Ultrasound Calibration and Tuning Procedure

Ultrasound Service Information
Rich-Mar Corporation recommends that all Rich-Mar ultrasonic therapy products be returned to the factory or to a servicing Rich-Mar distributor for service or calibration. It is recommended that the device be calibrated annually or when any major component is changed.

Caution
Calibration and peaking adjustments must not be attempted unless the person performing these adjustments has the proper test equipment, which must include an acceptable ultrasonic wattmeter, such as the Ohmic UPM-30 or equivalent. Degassed water must be used to obtain accurate readings (4 parts per million of oxygen).

Warning
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous exposure to ultrasonic energy.

To follow this graphical instruction we will show a button icon and then to the right the screen that would result along with instructions. NOTE: The frequency, voltage, and other numbers shown in these instructions are examples only and are not meant to be used as settings.

Beginning the Calibration Procedure - Therapy Hammer 2cm² and 5cm² crystals
To begin first make sure the device is plugged in but turned off so that you see a blank screen shown here.

Now turn the device on using the switch on the back of the device. As soon as you do that press the STOP button

You’ll begin with the Hammer soundhead. Press the SELECT button to highlight HAMMER

Then press the START button to access the HAMMER calibration screen.
Now that you have pressed the Start button the device is outputting and you should have a reading on the wattmeter. Use the up and down arrows to calibrate the frequency to the highest value on the wattmeter and then advance five.

Pressing the Stop button has stopped output to the 2cm² crystal. Then press the Select button to go to the voltage.

Pressing the Stop button has stopped output to the 2cm² crystal.
Now you begin the process of calibrating the 3MHz portion for the 2cm² soundhead.

Now that you have pressed the Start button the device is outputting and you should have a reading on the wattmeter.

Use the up and down arrows to calibrate the frequency to the highest value on the wattmeter – then advance five.

Pressing the Stop button has stopped output to the 2cm² crystal.

Now you are ready to set the voltage for the 2cm²/3MHz portion.

Pressing the Start button the device is outputting and you should be getting a reading on your wattmeter.

Use the arrows to calibrate the output to 4 watts. NOTE: holding down an arrow key will cause the voltage to move in increments of 10.
Once you are done setting the voltage for the 2cm²/3MHz press the STOP button. You then repeat the process for the 5cm² @1MHz settings. (Make sure to calibrate the output to 10 watts). You then repeat the process for the 5cm² @3MHz settings but this time advance the frequency ten instead of five.

It is recommended that you save the settings by pressing and holding the STOP button until you see the message “STORING DATA TO EE”. That screen verifies that you data for the 2 and 5 side are stored.

When you are done with the 5cm² settings you will see the Select buttons takes you past the XDCR I, XFMR DC, XDCR DC, and FLAGS settings DO NOT ALTER THESE SETTINGS – PRESS THE SELECT BUTTON UNTIL THE AS1/2 BOX IS HIGHLIGHTED (as shown below).

Now you have finished calibrating the manual “Therapy Hammer” transducer and are ready to begin calibrating the AutoSound applicator. Press Start to access the AutoSound cal screen.
To calibrate the AutoSound applicator you will be required to remove the Gel Well by prying it off (it is held on with removable epoxy). Once the Gel Well is off you will need the AutoSound Calibration Kit (Call 800.762.4665 to order part #A9128). Follow the procedure below to use your wattmeter during the calibration process that is detailed in the following pages. Make sure that the applicator is put in the wattmeter with the cable on the left side.

1. Place the Autosound calibration rails into the wattmeter pot and fill the pot to the rim with de-gassed water. See Figure 1.

2. Position the AutoSound applicator so that transducer 1 is centered over the cone. To do this, lay the applicator into the wattmeter by first placing it on the rear rail at an angle. Then, gently ease the applicator down onto the front rail. See Figures 2 and 3 below. Next, slide the applicator all the way over to the right. Place the sighting aid over the top of the applicator and verify that transducer 1 (AS1) is centered over the cone by making sure the green dot on the sighting aid is lined up with the center of the cones bracket. See Figure 4 below.
Now you are at the AutoSound applicator calibration screen. You see the first two crystals are labeled AS1 & AS2. AS3 & AS4 can be accessed at the lower right. You use the same procedure for each crystal here as you did previously.

**Calibrating the AutoSound Applicator**

You’ll begin with the AS1 crystal. It is the one furthest from the cable on the applicator. Place it in the wattmeter, making sure to center the AS1 crystal in the wattmeter.

Pressing the Start button the AS1 crystal is outputting and you should be getting a reading on your wattmeter.

Use the up and down arrows to calibrate the frequency to the highest value on the wattmeter – then advance five.

Once the frequency is set press the Stop button and output to the AS1 crystal has stopped.

Now you are ready to set the voltage for the AS1 1MHz portion.

Pressing the Start button the AS1 crystal is outputting and you should be getting a reading on your wattmeter.
Calibrating the AutoSound Applicator continued

Use the arrows to calibrate the output to 7 watts. NOTE: holding down an arrow key will cause the voltage to move in increments of 10.

Pressing the Stop button has stopped output to the AS1 crystal.

Now you begin the process of calibrating the 3MHz portion for the AS1 crystal.

Pressing the Start button the device is outputting and you should be getting a reading on your wattmeter.

Use the up and down arrows to calibrate the frequency to the highest value on the wattmeter - and then advance five.

Once the frequency is set press the Stop button and output to the AS1 crystal has stopped.

Now you are ready to set the voltage for the AS1 3MHz portion.
Calibrating the AutoSound Applicator continued

After you have repeated the process for all four crystals you need to save this information into the device’s memory. Once you have set the 3MHz voltage for crystal AS4 you need to press and hold the STOP button until you see the screen below. Once you see this screen the calibration settings are saved.

Pressing the Start button the AS1 crystal is outputting and you should be getting a reading on your wattmeter.

Use the arrows to calibrate the output to 5 watts. NOTE: holding down an arrow key will cause the voltage to move in increments of 10.

You have now calibrated the AS1 crystal of the AutoSound applicator. Re-position the applicator with crystal AS2 centered in the wattmeter.

Repeat the process for AS2. Once AS2 is finished press the SELECT button until the AS3/4 button is highlighted as shown here then press START.

You now repeat the process with AS3 and AS4.

After you have repeated the process for all four crystals you need to save this information into the device’s memory. Once you have set the 3MHz voltage for crystal AS4 you need to press and hold the STOP button until you see the screen below. Once you see this screen the calibration settings are saved.

You have now finished calibrating the AutoSound 5.6. Turn the device off and back on and it is now ready to use.