

Therasound 2.5 Ultrasound

Service Info

Therasound 2.5 Calibration Set Up

1. Hold Set/Enter button Stop /Clear down. Turn unit on.
XCDR should be darkened on the calibration screen.
2. Install soundhead into wattmeter 2cm side down.
3. Push Set and turn knob to 2cm/1MHz. Push Set.
4. Turn knob to frequency. Push Set. Adjust knob to achieve maximum output and add five to the reading. (i.e.- 947 go to .952) Push Set.
5. Turn knob to corr. Push Set and adjust knob to achieve 4 watts output. Push Set.
6. Turn knob to XCDR and push Set. Turn knob to 2cm/3MHz and push Set.
7. Repeat steps 3 and 4 (Note: Add 10 to frequency on 3meg).
8. Turn knob to XCDR and push Set. Turn knob to 5cm/1MHz and push Set.
9. Repeat steps 3 and 4 (Add 10 to frequency. Maximum output is 10 watts).
10. Turn knob to XCDR and push Set. Turn knob to 5cm/3MHz and push Set.
11. Repeat steps 3 and 4 (Add 10 to frequency. Maximum output is 10 watts).
12. After step 10 is completed, push Stop/Clear and go through presets to verify outputs and no CAL flashing.

Troubleshooting the Therasound 2.5

To check software version, turn unit on press set\enter and stop\clear down and hold.

ULTRASOUND

LOW OUTPUT FROM EITHER HEAD.

- A. Memory may have been lost. Go through calibration procedure.
- B. Crystal may be bad. Replace transducer and calibrate.

FLASHING BETWEEN CAL AND TREAT WITH OUTPUT.

- A. Memory may have been lost. Recalibrate.
- B. Output may be low. Check outputs for proper watts.

FLASHING CAL WITH NO OUTPUT.

Verify which head and frequency is causing CAL.

A. If one head and one frequency:

- 1. Radio wire in deck is bad. If it is not hardwired to the main board, do so.
- 2. If radio wire is hardwired to main board, cut off and redo.

B. If 2cm/1MHz and 5cm/3MHz or 2cm/3MHz and 5cm/1MHz:

- 1. Check radio wire and redo if necessary.
- 2. Q1 or Q2 on main board is shorted. Replace as needed.

C. If no output on the 3MHz side:

- 1. Check for a signal on J5 of main board. If there is no signal, replace U9 4423 IC (Replacement 7212).
- 2. If there is a signal on J5 2N20L, transistor in deck is probably shorted. Check and replace as needed.

D. If no output 1MHz:

- 1. Check for a signal on J4 of main board. If there is no signal, replace U9 4423 IC.
- 2. If there is a signal on J4 10N40E, transistor on deck is probably shorted. Check and replace as needed,

E. If no output on either head:

- 1. Check signal on J4 and J5. If no signal, replace U9 4423 IC.
- 2. Check hi-volt on J3. If no hi-volt, replace U4 LM317HVK.

RICH-MAR CORPORATION

Therasound 2.5 Main Board Rev. C

Modification Procedure

1/28/99

NOTE: Make certain you make this modification ONLY at a static protected (ESD) workstation. Be sure you are grounded to the workstation with your wrist strap whenever you handle or work on the Main Board.

CAUTION: Do not use a 50 watt soldering iron when installing these components. Use only a 30 watt iron. Too much heat will damage the circuit board.

11DQ04 Diodes

First, install the 4 protection diodes (11DQ04) as per the sample and Illustration 1. Be sure the banded ends (cathode) of the diodes are positioned exactly like the sample and Illustration 1. NOTE: When soldering the diode that connects to Pin 6 of the IC (U3), be careful in that it does not short to one of the other pins. Call Alan Clingenpeel if you have any questions regarding the correct positioning of the diodes.

Once the diodes are installed, place a SMALL dab of silicone along the body of each of the diodes (See sample and Illustration 1).

R7 – 15.8K Resistor

Place a 15.8K resistor in the number 12 slot of the small (MK1) lead bending tool and clip the leads flush with the edge of the toll. Bend the ends into small hooks with the needle nose pliers.

Remove the RF shield (has the sample notification on it), by carefully using a small bladed screwdriver to pry it up around the edges. It will be tight, but once it is loosened from the clips, it should come off easily.

Once the RF shield is removed, clip R7 (See sample and Illustration 2 for proper location) loose from the main board. **NOTE: Clip the leads right next to the resistor body.** Stand the leads that are soldered into the board straight up.

Place the hooked ends of the resistor around the clipped leads that are standing up. Crimp the hooked ends onto the leads with the needle nose pliers and solder these connections. Trim off the excess lead wire sticking up.

Reinstall the RF shield. Be sure the edges of the shield set into the clips mounted on the board. After all modifications have been made and the RF shield has been reinstalled, place a colored dot on the top of the RF shield. This will allow anyone to know at a glance that this board has the required modification.

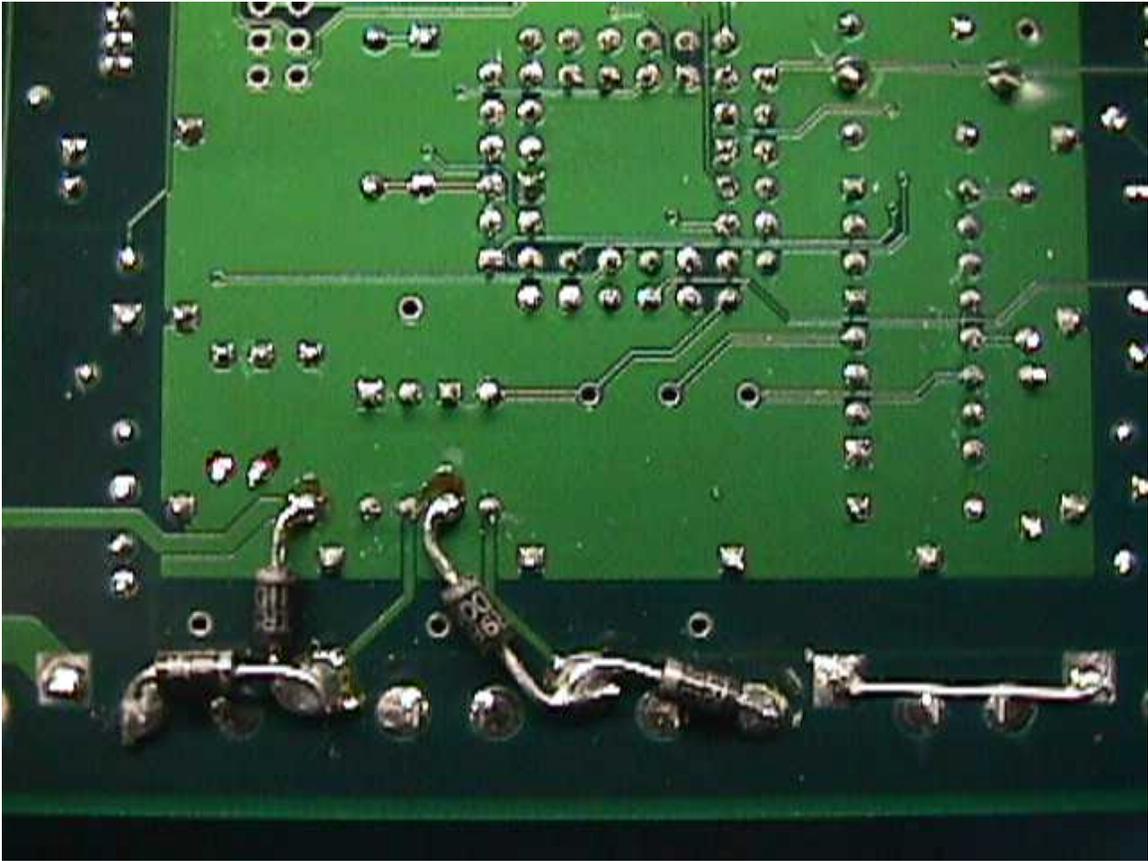
Head Select Cable (Radio Wire) Verification

Using an Ohm meter verify the following connections on the male connector hard wired to P3 designator.

1. Tip of connector goes to pin 2
2. Shield goes to Pin 1
3. Center of connector goes to Pin 3
4. Pin 4 has no connection

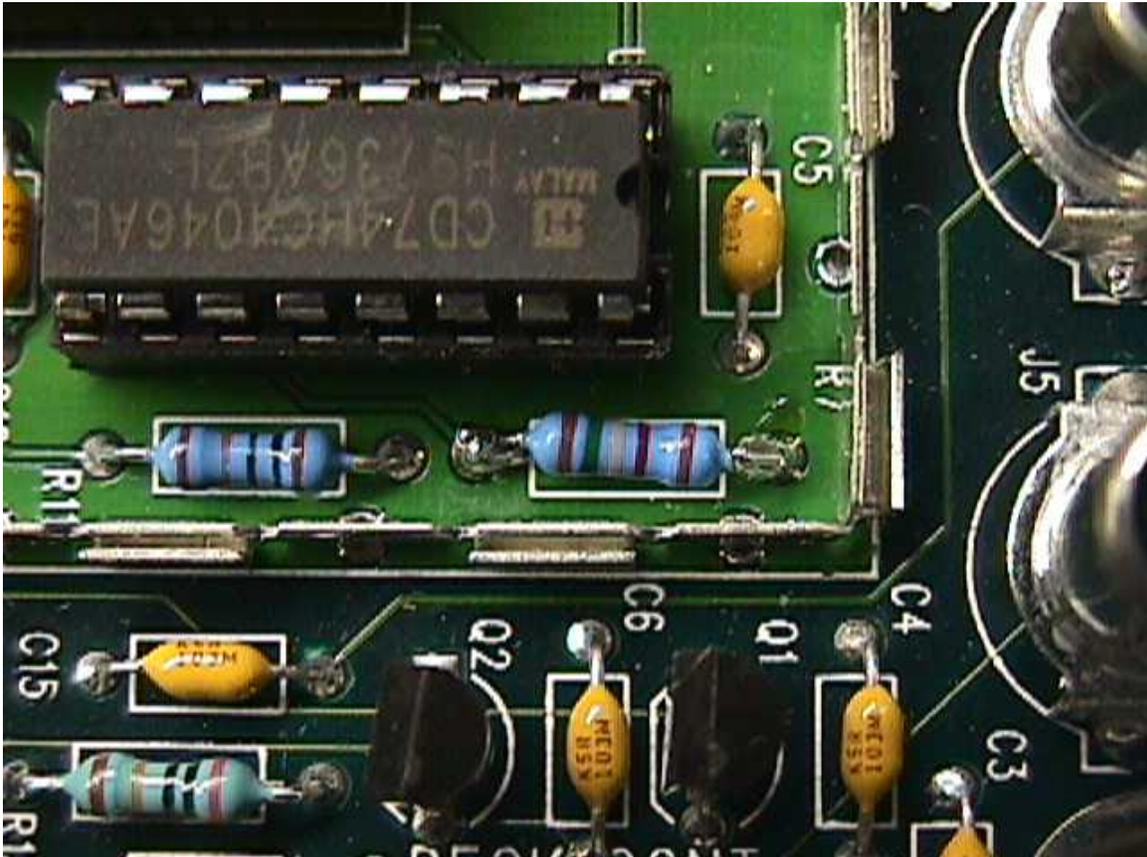
ILLUSTRATION 1

Therasound 2.5 Main Board



**NOTE POSITION OF BANDED END (CATHODE)
OF THE DIODES**

ILLUSTRATION 2
2.5 MAIN BOARD



REMOVE THIS RESISTOR

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Therasound 2.5

Preventive Maintenance Procedure

Serial No. _____

Date _____

Ultrasound Function Tests

While depressing the Stop/Clear button and the Set/Enter button, look for the System Stats.

Verify the software version as F201

Setup the treatment: 2cm1Mhz, 100%, 10:00.

Adjust the intensity to the watt settings below and verify that the watt meter measurements fall into the range listed

<u>Watt Setting</u>	<u>Watt Meter Range</u>
4 watts (max)	3.4 - 4.6 watts

Setup the treatment : 2cm3Mhz, 100%, 10:00.

Adjust the intensity to the watt settings below and verify that the watt meter measurements fall into range listed.

4 watts (max)	3.4 - 4.6 watts
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Setup the treatment: 5cm1Mhz, 100%, 10:00.

Adjust the intensity to the watt settings below and verify that the watt meter measurements fall into range listed.

5 watts	4.3 - 5.7 watts
10 watts (max)	8.6 - 11.4 watts

Set up the treatment: 5cm3Mhz, 100%, 10:00.

Adjust the intensity to the watt settings below and verify that the watt meter measurements fall into range listed.

5 watts	4.3 - 5.7 watts
10 watts (max)	8.6 - 11.4 watts

Set up the treatment: 5cm1Mhz, 35%, 10:00.

Adjust the intensity to the watt settings below and verify that the watt meter measurements fall into range listed.

10 watts	3.0 - 4.0 watts
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Appearance & Safety Test

Check all labeling, serial numbering, and manufactures date.

Recheck the overall appearance of the unit.

Check the stickers on the front panel

Check for COM port cover on back of the unit.

Check function of all touch controls on panel.

Check operation of encoder pot.

Check the units operation at 108 and 132 line volts AC

Check the line leakage using a Simpson 229-2 line leakage meter.

Forward _____ Reflected _____

Set up a 1:00 minute ultrasound treatment (any frequency;100% Duty). Verify that the treatment is terminated when the device times out. Also verify timer accuracy.

All checks completed by _____