V
Bosnia	220V	Italy	110/220V	Spain	110/220V
Botswana	220V	Ivory Coast	220V	Sri Lanka	220V
Brazil	110/220V	Jamaica	110V	St. Lucia	220V
Bulgaria	220V	Japan	110V	St. Marten	110/220V
Burma	220V	Jordan	220V	St. Vincent	220V
Burundi	220V	Kenya	220V	Sudan	220V
C. African Republic	220V	Korea	110/220V	Surinam	110V
Cameroon	110/220V	Kuwait	220V	Swaziland	220V
Canada	110V	Laos	220V	Sweden	220V
Chad	220V	Lebanon	110/220V	Switzerland	220V
Chile	220V	Liberia	110V	Syria	220V
China	220V	Libya	110/220V	Tahiti	110V
Columbia	110V	Luxembourg	110/220V	Taiwan	110V
Costa Rica	110V	Macao	220V	Tanzania	220V
Cuba	110V	Madeira	220V	Thailand	220V
Cyprus	220V	Majorca	110/220V	Trinidad and Tobago	110/220V
Czech Republic	220V	Malawi	220V	Tunisia	110/220V
Denmark	220V	Malaysia	220V	Turkey	110/220V
Dominican Rep.	110V	Malta	220V	Turks & Caicos Island	110V
Ecuador	110V	Martinique	220V	U.S. Virgin Islands	110V
Egypt	220V	Mexico	110V	Uganda	220V
El Salvador	110V	Nepal	220V	United Kingdom	220V
Ethiopia	220V	Netherlands	220V	Upper Volta	220V
Fiji	220V	Netherlands Antilles	110/220V	Uruguay	220V
Finland	220V	New Caledonia	220V	USA	110V
France	220V	New Zealand	220V	Venezuela	110V
French Guiana	220V	Nicaragua	110V	Vietnam	110/220V
Gambia	220V	Niger	220V	Yemen	220V
Germany	220V	Nigeria	220V	Zaire	220V
Ghana	220V	Norway	220V	Zambia	220V
Gibraltar	220V	Okinawa	110V	Zimbabwe	220V

Caution: Ensure the correct voltage rating has been selected before turning system ON. Contact an ImaCor Technical Support Representative if the appropriate voltage rating is not listed here (**Table 2-5**, above).

Chapter 3: System Installation

3.1 Installation Issues and Requirements

3.1.1 Environmental Requirements

Verify the system is to be operated in a room that meets the environmental requirements listed in **Table 3-6**.

⚠ **Caution:** Avoid placing the system against walls or structures that may decrease air circulation.

Table 3-6: Environmental Specifications

Operational Temperature	50º to 104º F (10º to 40º C)
Operational Humidity	30 to 75% relative humidity
Shipping/Storage Conditions	+5° to +122° F (–15° to +50° C)
Shipping/Storage Humidity	10% to 90% (non-condensing)
Shipping/Storage Pressure (kilopascal)	50 kPa to 106 kPa (kilopascal)

⚠ **Warning:** Operate in an indoor environment only, free from moisture, flammable liquids, gases, corrosive substances, strong electrical or magnetic fields and equipment that generates high frequency waves.

ImaCor cannot guarantee the proper performance of the system if used in the above-listed conditions.

Note: For more details on the wireless adapter and other peripherals, refer to the manufacturer's User's Guides included with the system.

3.1.2 Electrical Requirements

Verify the system is to be operated in a room that meets the electrical requirements listed below.

Table 3-7: Electrical Specifications

Electrical Rating	Value
Mains Voltage (system only)	100V–120V @ 50/60 Hz 200V–240V @ 50/60 Hz
Current Draw (system only)	120 VAC @ 7.0A 240 VAC @ 4.0A
Leakage Current (system only)	< 100 uA

Note: Refer to OEM peripheral manuals for peripheral-specific electrical ratings.

3.1.2.1 INSTRUMENT INPUT POWER RATING

An instrument input power rating has been established to clarify the maximum power requirement of the system with all accessories. Depending upon the accessories and options installed, the system may not draw the full amount of power listed below:

Table 3-8: Instrument Power Input Rating

System voltage, VAC	Nominal system power usage, including isolated accessory power	System power usage	Isolated accessory power available
120V	3.75A Max	3.75A Max	Not applicable
240V	1.8A Max	1.8A Max @120V	Not applicable

For optimal system performance, use a dedicated, interference-free, isolated, grounded wall outlet. To ensure grounding reliability, use a hospital-grade power cord and connect it only to an equivalent hospital-grade socket. The specifications of the hospital-grade power cord as follows:

Table 3-9: Hospital-Grade Power Cord Specifications

Input voltage	Hospital grade power cord specifications
100-120V ~, 50/60Hz	125Vac, 15A, 3 wire, 18 AWG, grounding type, 5-15P Hospital Grade plug cap, less than 6 m long, CSA & UL approved
200-240V~, 50/60Hz	250Vac, 15A, 3 wire, 18 AWG, grounding type, 6-15P Hospital Grade plug cap, less than 6 m long, CSA & UL approved

3.1.3 Electrostatic Discharge

During normal operation, the presence of electrostatic discharge (ESD) can cause system reliability issues. The following are the most common causes for ESD:

- moving people
- low humidity
- improper grounding
- unshielded cable
- poor connection
- moving machines

ESD is most likely to occur during periods of low humidity. If the relative humidity is below 50%, static charges can easily accumulate. ESD generally does not occur when the humidity is above 50%. Any time the charge reaches approximately 10,000 volts, it is likely to discharge to grounded metal parts.

Although ESD will not hurt humans, it can damage certain electronic devices. The high-voltage pulse can burn out the inputs of many integrated circuit (IC) devices. This damage might not appear instantly, but it can build up over time, eventually causing the device to fail.

To prevent damage to the system, use ESD minimizing devices where needed. These devices include: anti-static mats, humidifiers, and spray. Proper discharge is required before handling any electronic device such as an ESD strap.

3.1.4 Electromagnetic and Radio Frequency Interference

This equipment has been tested and found to comply with the EMC limits for EN 55011, Group 1, Class A and EN 60601-1-2. These limits are designed to provide reasonable protection against harmful interference in a typical medical installation. The equipment generates, uses and can radiate radio frequency (RF) energy and if not installed and used in accordance with these instructions, may cause harmful interference to other devices in the vicinity. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference with other devices (which can be determined by turning the equipment off and on) the user is encouraged to try to correct the interference with one or more of the following measures:

- reorient or relocate the receiving device
- increase separation distance between equipment

- connect the equipment to an outlet on a circuit different to that which the other device(s) is connected
- consult the manufacturer or field service technician for help

⚠ **Warning:** The system should not be used adjacent to or stacked with other equipment. If adjacent or stacked use is necessary, the system should be observed in order to verify normal operation in the configuration in which it will be used.

3.1.5 Wiring Requirements

3.1.5.1 MAIN AC CONNECTION

The electrical feed to the system should be a dedicated/isolated line (no other equipment on the same line) with a third-wire ground. Ensure a low impedance path for current to return to the source.

3.1.5.2 ETHERNET (HARD-WIRED) NETWORK CONNECTION

It is the user's responsibility to provide an Ethernet connection to the system and to install the correct type of cable in accordance with the building's applicable standards. The commonly used cable is CAT5 (Category 5, 10 Base-T, unshielded twisted pair).

⚠ **Caution:** System networking options are intended for use inside your organization's firewall. Organizations that elect to configure/use the networking functionality provided by ImaCor are assuming all liabilities and risks associated with that decision.

3.1.5.3 IMAGE MANAGEMENT NETWORK

Obtain the following information from the system administrator:

- list of all equipment that is part of the Image Management network
- logical diagram of the network showing topology, subnets, etc.
- location of all equipment
- location of all LAN (Local Area Network) attachment points
- locations of all power outlets and connector types
- location of any dedicated analog phone line
- all necessary Internet Protocol (IP) addresses and subnet information.

3.2 Pre-Installation

3.2.1 Preliminary Inspection

To Inspect the Shipping Crate and Box Upon Arrival

1. Examine the shipping container(s) for any damage that may have occurred during transport.
2. Look for evidence to ensure that the carton has not been opened.
3. Report any damage to both the carrier and ImaCor.

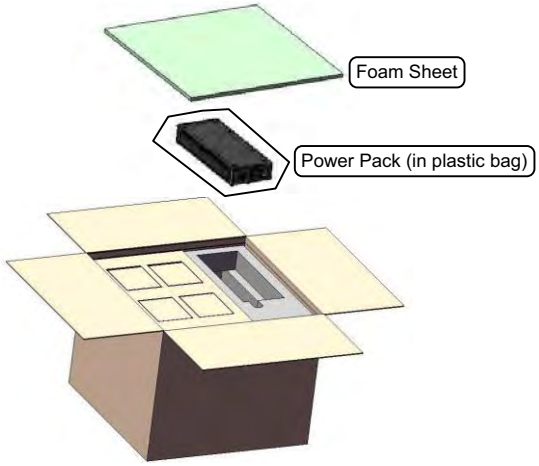
3.2.2 Zura-Evo Unpacking Instructions

Equipment/tools required: scissors or utility knife

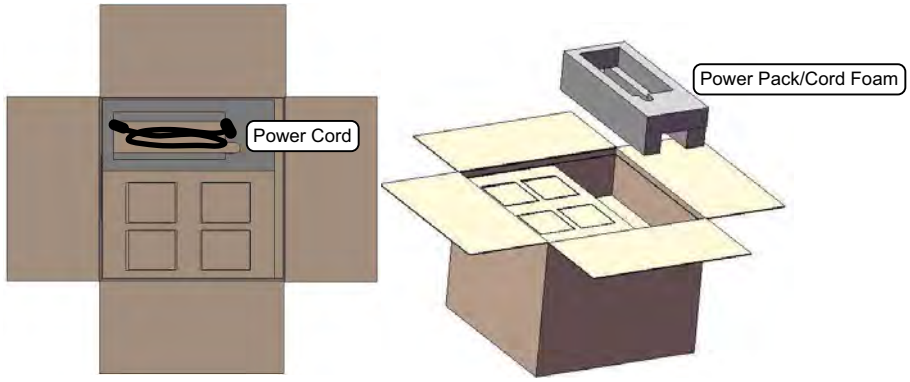
3.2.2.1 TO UNPACK THE SYSTEM

Note: If transducers are ordered at the same time as the system, they will be delivered in a separate carton.

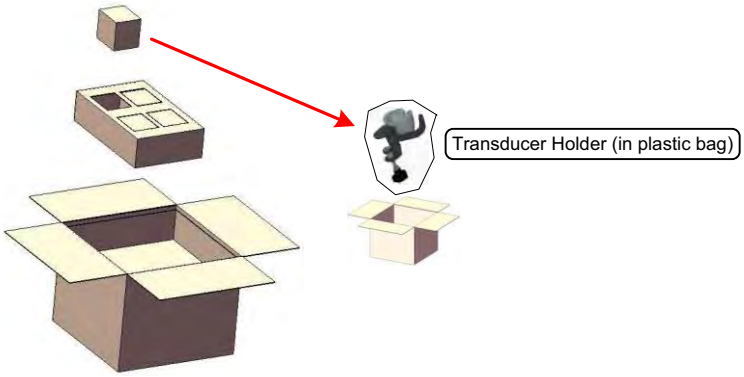
1. Ensure the top of the system box is facing in the correct direction and slice through the tape sealing it.
2. Remove the top foam packing sheet.
3. Remove the Power Pack (encased in a plastic bag).



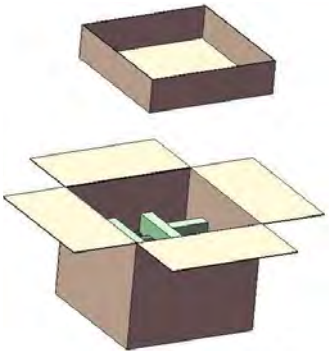
4. Remove the power cord and the Power Pack/cord foam packing. The Power Pack and cord may be mounted on the stand. **Note:** The Power Pack and cord may be mounted on optional stand along with provided ECG.



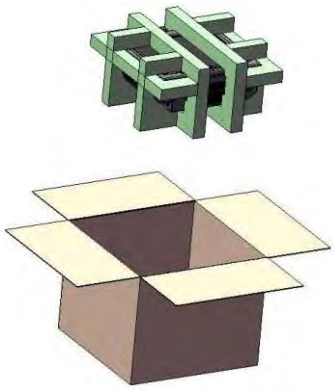
5. Remove the transducer holder packing box, then remove the transducer holders from their individual boxes.



6 Remove the inner carton tray.

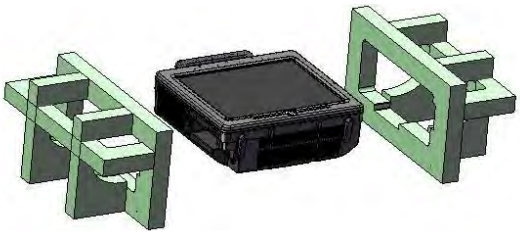


7 Carefully remove the Zura-Evo and the foam packing in one piece, setting it gently on a solid, flat surface.



⚠ **Warning:** Although the ImaCor Zura-Evo is portable, it weighs more than 30 lbs (13+ kg). To avoid injury, be sure to follow proper workplace/ergonomic lifting techniques when transporting the system.

8 Gently pull the foam packing away from the sides of the ImaCor Zura-Evo.



⚠ **Caution:** Be sure to let place the system gently on the table top as the foam packing is removed.

9 Remove the system from the plastic bag.

10 Set the system upright on the table surface.

⚠ **Warning:** Do not place the device on any surface that blocks/restricts ventilation (e.g., do not set the device on a soft surface such as a bed). Failure to comply with this directive could inhibit system air-flow and cause the system to overheat - which is not covered by the system warranty

3.3 Installation

3.3.1 EMI Filter and Power Pack

3.3.1.1 VOLTAGE CONFIGURATION

The diagram below shows the location of the EMI Filter which houses the system's fuses. Refer to **3.3.2.3** for details on how to remove the fuse box and replace the fuse(s).

When changing the voltage settings, the EMI filter must be adjusted to the relevant setting and the fuses must be flipped to match the selected voltage.

⚠ **Caution:** The system voltage setting is configured in the factory. It should not need to be changed in the field.

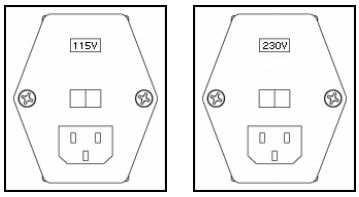


Figure 3-2: EMI filter and system power button location

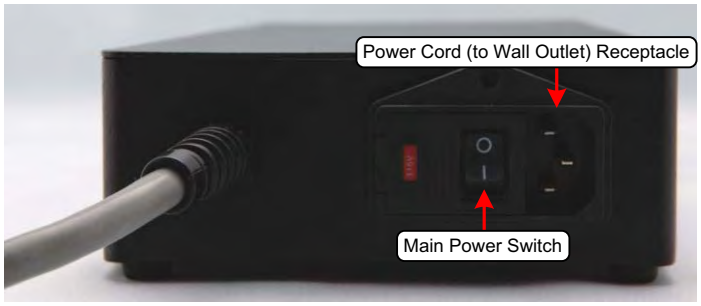


Figure 3-3: EMI filter and system power button location

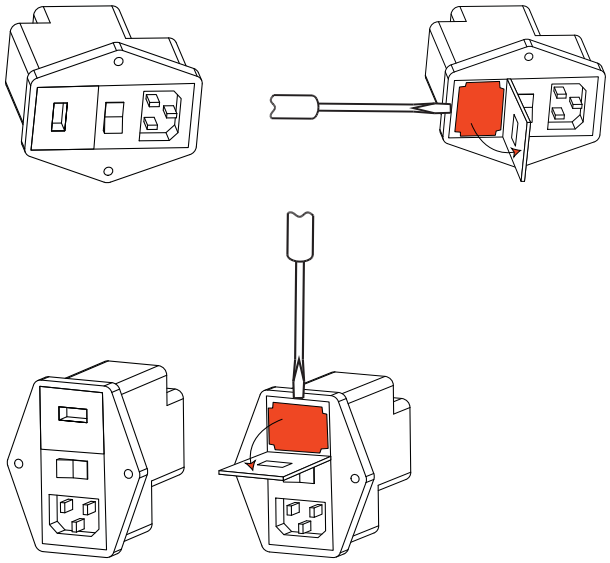
Equipment/tools required: fine-tipped, narrow-shafted, flat head screwdriver (e.g., 3 mm jeweler's screwdriver).

⚠ **Warning:** Do not perform any internal system maintenance if the UPS breakers are turned on.

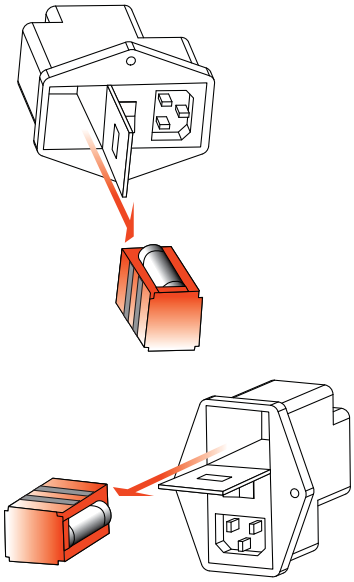
3.3.1.2 TO CHANGE VOLTAGE SETTINGS:

1 Power off and unplug the power cord from both the wall outlet and the system.

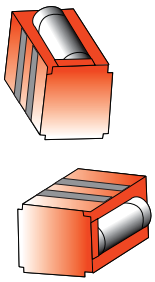
2 Use the screwdriver to open the fuse box lid.



3 Position the screwdriver at the top (as in **step 2**), using it to remove the fuse box.



4 Flip the fuse box and reinsert it so the correct voltage is visible.



5 Close the fuse box lid.

3.3.2 Powering the System

Before turning the system on, connect the power cords.

3.3.2.1 TO CONNECT THE POWER CORDS

1 Connect the power cord from the power pack to the system.

Note: Push the connector on firmly, ensuring the **red** dot on the power connector faces upwards.

2 Connect the system power cord to the power pack.

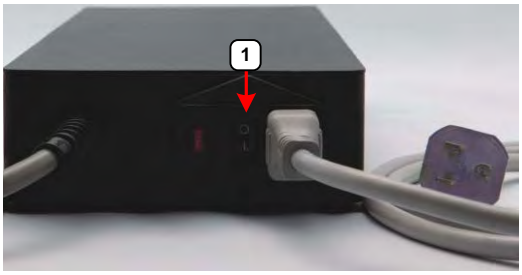
3 Plug the power cord into a wall outlet (hospital-grade electrical outlet recommended).

3.3.2.2 TURNING ON MAIN POWER SWITCH

To Turn on Main Power Switch

Note: Ensure the power cords are connected.

1 Press the Main Power switch on the back of the Power Pack.



Caution: DO NOT use Main Power switch for regular power shut downs. Failure to follow the correct procedure may result in loss of patient data and/or hard drive failure.

3.3.2.3 CHANGING FUSES

Equipment/tools required:

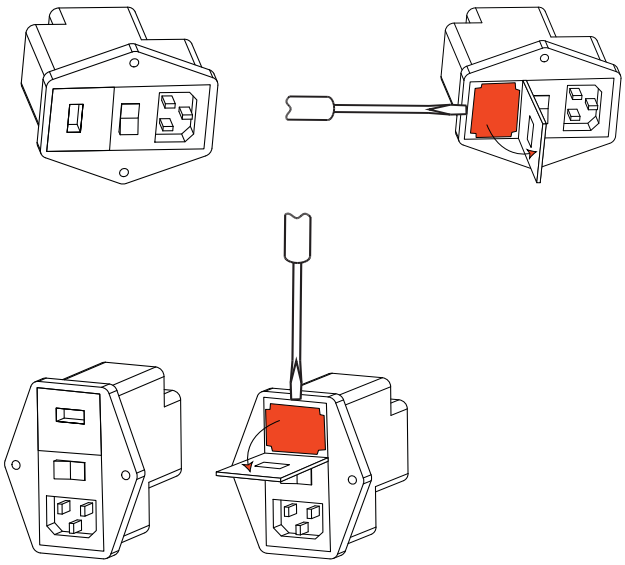
- two (2) 3AG Slo-Blo, 7A/250 V fuses
- fine tipped, narrow shafted, flat head screwdriver (e.g, 3mm jewelers screwdriver).

⚠ **Warning:** Do not perform any internal system maintenance if the UPS breakers are turned on.

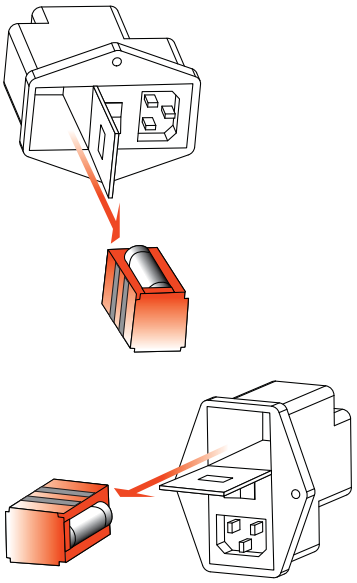
To Change the Fuses

1 Power off and unplug the power cord from both the wall outlet and the system.

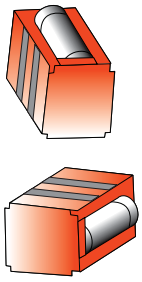
2 Use the screwdriver to open the fuse box lid.



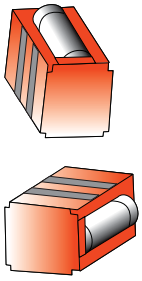
3 Position the screwdriver at the top (as in **step 2**), using it to remove the fuse box.



4 Replace one or both fuses, as required.



5 Reinsert the fuse box.



Caution: Ensure the correct voltage setting is visible and that it matches the setting on the EMI filter (**3.3.1.1**).

6 Close the fuse box lid.

3.3.3 System Initialization

To Initialize the System

1 Inspect the system for scratches or damage. Note any damage to the system and report it to ImaCor.

2 Connect at least one transducer to the system.

3 Plug in the power cord.

4 Press and hold the console **POWER** button for one (1) second.

⚠ **Warning:** Do not place the device on any surface that blocks/restricts ventilation (e.g., do not set the device on a soft surface such as a bed). Failure to comply with this directive could inhibit system air-flow and cause the system to overheat, which is not covered by the system warranty.

5 Inform the facility's representative that the system is installed and ready for any safety testing they would normally conduct.

3.3.4 Peripherals

Unpack and inspect all peripherals included with the system. Itemize any problems, record the model and serial numbers and report the damage to ImaCor.

Chapter 4: Software Test

Contact ImaCor for Software Smoke test procedure, if desired. In the overwhelming majority of cases, software can be adequately verified by starting up and proceeding to the patient screen.

Chapter 5: Software Update

Upgrade packages are machine-specific and require a registration code that is displayed in the Configuration Dialog >Version tab.

Download the Software Upgrade and Request a License File

1. Log into the ImaCor support web page: http://www.imacorinc.com/support.html
2. Tap or click on the software upgrade you wish to download.
3. Enter the Zura-Evo machine registration code, which can found on the Version tab of the Zura-Evo Configuration window.
4. Tap or click on the Go button. A license request is automatically sent to the ImaCor support team.
5. Tap or click on the "Download File" option.
6. Navigate to the location on your computer where you wish the file saved.

Upgrade the Zura-Evo Software

1. Save the .icm file that was emailed to you onto a USB thumb drive. For example, if your thumb drive is the F: drive, save the .icm file to F:
2. Unzip the software downloaded upgrade and move the .exe file inside the zip folder to your USB thumb drive. The .icm and .exe files must be placed at the same location.
3. Plug your USB key into the Zura-Evo system you are upgrading.
4. Go to Configuration > Version tab and tap or click the Update button. You can accomplish this from either the Patient Information screen or the Imaging screen.
5. Select the .icm file on your thumb drive and tap or click "OK."
6. When the Upgrade Wizard appears (it may take up to 5 seconds), follow the instructions.
7. Do not disconnect the USB thumb drive until a message is displayed instructing you to reboot the system.
8. After the system reboots you will be prompted by the Upgrade Wizard to tap or click on "Finish." Once you've clicked Finish, the upgrade is complete.

Chapter 6: Transducers

Certain transducers may not be available in all markets. Consult your local Ultrasonix Authorized Distributor or Sales Representative to determine availability in your area.

Table 6-1: Transducer

 ImaCor ClariTEE probe with umbilical and handle	

Chapter 7: Field Service Components

This section describes how to handle all field serviceable components, including the modulo, LCD display, speakers, UPS, battery and transducers.

7.1 Protecting Patient Data

Before doing any work with the modulo, be sure to complete section **7.1.1** in order to the export/backup and therefore protect the integrity of each client's data.

Once all work has been completed, refer to section **7.1.2** to import/restore the client's settings and data.

7.1.1 Exporting User Data (As Required)

Before servicing the modulo, export User Data to a Data Transfer Module (DTM). This will ensure access to this data if either the modulo or hard drive needs replaced during servicing.

The following options are available for export

Note: When creating a backup prior to servicing or replacing the modulo, ImaCor recommends selecting all options for Export.

Export a Patient Record to a Data Transfer Module (DTM)

1. Access the Patient Information screen.
   - After starting the ImaCor Zura-Evo system, the Patient Information screen is the first interactive window displayed.
   - If you are in the imaging environment, tap or click the Patient button.
2. Insert the DTM into one of the USB ports on the left side of the Zura-Evo. The DTM Patients dialog box is displayed.
3. Tap or click the name of the patient whose records you wish to export. Check the GUID to make certain you are selecting the correct patient.
4. Tap or click the Export button.

Notes:

- If the "Export DICOM Images" option is enabled in the Configuration window, the operation will export ImaCor cine files as well as DICOM multiframe images.
- The ImaCor decryption utility must be used before DICOM images can be imported and viewed on a DICOM workstation. The decryption utility is available to registered customers for download from the ImaCor support web page: http://www.imacorinc.com/support.html

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DICOM Patient Export Options

If the Export DICOM option is selected, DICOM files are automatically created as cineloops are exported to the DTM. If Color Flow images are available, they are embedded in the DICOM file.

If the Overwrite DICOMDIR when Exporting option is checked, the DICOMDIR file is overwritten with each patient export.

Notes:

- If multiple patient records are selected for export and the Overwrite DICOMDIR when Exporting option is checked, only the last record selected will appear on the DICOMDIR.
- DICOMDIR and DICOM files are encrypted before they are saved onto a DTM. An ImaCor decryption application is provided to import DTM data into a DICOM workstation.

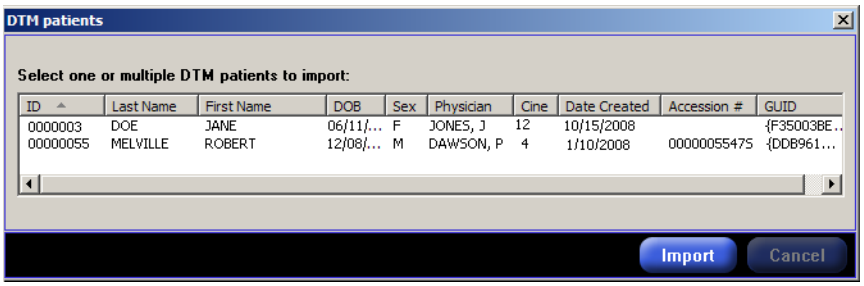
7.1.2 Importing User Data (As Required)

Once the modulo has been installed, if required, import (restore) the previously-saved user data from the removable disk to this system.

Note: If the system boots properly with all user data intact, then it will not be necessary to import this data.

Import a Patient Record from a Remote Zura-Evo System

1. Insert a DTM into one of the USB ports on the left side of the Zura-Evo. When the DTM is connected, the Import button becomes active and the system displays a message indicating that the import/export features are enabled.
2. The DTM Patients dialog box is displayed. Tap or click the name of the patient whose records you wish to import. Check the GUID to make certain you are selecting the correct patient.



3. Tap or click the Import button. While data is being transferred, a progress bar is displayed. *Do not disconnect the DTM while the data is being imported.*

7.1.3 Connectivity

The Side Connectivity Panel can be accessed from the side of the system. The connectors are routed internally enabling easy configuration.

7.1.3.1 SIDE CONNECTIVITY PANEL

Figure 7-4: Side Connectivity Panel

Table 7-10: Side Connectivity Panel

 	Sound Connections	Line-in (blue): may be used to connect an ImaCor-approved audio input device. System speaker connection (green). System microphone connection: Disabled.
	LAN	Use to connect the system to a network. This port supports 10 Mb/100 Mb.
	USB (x6)	Use to connect ImaCor-approved USB devices (e.g., printer, barcode reader, memory stick, etc.).
Video VGA Output		Not in use.

7.2 Internal Component Replacement

⚠ **Caution:** Before doing any work with the modulo, be sure to complete section **7.1.1** in order to the protect the integrity of the client's data.

7.2.1 Removing the Hard Drives

To protect patient/exam data and System settings, ImaCor strongly recommends regular patient/image file back-up and purging of older patient files stored on the system. Refer to section **7.1.1** for details on backing up user settings and patient/exam data.
Hard drive removal is necessary whenever the system must be removed from a customer site

.

IMPORTANT: The contents of the system hard drive may include Personal Health Information that must be protected as dictated by local or state laws (for example, Federal Privacy Act or the Health Insurance Portability & Accountability Act (HIPAA)). In order to ensure regulatory compliance, ImaCor will not remove the system hard drive – and the patient data it contains – from the customer site.

In the event the hard drive must be removed from the system, it will be returned to the customer. Final disposition of the hard drive and its data will remain the customer's responsibility.

Equipment/Tools Required

- #1 Phillips screwdriver
- 2.5mm Allen Key

- anti-static bag

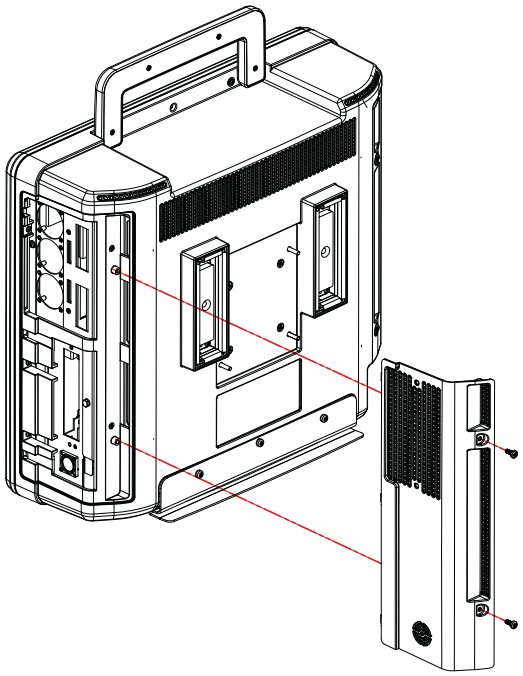
Note: If a hard drive is being replaced, use the anti-static bag shipped with the new hard drive. If the hard drive is to be reinstalled in a new or loaner system, no anti-static bag is required.

⚠ **Warning:** Do not perform any internal system maintenance if the UPS breakers are turned on.

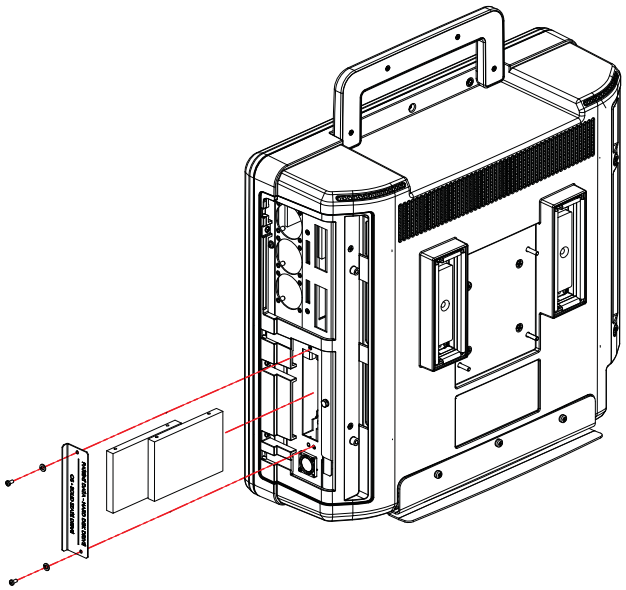
⚠ **Caution:** Always wear a grounding strap when opening and working inside the system.

To Remove the Hard Drives from the System

1 Using a 2.5mm Allen key, remove the two (2) screws securing the hard drive cover.



2 Using a # 1 Phillips screwdriver, remove the two (2) screws and washers securing the hard drive cover plate.



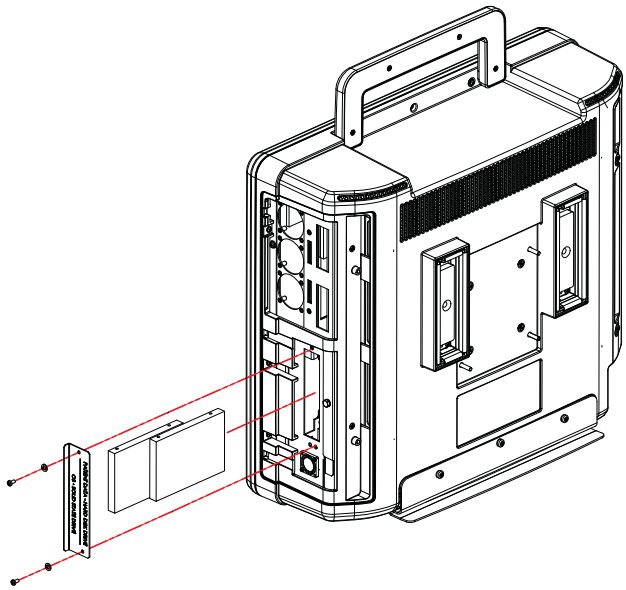
3 Using your fingers, pull the relevant hard drive from its slot.

7.2.2 Replacing the Hard Drives

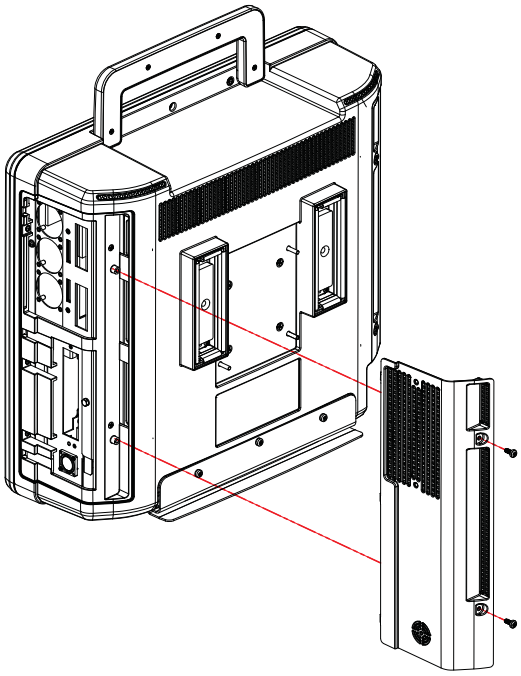
To Replace the Hard Drives

1 Using your fingers, insert the hard drives in the relevant slots.

2 Replace the hard drive cover plate and, using a # 1 Phillips screwdriver, fasten it with the two (2) screws and washers.



3 Replace the hard drive cover and, using a 2.5mm Allen key, fasten it with the two (2) screws.



Note: If there is any doubt about the image, contact ImaCor Technical Support and forward them a digital copy of the image in question for verification of the diagnosis.

7.3 Miscellaneous Parts

7.3.1 Transducers Holders and Cable Hooks

The transducer holder with integrated cable hook mounts to a table edge with a simple screw clamp. The transducer holders are connected with a simple thumbscrew that is hand-tightened. No tools are required.

Note: For best results, ImaCor recommends removing the transducer holders before cleaning (**11.2.4**). This will allow the operator to clean all the various curves and folds in a more effective manner.

Figure 7-5: Transducer holder with integrated cable hook

7.4 Returning Parts for Service/Repair/Replacement

Once any part is determined to be defective, the Return Merchandise Authorization (RMA) process must be initiated.

Note: For specific details on the transducers, refer to **7.4.1**.

Contact ImaCor Technical Support for the RMA number

Note: The RMA number **must** always be clearly written on the outside of the packaging.

- labeling instructions
- appropriate shipping method, instructions and destination.

ImaCor Technical Support:
Toll Free: 1-877-244-0657
E-mail: support@imacorinc.com

7.4.1 Transducers

When shipping transducers for service/repair/replacement, it is the customer's responsibility to ensure that each transducer meets the requirements laid out in **11.3 Shipping Transducers for Service or Return**.

Chapter 8: DICOM

The system uses the Digital Imaging and Communications in Medicine (DICOM) standard to share medical information with other digital imaging systems. The system, by means of the DICOM protocol, communicates with Storage, Print and Modality Worklist Service Class Providers. DICOM setup/configuration is an Administrator Settings option.

Refer to **Chapter 9: Network Configuration** to configure the system for network connectivity.

Notes:

When using a hard-wired network connection, ensure the network is connected via a CAT5 cable at the back of the system. (Check with the local IT Department to ensure that the jack from the wall is live.)

When using a wireless network connection, ensure the wireless network is configured properly and that the system has a live wireless connection.

Beginning with software version 5.5.0, DICOM Structured Reporting is supported.

Digital Imaging and Communications in Medicine (DICOM) is the standard format for distributing and viewing all types of medical images. DICOM files contain the following information:

- Patient information
- Cineloop
- ECG
- hTEE measurements, if present

The DICOM tab in the Configuration menu enables you to:

- Specify that cineloops be exported in DICOM format
- Indicate if JPEG compression should be applied
- Configure a DICOM Archiving Server (application entity title [AET], Host, Port)
- Configure a DICOM MWL Server (AET, Host, Port)
- Customize DICOM synchronization rules
- Customize system network properties
- Edit the client application entity title (AET)

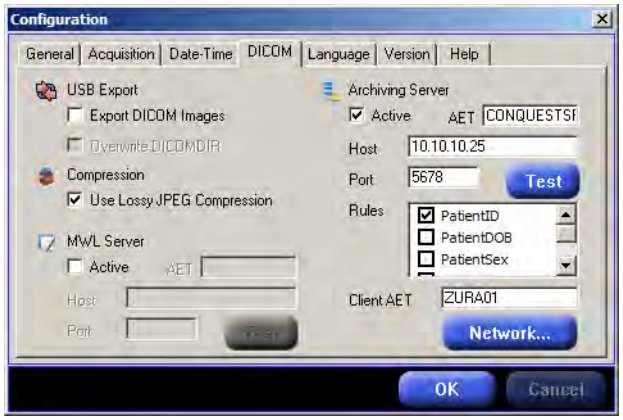


Fig. 8 Configuration > DICOM tab

Patient Export Options

If the Export DICOM option is selected, DICOM files are automatically created as cineloops are exported to the DTM. If Color Flow images are available, they are embedded in the DICOM file.

If the Overwrite DICOMDIR when Exporting option is checked, the DICOMDIR file is overwritten with each patient export.

Notes:

- If multiple patient records are selected for export and the Overwrite DICOMDIR when Exporting option is checked, only the last record selected will appear on the DICOMDIR.
- DICOMDIR and DICOM files are encrypted before they are saved onto a DTM. An ImaCor decryption application is provided to import DTM data into a DICOM workstation.

Archiving Server Configuration

To configure the Archiving Server, the "Active" box must be checked. The server configuration parameters are:

- Target AET
- Host name / IP Address
- Port number

By default the client AET for Zura-Evo is ZURA. It can be changed by entering an appropriate name in the Client AET field.

The Network configuration parameters are those exposed by the Windows XP operating system and will require an ImaCor technician (locally or with remote access) to set up.

Once the server has been configured the user can click on the Test button to check communication with the server.

Checking the Archiving Server "Active" checkbox will enable the Sync button on the Patient Information screen.

Custom Synchronization Rules

The Zura-Evo System provides six basic rules that can be turned ON or OFF independently to customize the synchronization process. These rules are:

1. Require Cineloop Comment
2. Require Patient ID
3. Require Patient DOB
4. Require Patient Accession Number
5. Require Patient Sex
6. Max Daily Cine

For example if rules (1) and (2) are turned ON, only cineloops that have a comment and are for a patient whose ID is not empty will be sent to the Archiving Server. The rules can only be turned ON/OFF by an ImaCor technician.

If the Require Patient Accession Number rule is ON, cineloops are sent to the server only if the accession number field in the Patient Information screen is completed for the corresponding patient.

The Max Daily Cine rule enables you to specify the maximum number of cineloops in a daily folder that may be sent to the archiving server.

Synchronization operations occur when the Sync button is clicked. A synchronization log provides information about the last Synchronization operation that was performed. To view the Log, simply right-click on the "Sync" button and choose "Show Synchronization Log."

Modality Worklist (MWL) Server Configuration

To configure the MWL Server, the "Active" box must be checked. The MWL Server configuration parameters are similar to those required by an Archiving Server.

Once the server has been configured the user can click on the Test button to check communication with the server.

Checking the MWL Server "Active" checkbox will enable the Check Worklist menu in the Patient list.

Compression

If the Compression option is selected, JPEG compression is automatically applied to the DICOM files. The compression option applies to both exported data and data sent to the DICOM Archiving Server (if configured).

DICOM Synchronization Feature

The atomic DICOM synchronization feature permits you to send selected patient records to the archiving server.

Table 8 Patient Information Screen Buttons and Function

Number	Button	Function
1	Import	Import patient information. Enabled only when an ImaCor Data Transfer Module (DTM) is inserted in a USB port.
2	Export	Export patient information. Enabled only when an ImaCor Data Transfer Module (DTM) is connected and a patient record is selected from the Patient List.
3	Sync	The Sync button is enabled when a DICOM Archiving Server is active (see "Archiving Server Configuration," page 2). The Sync button allows you to send cineloops as DICOM files to a DICOM server via a network connection. The server synchronization log can be viewed by tapping or right-clicking the Sync button.
4	New Patient	Clears the Patient Information screen, including the GUID, enabling the user to create a new patient record. The New Patient button is the **only** way to clear the GUID.
5	Next	Advances to the single-view imaging environment. The mandatory first and last name fields must have been completed.
6	Configure	Accesses the Configuration screens.
7	Shutdown	Shuts down the system.

Querying a Modality Worklist (MWL) Server

If an MWL server is configured and networked to a Zura-Evo system, you can query the server for a selected patient. Data elements that are already present on the Zura-Evo system are not imported from the MWL server. For example, if the date of birth for a selected patient is already recorded on the Zura-Evo system, the birthdate will not be imported.

Touch Screen

1. Select a patient from the Patient List.
2. Tap anywhere on the screen and hold.
3. Select the “Check MWL Server...” option.

Zura-Evo Mouse

1. Select a patient from the Patient List.
2. Right-click and select the “Check MWL Server...” option.

If the MWL server query returns at least one item, you can import the information from a selected MWL item into the local patient record. See the DICOM Conformance Statement for details of imported fields. The DICOM Conformance Statement is available to registered customers for download from the ImaCor support web page: http://www.imacorinc.com/support.html

Note: The accession number can be imported from the MWL server.

Synchronizing with a DICOM Archiving Server

If a DICOM archiving server is configured and networked to a Zura-Evo system, you can send acquired cineloops to it as multiframe DICOM files.

To transmit cineloops to the server, tap or click the Sync button in the Patient Information screen.

After communication with the server is verified, the Zura-Evo system sends cineloops that do not yet reside on the server and that satisfy user-defined Sync rules, if any. Examples of user-defined rules follow:

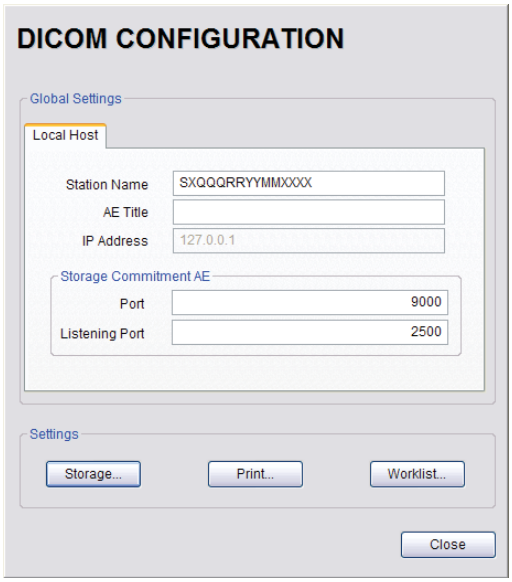
- Cineloop comment required
- Patient ID required
- Patient DOB required
- Accession number required
- Patient sex required; (“unknown” not acceptable)

Note: Cineloops imported from another Zura-Evo system will not be sent to the archiving server. Cineloops can be transmitted to an archiving server only by the Zura-Evo system that acquired them.

VIEWING THE SYNC LOG

The Sync Log feature enables you to check the status of the last synchronization operation, displaying transmission errors and the count of cineloops not transmitted because of rule noncompliance.

To view the Sync Log, tap or right-click the Sync button, which displays the Show Synchronization Log menu.


DICOM CONFIGURATION
Global Settings
Local Host
Station Name
SXQQQRRYYMMXXXX
AE Title
IP Address
127.0.0.1
Storage Commitment AE
Port
9000
Listening Port
2500
Settings
Storage...
Print...
Worklist...
Close

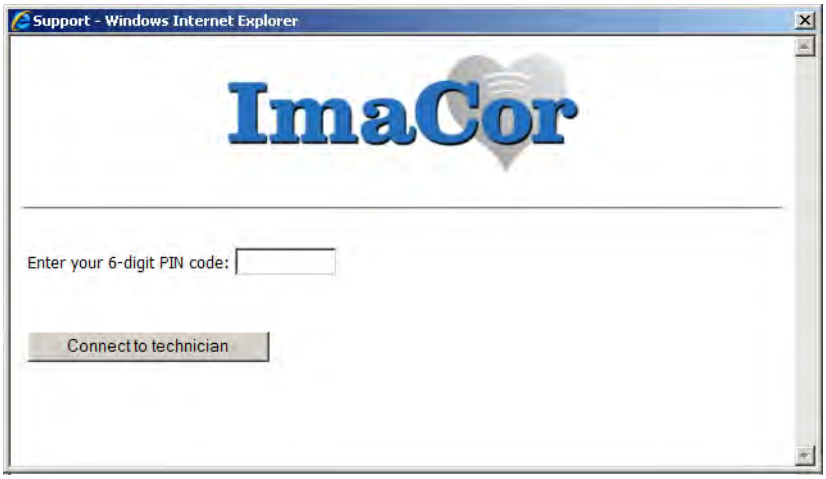
Chapter 9: Network Configuration

Remote Assistance

The Remote Assistance button enables you to establish a link with an ImaCor technician who can access the Zura-Evo system remotely for troubleshooting.

Once the Remote Assistance button is clicked, the Support Internet Explorer window is displayed.

1. Enter the 6-digit PIN code provided by ImaCor tech support.
2. Tap or click the "Connect to technician" option to establish a secure connection with a technician's console.



Configuration > Support tab

Analysis Package

The support technician may request an analysis package, which is a file that provides information about your system and assists in troubleshooting.

To create an analysis package:

1. Select Configuration > Help
2. Insert an external USB drive into the USB port in the Zura-Evo system. You need not use the special ImaCor data transfer module; any operational USB drive will work.
3. Tap or click the Analysis Package button
4. Email the analysis package (ZuraPkg.zip) to support@imacorinc.com.

If there is insufficient free space on the USB drive to accommodate the analysis package, or if the USB drive is removed prematurely, the error message shown in Figure 9 is displayed.

- In the case of insufficient free space on the USB drive, you may:
  - Remove the drive from the Zura-Evo system.
  - Insert the drive in any personal computer with a USB port.
  - Delete unnecessary files. Files may not be deleted from the Zura-Evo system.
  - Retry the operation
- If the USB drive was removed prematurely — i.e., before the analysis package is completely written to the drive — you may:

- Reinsert the drive in the Zura-Evo system.
- Retry the operation.

The error code shown in the message may vary and is for the use of ImaCor technicians only.

Fig. 9 Analysis package export error

If no USB drive is present when the Analysis Package button is pressed, the error message below is displayed.

Chapter 10: Software Update

Software Update

Upgrade packages are machine-specific and require a registration code that is displayed in the Configuration Dialog >Version tab.

Download the Software Upgrade and Request a License File

1. Log into the ImaCor support web page: http://www.imacorinc.com/support.html
2. Tap or click on the software upgrade you wish to download.
3. Enter the Zura-Evo machine registration code, which can found on the Version tab of the Zura-Evo Configuration window.
4. Tap or click on the Go button. A license request is automatically sent to the ImaCor support team.
5. Tap or click on the "Download File" option.
6. Navigate to the location on your computer where you wish the file saved.

Upgrade the Zura-Evo Software

1. Save the .icm file that was emailed to you onto a USB thumb drive. For example, if your thumb drive is the F: drive, save the .icm file to F:
2. Unzip the software downloaded upgrade and move the .exe file inside the zip folder to your USB thumb drive. The .icm and .exe files must be placed at the same location.
3. Plug your USB key into the Zura-Evo system you are upgrading.
4. Go to Configuration > Version tab and tap or click the Update button. You can accomplish this from either the Patient Information screen or the Imaging screen.
5. Select the .icm file on your thumb drive and tap or click "OK."
6. When the Upgrade Wizard appears (it may take up to 5 seconds), follow the instructions.
7. Do not disconnect the USB thumb drive until a message is displayed instructing you to reboot the system.
8. After the system reboots you will be prompted by the Upgrade Wizard to tap or click on "Finish." Once you've clicked Finish, the upgrade is complete.

Chapter 11: Maintenance

This section is intended to assist in the effective care, cleaning and disinfection of the system. It is also intended to protect the system and transducers against damage during cleaning/disinfection.

Be sure to carefully follow all recommendations in this section to maintain the highest standard of cleanliness/disinfection, while at the same time ensuring the operational safety of all equipment.

11.1 Recommended Frequency of Maintenance Procedures

The frequency of preventive maintenance performed on the system plays a key role in eliminating or extending the periods between downtime due to poor performance or unexpected breakdown. The following table offers recommendations that must be weighed by factors like frequency of use and environmental conditions. In every case, frequent checks of safety related items are highly recommended.

Table 11-1: Maintenance Procedure Frequency

Test/Clean	Frequency Interval	Task
Transducers	Six (6) months	Check for cracks or bent pins.
Safety	Six (6) months	Ground impedance/leakage test.
System Filter	Four (4) months or as required	Check for good air flow without excessive noise. Remove and vacuum. **Note:** Filter cleaning frequency is dependant upon usage location. If the system is used in a high traffic area (such as an Emergency Room) filters may require more frequent cleaning.
System Fans	Six (6) months	Check for good air flow without excessive noise.
Periodic Maintenance (PM)	As prescribed by ImaCor procedures	To be performed only by qualified service personnel.

11.2 System Cleaning

ImaCor recommends the following cleaning instructions for all **external** surfaces, including the cart, cables and connectors.

Cautions:

Power off and unplug the system before cleaning.

Do not spill or spray water on the controls, transducer connection receptacle, or transducer ports.

11.2.1 LCD Display/Touch Screen and Cabinet

Cautions:

Power off and unplug the system prior to cleaning the LCD display/touch screen.

DO NOT apply cleaning solutions directly to any surface of the system.

11.2.1.1 LCD DISPLAY CABINET

Apply a small amount of one of the following recommended cleaning solutions to a soft, non-abrasive cloth and wipe down the cabinet:

- water
- mild detergent (PH level at or near 7) and water solution.

11.2.1.2 LCD DISPLAY/TOUCH SCREEN

Apply a small amount of one of the following recommended cleaning solutions to a soft, non-abrasive cloth and wipe down the display:

- Steriplex SD for high-level disinfection
- 50:50 isopropyl alcohol and water
- any proprietary glass cleaning solution
- water
- mild detergent (PH level at or near 7) and water solution

11.2.2 Power Pack

Cautions:

Power off and unplug the system prior to cleaning.

DO NOT apply cleaning solutions directly to the power pack.

Apply a small amount of one of the following recommended cleaning solutions to a soft, non-abrasive cloth and wipe the power pack:

- water
- mild detergent (PH level at or near 7) and water solution.

11.2.3 Power Cord(s)

Cautions:

Power off and unplug the system prior to cleaning.

DO NOT apply cleaning solutions directly to the power cord.

Apply a small amount of one of the following recommended cleaning solutions to a soft, non-abrasive cloth and wipe the power cord:

- water
- mild detergent (PH level at or near 7) and water solution.

11.2.4 Transducer Holders and Cable Hooks

Cautions:

Power off and unplug the system prior to cleaning.

For best results, ImaCor recommends removing the transducer holders and cable hooks before cleaning (**7.3.1**). This will allow the operator to clean all the various curves and folds in a more effective manner.

For best results, ImaCor recommends removing the transducer holders and cable hooks before cleaning (**7.3.1**). This will allow the operator to clean all the various curves and folds in a more effective manner.

DO NOT apply cleaning solutions directly to the transducer holders and cable hooks.

Apply a small amount of one of the following recommended cleaning solutions to a soft, non-abrasive cloth and wipe off the transducer holders and cable hooks:

- water

- mild detergent (PH level at or near 7) and water solution.

11.2.5 System Filter

This filter should be cleaned approximately every three (3) to six (6) months.

Warning: Do not perform any internal system maintenance if the UPS breakers are turned on.

Caution: Power off and unplug the system prior to cleaning the fan filters

The Zura-Evo comes equipped with a double layer filtering system. The first layer, or system filter, is accessible without removing anything from the system – the filter can simply be pulled out. The second layer (fan filtering) is attached to the modulo and necessitates modulo removal.

Cleaning the system filter every three (3) to six (6) months helps to safely prolong the modulo fan filter cleaning interval (refer to **Table 11-1** for the various maintenance procedure frequencies).

Use a vacuum cleaner to remove the dust from the system exhaust filters or vents. If a vacuum cleaner is not available, dust off by hand or with an anti-static brush.

11.2.5.1 CLEANING THE SYSTEM FILTER

Note: For additional views, refer to Service Drawing: **System Filter Removal/Replacement**.

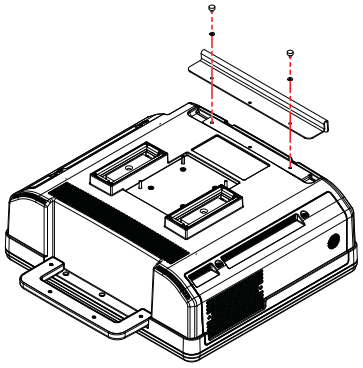
To Clean the System Filter

1 Power off and unplug the system.

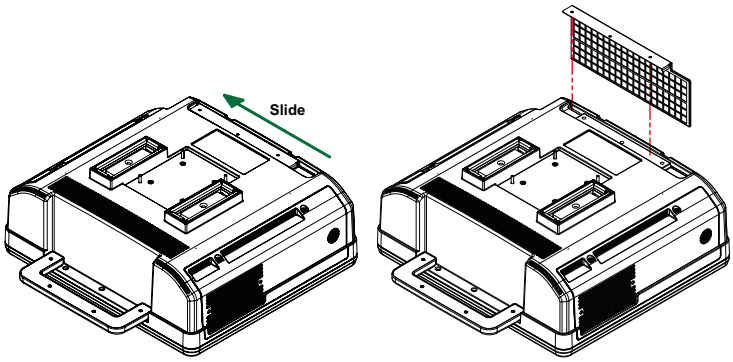
2 Using a soft towel or bubble wrap to protect the LCD display/touch screen, gently tip the system flat.

Note: Ensure the surface used is steady and secure.

3 Unscrew the two (2) thumbscrews and washers.



4 Push the filter forward (following the directional arrow label) then lift up.



5 Vacuum thoroughly and *gently* reinstall the filter.

6 Plug in and power on the system.

11.3 Shipping Transducers for Service or Return

It is the customer's responsibility to ensure:

- each transducer is disinfected prior to shipping
- the transducer is properly packaged for shipment
- all shipping waybills/paperwork is completed as per the relevant regulations and laws.

Refer to **7.4 Returning Parts for Service/Repair/Replacement** for more details on transducer return or replacement.

Chapter 12: Troubleshooting Issues

12.1 System Not Powering Up

Using a volt meter, ensure there is power to the wall outlet.

Test system power:

- **Table 1 Troubleshooting Matrix**

Check the AC power cable connection:

- **Figure 3-2**

Check fuses and voltage selection:

- **3.3.2.3 Changing Fuses**
- **3.3.1.1 Voltage Configuration**.

If the system still does not power on, contact ImaCor Technical Support.

12.2 System has Power but is Not Powering Up

The system has power if, when plugged in, the LCD display shows the message Digital/Analog No Signal.

Check the AC power cable connection:

- **Figure 3-2**

If the system still does not power on, contact ImaCor Technical Support.

12.3 No Primary Hard Drive Detected

Remove and reseat the hard drives (**7.2.1**).

12.4 System Seems Slow

System may be overheating:

- Check the CPU fan to ensure that it is working properly. If it is not, it will have to be replaced by a qualified ImaCor Service Technician.

12.5 System Freezes during Use

If the system freezes during use and there is no discernible pattern to this behavior, contact ImaCor Technical Support.

12.6 Initialization Failures

12.6.1 System Initialization

The first screen displayed is the system initialization screen. During initialization, configuration files are loaded into memory and the system software conducts a diagnostic self-test. Informational messages are displayed if a problem is detected.

A full-power test is run after a patient examination ends abruptly; i.e., when an exam is ends without the user pressing the End Exam button. Causes for an abrupt exam termination include a power outage, a system powered down during an exam, and a software malfunction. The full-power test adds about 40 seconds to the initialization sequence.

	The failure of one of the following initialization steps failed: • Loading configuration • Loading ultrasound definitions • Loading ECG definitions • Loading probe settings • Loading ultrasound software module • Loading ECG software module • Connecting to the patient database server	Click the OK button and restart the system. If the error persists, contact technical support.
	Review the Initialization screen for the specific error.	Click the OK button and restart the system. If the problems persists, contact ImaCor technical support.

12.7 No Network Connection via Ethernet Cable

If the system is connected to the network via an Ethernet cable but a network connection cannot be established, there may be an issue with the network cable connection or with the BIOS. Contact ImaCor Technical Support.

12.8 Transducer Connection Port not Functioning

If a transducer connection port is not functioning, the MUX board may need to be replaced. Contact ImaCor Technical Support.

Appendix A: Troubleshooting

If you encounter difficulty with the system refer to the troubleshooting guide below, if you are unable to resolve the issue, contact ImaCor technical support at the following numbers and addresses:

Technical support: 1-877-244-0657

Technical support email: support@imacorinc.com

⚠ Caution
To reduce the risk of electric shock, do not open system enclosures.

Table 1 Troubleshooting Matrix

Problem	Solution	Comments
Unit does not turn on	1. Check that On/Off rocker switch is on 2. Check that power cord is connected to equipment 3. Check that power cord is connected to building receptacle 4. Check building supply 5. Check main fuse of machine	5. Fuse holder is located integral to Power inlet. Refer to ratings on fuse holder
System computer does not boot up	1. Refer to solutions for above, "Unit does not turn on" 2. Press pushbutton switch adjacent to ecg connector to boot computer	Mains power is On if system fans are running. LCD appears to be powered up.
System software freezes; does not respond to user actions	Reboot computer	
System does not image	1. Toggle freeze/unfreeze command button 2. Reposition probe 3. Reboot computer 4. Check umbilical connection 5. Check probe connection to handle	
No display	1. Check LCD connections 2. Confirm LCD power	2. Blue LED adjacent to LCD power switch
No ECG on display	1. Check ECG connection on machine 2. Check patient ECG lead connections	

Appendix B: Electromagnetic Immunity Tables

Table B-1: EN 60601-1-2:2007

Guidance and Manufacturer's Declaration — Electromagnetic Immunity		
ImaCor Zura-Evo Systems are intended for use in the electromagnetic environment specified below. The customer or the user of the ImaCor Zura-Evo System should ensure that it is used in such an environment.		
Emissions Test	**Compliance Level**	**Electromagnetic Environment-Guidance**
RF emissions CISPR 11	Group 1	The ImaCor Zura-Evo System uses RF energy only for its internal functions. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class A	The ImaCor Zura-Evo System is suitable for use in all establishments other than domestic and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	

Table B-2: EN 60601-1-2:2007

Guidance and Manufacturer's Declaration—Electromagnetic Immunity			
ImaCor Zura-Evo Systems are intended for use in the electromagnetic environment specified below. The customer or the user of the ImaCor Zura-Evo System should ensure that it is used in such an environment.			
Immunity Test	**IEC 60601 Test Level**	**Compliance Level**	**Electromagnetic Environment-Guidance**
Electrostatic discharge (ESD) IEC 601000-4-2	± 6 kV contact ± 8 kV air	± 6 kV contact ± 8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines ±1kV for input/output lines	±2 kV for power supply lines ±1kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1kV differential mode ±2kV common mode	±1kV differential mode ±2kV common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage DIPS, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	<5% UT (>95% dip in UT) for 0,5 cycle 40% UT (60% dip in UT) for 5 cycles 70% UT (30% dip in UT) for 25 cycle <5% UT (>95% dip in UT) for 5 sec	<5% UT (>95% dip in UT) for 0,5 cycle 40% UT (60% dip in UT) for 5 cycles 70% UT (30% dip in UT) for 25 cycle <5% UT (>95% dip in UT) for 5 sec	Mains power quality should be that of a typical commercial or hospital environment. If the user of the ImaCor Zura-Evo System requires continued operation during power mains interruptions, it is recommended that the SonixTABLET be powered from an uninterruptible power supply (UPS) or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3A/m	3A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial environment.

Note: UT is the AC mains voltage prior to application of the test level.

Table B-3: EN 60601-1-2:2007

Guidance and Manufacturer's Declaration—Electromagnetic Immunity			
The ImaCor Zura-Evo System is intended for use in the electromagnetic environment specified below. The customer or the user of the ImaCor Zura-Evo System should ensure that it is used in such an environment.			
Immunity Test	**IEC 60601 Test Level**	**Compliance Level**	**Electromagnetic Environment-Guidance**
Conducted RF IEC 61000-4-6 Conducted RF IEC 61000-4-3	3 Vrms 150 kHz to 80 MHz 3 V/m 80 MHz to 2,5 G Hz	3 Vrms 3 V/m	Portable and mobile RF communications equipment should be used no closer to any part of the ImaCor Zura-Evo System, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distances: $d = 1,2\sqrt{P}$ 150kHz to 80 MHz $d = 1,2\sqrt{P}$ 80 MHz to 800 MHz $d = 2,3\sqrt{P}$ 800 MHz to 2,5 GHz where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site surveya should be less than the compliance level in each frequency rangeb. Interference may occur in the vicinity of equipment marked with the following symbol: 
Note 1: At 80 MHz and 800 MHz, the higher frequency applies. **Note 2:** These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people. Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the system is used exceeds the applicable RF compliance level above, the system should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the system. Over the frequency range 150 KHz to 80 MHz, field strengths should be less than 3 V/m.			

Table B-4: EN 60601-1-2:2007

Recommended Separation Distances Between Portable and Mobile RF Communications Equipment and the System			
The ImaCor Zura-Evo System is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the ImaCor Zura-Evo System can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the system, as recommended below, according to the maximum output power of the communications equipment.			
Rated maximum output power of transmitter W	**Separation distance according to frequency of transmitter m**		
	150 kHz to 80 MHz $d = 1,2\sqrt{P}$	**80 MHz to 800 MHz** $d = 1,2\sqrt{P}$	**800 MHz to 2.5 GHz** $d = 2,3\sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23
For transmitters rated at a maximum output power not listed above, the recommended separation distance (d) in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating in watts (W) according to the transmitter manufacturer.			

Table B-4: EN 60601-1-2:2007

Note 1: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

Note 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

Appendix C: ImaCor Limited Warranty

8 LIMITED WARRANTY AND REMEDY

8.1 LIMITED WARRANTY

ImaCor offers a limited warranty as per the terms and conditions of sale between the parties that the Product as delivered to the Customer shall be free from defects in materials and workmanship for no less than twelve (12) months (except where Customer purchases a refurbished or reconditioned Product in which case it shall be six (6) months) from date of delivery within North America, or from date of shipment for orders shipped outside of North America, subject to the following limitations as well as those limitations set out in Sections (**8.2 SOLE REMEDY**) and (**8.3 EXCLUSIONS**) below:

8.1.1 During the first twelve (12) months from delivery of the Product to the Customer, the warranty and ImaCor's obligations under this Section 1.1 shall be limited to the following: provision by ImaCor of all replacement device parts, software updates and upgrades (excluding new features) which ImaCor regularly makes available to its customers of such Products at no additional fee, next Business Day response to warranty repair requests received by ImaCor before 13:00 Eastern Time on the prior Business Day, and shipping costs as per the terms and conditions of sale for replacement parts. As used in this Agreement "Business Day" means any day other than a Saturday, Sunday or statutory holiday in the United States or install locality.

8.1.2 Notwithstanding the foregoing, for refurbished or reconditioned Products purchased by the Customer, the Limited Warranty shall expire entirely six (6) months from the date of delivery. ImaCor shall have no responsibility for defects in materials or workmanship of any Product after the expiry of the applicable period for each aspect of the Limited Warranty. In the event that ImaCor provides replacement parts or components in support of a warranty claim, the warranty is not renewed or extended, but will continue from the original date of purchase. The Limited Warranty shall not cover, and ImaCor shall not have any responsibility for, any defects in the Products unless the Customer gives ImaCor notice of the defect prior to the end of the applicable warranty period.

8.2 SOLE REMEDY

ImaCor's obligation and liability under the Limited Warranty is limited solely, at ImaCor's option, to repair or replace the Products, or repayment or reduction of a reasonable portion of the purchase price for the Products, as determined by ImaCor in its sole discretion. The Customer must obtain a "Return Materials Authorization number" from ImaCor prior to returning any defective Product and follow all reasonable instructions of ImaCor with respect to such return.

8.3 EXCLUSIONS

The Limited Warranty provided hereunder does not include the following: a) any work external to the Product; b) maintenance, connection or removal of any device not furnished by ImaCor; c) repair of damage by any cause beyond ImaCor's reasonable control, including resulting from accident, neglect, misuse, failure of recommended or customary environmental conditions to be met, or from repairs performed by persons other than approved repairs by ImaCor's authorized service representatives; d) relocating the Product or damage caused by relocation; e) upgrades to or other modifications of the Product not approved or authorized by ImaCor, including without limitation, any software or hardware modifications thereto, or the use of any Product with any other hardware or software not supplied by ImaCor pursuant to a Purchase Order or written agreement; f) any work for cosmetic purposes; g) consumable items and parts, including batteries, h) repair of damage resulting from the use of the Product in a manner or configuration other than as specified in the Product operation manual and other documentation provided by ImaCor.

Appendix D: Service Drawings

Contact ImaCor Technical Support