## PURPOSE
This technical guidelines provides information about the J. Morita Apex Locator Root ZX II instrument integrated into an ASI delivery system: general usage information, troubleshooting assistance, and outlines the process for repairs.

## CONTENTS


## INSTRUMENT INFORMATION
### General Information
Canal Measurement Module

### Mounting Configuration: Components
One (1) panel installation one (1) panel mounted assembly with:

- Touch pad with ribbon cable
- LCD display board with interconnect cable
- Shelf mounted power console with probe wires
- Three AA batteries, installed into backside of power console

### Voltage Input Requirements

- Internally powered equipment
- Three (3) Alkaline AA batteries

**Instrument Information:**

- The Root ZX unit is a battery-powered instrument. The power button on the touch pad has to be pressed to use this instrument, unit is not powered by the ASI unit's main power switch.
- Never use rechargeable nickel-hydrogen or nickel-cadmium batteries.
- Replace all three batteries at the same time.
- Never autoclave probe wires, wipe down with Ethanol for disinfection.

**TROUBLESHOOTING**

| Problem | Correction |
|---|---|
| Battery power indicator is flashing | • Low battery strength; replace batteries |
| LCD Display will not illuminate when power button is turned on | • Check interconnect cable between the LCD display board and power board<br>• Replace the batteries<br>• Remove LCD display board and power console, see repair process |
| LCD display is illuminated, but no measurements are showing on indicator bar. | • Replace probe wires<br>• Remove LCD display board and power console, see repair process |
| Unit does not turn on with power button | • Replace batteries<br>• Check ribbon cable connection from the touch pad to the LCD display board<br>• Remove LCD display board and power console, see repair process |
| LCD display is unreadable, too dim. | • Remove LCD display board and power console, see repair process |

**REPAIR PROCESS**

If troubleshooting did not resolve the issue, the instrument will need to be sent in for repair, follow the steps below. The Root ZX II unit will be processed through ASI Medical, Inc., per manufacturer's requirements.

**Components Required for Full Evaluation and Repair**

Before starting, refer to the Warning section below. Then, follow the "Removal Instructions" below for the steps to remove the instrument from the delivery system.

**Important:** All items listed below are required to perform a complete instrument evaluation and repair. A delay will occur in the repair process if all items are not received. ASI will not submit the repairs to J. Morita until all required parts have been received.

- One (1) LCD display board

- One (1) Power console with interconnect cable

**Obtain an RMA Number**

- Contact ASI Customer Support to obtain an RMA number. The RMA is required to process the repair.

**Ship Instrument to ASI Medical**

To avoid shipping damage, please carefully package all of the instrument components in bubble wrap and place inside a sturdy shipping container. Also include the RMA sheet provided by ASI inside the container.

Ship to the address below and mark the box with the RMA number assigned. Including shipment tracking is strongly suggested.

ASI Medical, Inc. Attn: Repairs / RMA#
8811 American Way, Suite 130
Englewood, CO. 80112

## IMPORTANT

ASI does not repair the instrument, but works with the manufacturer, J. Morita, to assist the repair process in a timely manner. ASI receives the components and forwards to the manufacture for evaluation and repair. Once the instrument is out of our possession, we do not have a status of the repair until we are contacted by the manufacture's repair department. There is a minimum repair time of 2-6 weeks, which includes transit time. ASI will contact the office for repair approval when the manufacture repair estimate is known. Once the repair has been completed and the instrument received back at ASI, ASI will also contact the office for repair payment. When payment is received/processed, the instrument will be shipped to the office (the tracking number will be emailed to the office as notification).

**REMOVAL INSTRUCTIONS**

- Turn of main power and unplug dental unit.
- Open the cover to the delivery system, according to the unit model type.
- Disconnect probe wire connector, attached to the right side of power console.
- Remove the bottom of the power console from the adapter panel shelf, it has a piece of Velcro holding the bottom of the power console to the shelf.
- Move the power console to the side to expose the interconnect cable, attached to the LCD display board and the power board in power console.
- Remove the interconnect cable connector from the LCD display board.
- Remove the power console from the ASI unit.
- Remove the touch pad ribbon cable from the connector on the LCD display board.
- Remove the four (4) nuts attaching the LCD display board to the mounting panel, using a ¼" nut driver. Set nuts aside for reinstallation.
- Remove the LCD display board from the ASI unit.

## INSTALLATION/RE-INSTALLATION

**Tools required**

- 1/4" nut driver

1. Before handling any circuit boards, be sure to follow good Electrostatic Discharge practices.

2. You should have 1 adapter panel with display board attached and link harness, 1 white plastic enclosure with main board, Velcro on bottom and 3 (AA) batteries, 1 probe cord, 4 of (4-40) nuts, and 1 probe cord bracket.

3. Mount the adapter panel to the cover using four (4) 4/40 nuts. **(Fig. 1)**


Fig. 1

4. Attach Shelf or Support Plate, depending on your cart model:
   - **Designer Model**: Use the shelf provided. Attach by loosening the bottom two (2) 4/40 nuts on the adapter panel. Slide on with the bend going down; retighten the nuts. **(Fig. 2)**
   - **Classic Model**: Use the support plate provided.
     Attach by using two (2) flat head screws. With the cover setting on its top, place the shelf under the lip of the cover, line up the holes, put in the screws.

Fig. 2

5. Run the probe wires through the side hole (see **Fig. 3**; arrow) in the cover. Attach to the plug on the side of the enclosure. Run a cable tie through the screw hole (see **Fig. 3**, arrow) in the enclosure, securing the probe wires to the base as a strain relief.

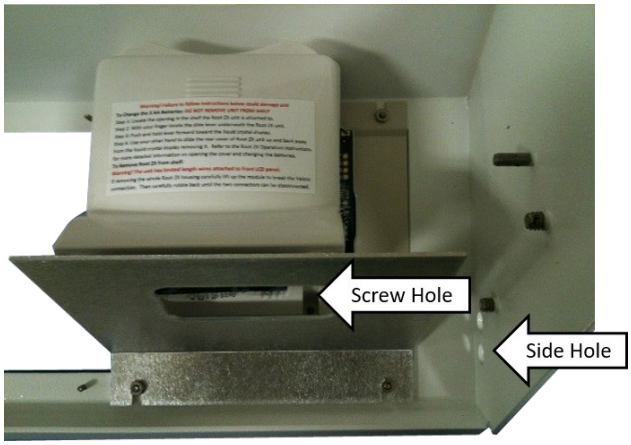


Fig. 3

6. Install the enclosure on the shelf, holding it in place with the Velcro. Reattach the wire harness from the front circuit board to the back circuit board in the enclosure. (**Fig. 4**)


Fig. 4

7. Attach the Probe Cord Wrap to the side of cover, using the two (2) screws provided with the Cord Wrap Assembly. (**Fig. 5**)

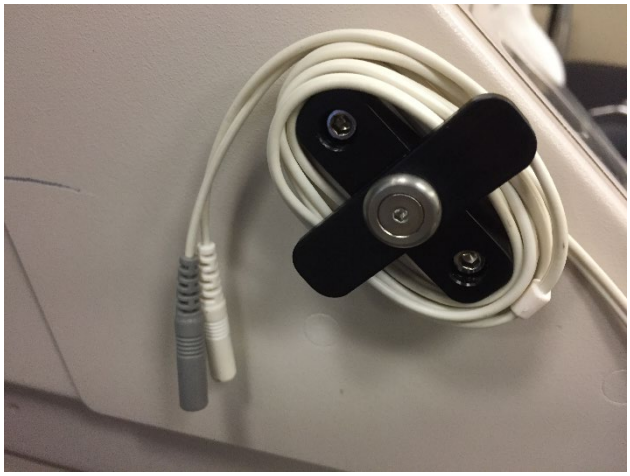

Fig. 5

## WARNINGS

WARNING. Only qualified personnel should service or repair this device. This device should only be serviced/repaired by a qualified service technician who is proficient in the repair of electromechanical dental equipment and who understands the complexities and risks of working within the device and observes proper safety precautions.

WARNING – Compressed Air. The compressed air system that operates this unit is under pressure. Compressed air can propel dust or loose particles and can cause bodily injury or damage. Always turn the system off and bleed off air pressure before attaching or removing air lines or accessories or servicing this unit. All air lines should be periodically inspected and replaced if worn or damaged. If an outside compressed air supply is used to power this unit, the air supply must be regulated to 80 psi or below. Excessive air pressure could cause certain components to rupture.

WARNING – Electrical Voltage. This system is powered by high voltage electricity. Like any other electrically powered device, if it is not used properly, it can cause electrical shock. Always plug the power cord into an electrical outlet with adequate fuse protection and proper grounding. In the event of a short circuit, grounding reduces the risk of shock by providing an escape wire for the electric current. Improper grounding of the unit can result in a risk of electric shock. Always unplug the unit before doing any service or repair to the unit.