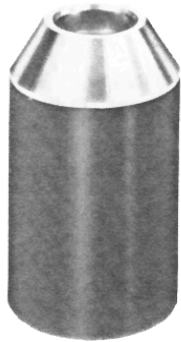




MODEL CA-12 SOUND LEVEL CALIBRATOR



INSTRUCTIONS

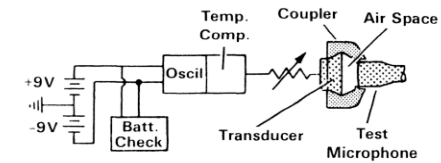
DESCRIPTION

The Quest CA-12 Sound Level Calibrator is a self-contained unit that quickly and precisely verifies the accuracy of microphones and sound measuring instruments. The Calibrator generates a reference sound level at precisely 110 dB and 1000 Hz.

The unit is battery operated and therefore fully portable. The CA-12 is primarily a field instrument for on-the-spot accuracy checks of sound level meters, noise dosimeters and other microphone instruments.

The CA-12 consists of a stable 1000 Hz oscillator, amplifier stage, magnetic acoustic transducer, and a coupler that accepts the standard 1-1/8 inch diameter microphone. A separate adaptor is also provided to accommodate a 15/16 (one inch) diameter microphone. Other adaptors to accommodate smaller microphones can also be used.

The Calibrator employs solid state integrated circuitry that provides accurate and stable performance. The block diagram shows the basic operating sections of the unit. Regulation against battery drain is inherently provided in the electronics.



CA-12 Calibrator Block Diagram

SPECIFICATIONS

Acoustic Output

Frequency: 1000 Hz $\pm 3\%$
Sound Pressure Level: 110 dB reference $20\mu\text{N/m}^2$
Accuracy: ± 0.4 dB (20°C, 760 mm Hg)
Temperature Range: -10 to +50°C operating, -40 to +65°C storage (with batteries removed)
Temperature Coefficient: 0 to 0.01 dB/°C
Altitude Effects: Approximately 0.1 dB decrease for each 2000 feet increase in altitude from sea level to 12,000 feet elevation, or comparable atmospheric pressure change (approximately every 50 mm of Hg decrease).

General

Power Source: Two 9V transistor batteries NEDA 1604, Burgess 2U6 or equivalent. Battery life approximately 100 hours
Construction: Rugged aluminum housing
Case Size: 4 inches by 2-3/8 inches diameter
Weight: 13 oz. including batteries

OPERATION

The CA-12 Calibrator is designed to check the accuracy of many types of sound instruments, not only Quest manufactured equipment. Quest instruments commonly use the standard 1-1/8-inch diameter ceramic microphone which fits directly into the calibrator coupler cavity. For other microphones with smaller diameters, an adaptor must be used. The next most common size microphone is the 1-inch (actually 15/16 inch). When testing an instrument with a 1-inch microphone, the proper adaptor ring must first be inserted in the coupler. This keeps a close tolerance fit around the microphone head. Be sure the microphone fits down inside the adaptor and rests on the lower rim. This rim supports the microphone and forms the necessary inner seal.

OPERATING PROCEDURE

1. Set Calibrator ON-OFF switch to ON. A 1000 Hz tone should be heard. Turn on the sound level meter which is to be

calibrated.

2. Check battery indicating meter of the calibrator to be sure needle enters into the green "good battery" area. If needle stays in red area, replace batteries. Likewise, check the condition of the sound level meter batteries.

3. (Skip this step if the microphone to be measured is 1-1/8 inch diameter.) Insert the proper sized microphone adaptor, inner rim down, into the calibrator coupler cavity.

4. Carefully insert the microphone into the calibrator coupler. Be sure the microphone is down inside the coupler resting flush on the lower coupler rim. If remote microphone type sound level meters are used with a microphone extension cable, then calibration is performed with the microphone mounted on the extension cable.

CAUTION

Rapid insertion or withdrawal of the microphone may damage the microphone or the transducer in the coupler because of the rapid change in pressure on the diaphragms.



5. Proceed to verify the instrument accuracy by comparing the 110 dB output level of the calibrator to the sound level meter reading. Note the correction in calibrator output due to altitude effects given at top of next page. Adjust the sound level meter sensitivity as necessary.

6. When calibration has been made, carefully remove the microphone and turn calibrator to OFF.

BATTERY REPLACEMENT

To replace batteries, remove two screws from face plate on bottom of calibrator. Slide off face plate and outer shell to expose batteries.

ALTITUDE EFFECTS

Most calibrators including the C A-12 are affected by altitude. The transducer diaphragm within the calibrator creates the sound as it vibrates against the air. When the air is thinner (at higher elevations) a lower sound level is produced.

The CA-12 is calibrated to produce 110 dB at sea level. When the unit is operated above sea level a slightly lower sound level is emitted depending on altitude. For each 2000 feet of elevation above seal level the CA-12 produces 0.1 dB less than the 110 dB rating. As an example, the calibrator will only emit 109.7 dB at an elevation of 6,000 feet. Therefore, a sound level meter should be set at 109.7 dB, not at the rated 110 dB.

CA-12 CALIBRATION

The CA-12 Calibrator was precisely calibrated in the Quest laboratory with special acoustical instrumentation traceable to the U.S. Bureau of Standards. The CA-12 is very stable, but since it is used to calibrate other equipment, it should be periodically checked with laboratory standards. It is recommended that the Calibrator be returned to the factory at least once each year for recalibration, or whenever there is a question about its accuracy.

Service Policy

The Quest product you have purchased is one of the finest acoustic instruments available. It is backed by our full one year warranty which seeks complete customer satisfaction. This is your assurance that you can expect prompt courteous service for your equipment from the entire Quest service organization.

Should your Quest equipment need to be returned for repair or recalibration, please contact the Service Department at (800)245-0779 (USA) or Fax (262)567-4047 for a Return Authorization Number. The RA number is valid for 30 days, and must be shown on the shipping label and purchase order/cover letter. If you are unable to return instruments in that time call for a new RA number. Send it prepaid and properly packed in the original shipping carton directly to Quest Technologies, 1060 Corporate Center Drive, Oconomowoc, WI 53066 U.S.A.

Repair or replacement work done under warranty will be performed free of charge, and the instrument will be returned to you prepaid. Your copy or a photocopy of the Quest Registration Card will serve as proof of warranty should the factory require this information.

If for any reason you should find it necessary to contact the factory regarding service or shipping damage, please direct your calls or letters to the attention of the Service Manager, Quest Technologies, (262) 567-9157 or (800) 245-0779. Office hours are from 7 AM to 6 PM (Central Standard Time) Monday through Friday.

For service or recalibration outside the U.S.A., please contact your local Quest Dealer or fax Quest U.S.A. at 1-262-567-4047.