

Microphone (B&K) calibration procedure (CW13/17)

The 'end-to-end' calibration is performed using a B&K (4220) Pistonphone. The Pistonphone provides an output of 124 dB at 250 Hz (re 2×10^{-5} N/m²).

(1) Install the microphone on suitable probe support. Attach appropriate connecting cable. Connect other end of the cable to a B&K (2610) amplifier (such as on cabinet #1 in the control room). The cables are routed through the cable tray and are labeled.

(2) Choose a suitable adapter with the pistonphone to fit the microphone in use (1/8 inch, 1/4 inch or 1/2 inch). The microphone should have 'protection grid' on. Insert the microphone in the pistonphone. Have someone hold the pistonphone steady.

(3) With both input and output section gains set at zero, ask the helper to turn on the pistonphone (middle position of the switch). Adjust preamplifier sensitivity screw so that the output voltage corresponds to a suitable value (such as 0.1 Vrms) The output of 0.1 Vrms then corresponds to 124 dB. This would be the end of the calibration.

(4) During experiment, the GAIN setting on the amplifier may be changed but needs to be accounted for to convert voltage to dB. To convert a Vrms to dB, the following expression may be used:

$$\text{Sound pressure level in dB} = 20 \cdot \text{LOG}_{10}(\text{Vrms}) + 144 - \text{GAIN}$$

[Note: (1) 0.1 Vrms = 124 dB, thus, 1.0 Vrms = 124 + 20 = 144 dB, (2) the expression applies to either total or rms spectral amplitudes].

Procedure approved by.....

Procedure reviewed by.....

Date.....

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