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## 2.5 Occasional Calibration Checks

### 2.5.1 Microphone Calibration Check

Although it is not necessary to check the calibration of the 6500-CX every time it is turned on, we recommend an occasional check with a sound level calibrator such as the Quest QC-10. Use the following procedure:

**NOTE: Allow at least 30 minutes at room temperature before checking the calibration of the test set, especially if it has been exposed to cold temperatures. Open the sound chamber lid during this warm up period.**

1. Insert the M1550E microphone into the 14-mm-to-1" adapter supplied in the standard accessories kit. Insert the microphone / adapter assembly into the output port of the calibrator.
2. Press the [RESET] button located on left side of the front panel.
3. After pressing [RESET], the instrument will be in COMPOSITE mode (which is described in Chapter 5). Press the [SINE / COMPOSITE] button, found under SIGNAL. The green LED will turn off indicating that the instrument is in SINE (Pure tone) mode.
4. **IMPORTANT: Be sure Noise Reduction is off.** If necessary, press the [NOISE REDUCTION] button repeatedly, until the LED next to the button is off and there is no "NOISE REDUCTION" designation on the screen.
5. Read the SPL from the M1550E on the video monitor (next to "AID OUT"). The displayed reading should agree with the stated output of the calibrator (in the case of the Quest QC-10, this is 114 dB).
6. If the SPL reading next to "AID OUT" does not match the stated output level of the calibrator, adjust the test set amplifier with the GAIN adjustment control screw located on the rear panel, next to the M1550E input plug. Loosen the lock nut and turn the screw until the reading on the display matches the specifications of the calibrator. Tighten the lock nut without moving the position of the adjustment screw.

### 2.5.2 Audio Source Calibration Check

The Audio Source Level is pre-set at the factory and may never need adjusting. However, if there is a problem with LEVELING (Section 2.4.3 in the 6500-CX manual), it could mean that the Audio Source Level is out of adjustment.

1. Follow the procedure for microphone calibration in Section 2.5.1, above.
2. Remove the microphone from the chamber. Press [LEVEL]. This will unlevel the instrument.

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3. Place the M1550E microphone at the reference position (circle) in the test chamber.
  4. Press the [WEIGHT] button twice, to get to COMPOSITE MODE (without speech weighting).
  5. Checking the numbers in the upper right of the video monitor, verify that the "RMS OUT" level is within 0.5 dB of the "RMS SOURCE" level. If not, loosen the lock nut on the AUDIO SOURCE LEVEL control on the rear panel and adjust the control until the "RMS OUT" reading is within 0.5 dB of the "RMS SOURCE."
  6. Tighten the lock nut.

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## 8.6 Calibration Adjustments for Quik-Probe

It is not necessary to set the calibration controls every time you use Quik-Probe II. Rather, you should check calibration once in a while to assure the accuracy of the adjustments for the microphones and the loudspeaker.

### 8.6.1 Calibrating the Reference and Probe Microphones

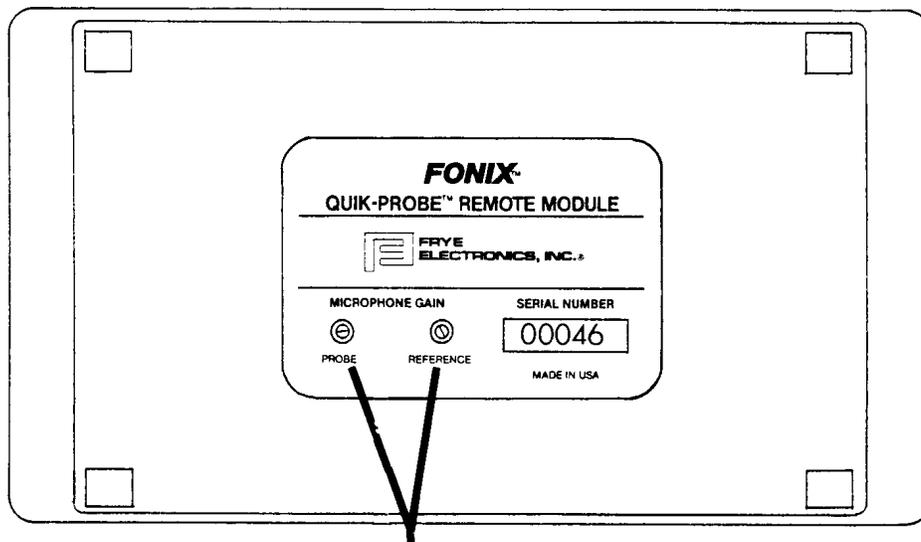
You need a sound-level calibrator such as the Quest QC-10 (available from Frye Electronics) to check the calibration periodically. You will also need the 14-mm-to-1-inch adaptor, the Probe Microphone calibrator adaptor, and the calibration clip (see Figure 8.6.1-1).



**Figure 8.6.1-1 —1" Adapter, 14-mm Probe Calibration Adapter, and Calibration Clip**

1. Once you have entered Quik-Probe II (Section 8.2), pu in the 6500-CX manualsh the [MENU] button on the Remote Module.
2. Use [v] to move the highlighting cursor to "CALIBRATE PROBE."
3. Prepare the calibrator (Quest QC-10) by checking the battery meter, and by putting the 14-mm-to-1-inch adaptor into the calibrator.
4. Insert the Reference Microphone into the adaptor.

5. Turn on the calibrator with the switch on the bottom.
6. To calibrate the Reference Microphone:
  - a. Push the [START/STOP] buttons from the menu to activate measurement. The box in the lower part of the screen will have the heading, "MEASURED MIC. AMPLITUDE."
  - b. If the number you see under "REFERENCE" is not within 1 dB of the calibration value (114 for the Quest QC-10), adjust the gain of the Reference Microphone with a small screwdriver using the control marked "REFERENCE," on the bottom of the Quik-Probe module (see Figure 8.6.1-2).



**Figure 8.6.1-2 — Screw Adjustments on Bottom of Remote Module**

7. To calibrate the Probe Microphone:
  - a. Remove the Reference Microphone from the calibrator and insert the Probe Microphone adaptor.
  - b. Fully insert the probe tube into the calibrator adaptor. Check to make certain nothing is clogging the probe tube, and that it is properly connected to the body of the Probe Microphone (see Figure 8.6.1-3A).
  - c. If the number you see in the "MEASURED MIC. AMPLITUDE" box on the screen under "PROBE," is significantly below the calibration level (114 for the Quest

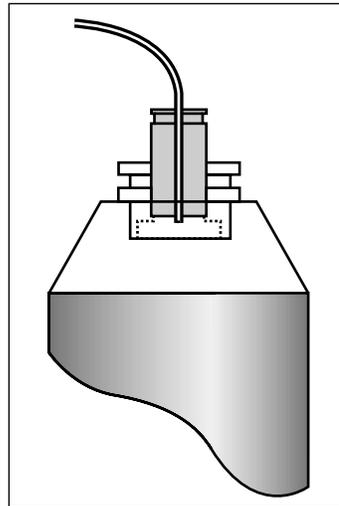
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QC-10), check that the probe tube has gone all the way into the adaptor. Take the probe calibrator adaptor out to check (Figure 8.6.1-3A).

- d. If necessary, adjust the gain of the Probe Microphone with a small screwdriver using the control marked "PROBE," on the bottom of the Remote Module (see Figure 8.6.1-2).
8. When calibration is done, press [MENU] (on the Remote Module) to return to the normal Quik-Probe screen.



**Figure 8.6.1-3A**



**Figure 8.6.1-3B**

### ***Using the 14mm / 1" Adapter and Probe Mic Adapter to Calibrate the Probe Microphone***

#### **8.6.2 Calibrating the Sound Field Loudspeaker**

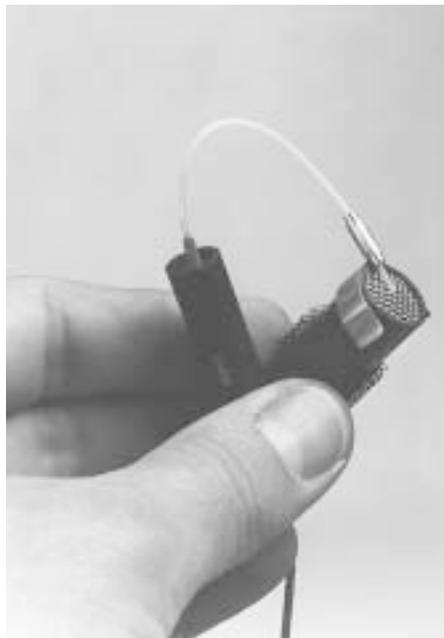
This calibration procedure is done only occasionally to check the accuracy of the loudspeaker level.

1. Be sure that you have not already LEVELED (Section 8.9 in the 6500-CX manual ). The display under "CURRENT STATUS" in the upper right of the screen should read, "UNLEVELED." If in doubt, turn the 6500-CX off and then on. Then enter Quik-Probe II as described in Section 8.2 in the 6500-CX manual.
2. Prepare the room for Quik-Probe testing, as described in Section 8.5 in the 6500-CX manual. Situate a person, wearing the Velcro headband, in the proper position near the loudspeaker.

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3. Combine the Reference Microphone and the Probe Microphone with the calibration clip as shown in Figure 8.6.2. Be sure the tip of the probe is at the center of the grid of the Reference Microphone.
  4. Position both microphones on the headband just above the ear nearest the loudspeaker. Re-adjust the position of probe, if necessary.
  5. Push [START/STOP] to turn on the test signal. (It might be necessary to increase the Noise Reduction; see Section 8.7.2 in the 6500-CX manual.) Observing the screen display, compare the RMS SOURCE SPL to the RMS OUT SPL. If the levels are within 3 dB of each other, the calibration is correct.
  6. If the difference is greater than 3 dB, locate the adjustment for the loudspeaker on the back panel of the main electronics module. It is labeled "LEVEL," below the words "QUIK-PROBE" and "SPEAKER."
  7. Loosen the lock nut and then turn the screw adjustment until the RMS SOURCE and RMS OUT levels are within 3 dB of each other. Re-tighten the lock nut.
  8. Press [START/STOP] and then [CLEAR] to return to the normal Quik-Probe screen.

### 8.6.3 Checking Probe and Reference Microphones Together

1. Locate the calibration clip and fasten it to the top edge of the Reference Microphone (see Figure 8.6.2).



**Figure 8.6.2 — Calibration Clip Holding Probe Tube in Proper Position**

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2. Insert the probe tube through the tube on the clip until the tip of the probe is at the center of the Reference Microphone grid.
  3. Hold the two connected microphones about 12 inches (30 cm) from the sound field loudspeaker. Push the [START/STOP] button.
  4. Since the responses of the Reference and Probe Microphones should be within 2 dB of each other, the GAIN curve (difference curve) on the screen should be very close to horizontal at the 0-dB line. If this is not the case, one or both microphones need recalibration (see Section 8.6.1).
  5. Push [START/STOP] and then [CLEAR] to stop the test and return to the normal Quik-Probe screen.