



## Audiometer Calibration: The “Functional” Calibration

The OSHA Hearing Conservation Amendment under the section **Audiometer Calibration** states: “The functional operation of the audiometer shall be checked before each day’s use by testing a person with known, stable hearing thresholds, and by listening to the audiometer’s output to make sure that the output is free from distorted or unwanted sounds. Deviations of 10 decibels or greater require an acoustic calibration.”

According to the above definition, The **Functional Calibration** has two components:

1. The **Biological Calibration** – testing persons with known stable hearing thresholds.
  - Done each day the audiometer is used.
  - Use at least two subjects. Set up a log on each subject.
  - Test one subject each day the audiometer is used. Threshold changes of 10 dB or more, from the baseline to the current test, must be investigated.

Thankfully, OSHA allows the use of instruments as a substitute for the human biological subjects. These **Biological Simulators** are basically sound level meters that respond to sound intensity and “push the button” when a preset level is reached. Threshold changes of 10 dB or more, baseline to current test, require investigation. A new baseline should be established each year when the audiometer receives the Acoustic Calibration.

**Note:** OSHA states changes of 10 dB or more require Acoustic Calibration. Most changes can be resolved locally without the need for an additional Acoustic Calibration. Our experience indicates that the following conditions may be the cause of the threshold change(s):

**Low battery power.** Even if the power light indicates the battery is OK, change the battery and repeat the test.

**Earphones reversed** on the simulator or the **cushions not properly seated** on the simulator. Check that the earphone cushion is properly positioned. Repeat the test. Check that the **earphone cord plugs** are fully seated in the receptacle (inside the booth, outside the booth, to the audiometer). Pull out and push in the plugs several times. Repeat the test.

2. The **Self –Listening Check** – using our own ears to listen for unwanted sounds:
  - Done each day the audiometer is used.
  - A record is maintained to show that the check was done.
  - Listen for static, pops, crackling sounds. Gently wiggle wires to see if the tone is interrupted or changes volume.



- Most common problems found are broken earphone wires and earphone cord plugs not properly seated.

Modern microprocessor audiometers have a self-listening test mode which produces a steady tone. It is much easier to find problems using a steady tone than using a pulsed tone. With the earphones on your own ears and steady tone, change frequencies. *Is the pitch OK? Does the patient response button operate properly? Is the tone interrupted when the earphone cords are gently wiggled?*

If the daily Functional Check shows a change of 10 dB or more, postpone testing until the change is resolved. Your record should indicate that the thresholds are back within an acceptable range before continuing with employee testing. Good Luck!

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