



Calibrator for B & K Hydrophones

type 4223

FEATURES:

- Provides accurate calibration to within $\pm 0,3$ dB
- Calibration traceable to NBS
- Well defined sound source
- High calibration level
- Individually calibrated couplers
- Easy calibration procedure

The Calibrator for B & K Hydrophones Type 4223 is a high level, precision sound source which provides a rapid and easy method for the calibration in air of sound measuring systems which terminate with B & K hydrophones. The 4223 is compact and battery operated and is thus suitable for both field and laboratory use.

The principle of operation of the Calibrator is the same as that of a pistonphone, that is, a sound pressure is produced in the coupler cavity of the 4223 by four pistons which oscillate back and forth in phase. Electronic control maintains the calibration tone within $\pm 2\%$ of 250 Hz.

Three couplers and an adaptor are provided for calibrating the four B & K Hydrophones. Fig. 1 shows sectional drawings of the Calibrator when fitted with the four hydrophones by means of their respective couplers. The sound pressure levels produced in the coupler volumes by the 4223 are 157, 166, 162 and 151 dB re $1 \mu\text{Pa}$ for the 8101, 8103, 8104 and 8105, respectively. These high sound pressure levels enable accurate calibrations to be made even in very noisy surroundings. The sound pressure level in the coupler volume can be monitored with a $1/2$ " microphone; this enables the calibration to be traceable to NBS. This facility also allows the 4223 to be used to calibrate sound measuring systems which terminate with a $1/2$ " microphone providing that the dummy hydrophone supplied with the 4223 is placed in the coupler for the duration of the calibration procedure. A barom-

- Battery operated, compact and portable

USES:

- Calibration of sound measuring systems which terminate with B & K hydrophones
- Calibration of sound measuring systems which employ $1/2$ " microphones
- Field and laboratory use



eter supplied with the 4223 gives the atmospheric pressure correction in dB in the range 790 mbar to 1040 mbar.

The Calibrator is delivered with a set of six alkaline batteries which are mounted in a battery container. The condition of the batteries can be checked by pushing the control switch of the 4223 to the "Batt." position whereupon the frequency of the emitted tone should be higher than in the "On" position (approximately 320 Hz with new batteries). The 4223 can operate in the temperature range -10°C

to $+55^{\circ}\text{C}$ (14°F to 130°F), although if an external power supply is used this range can be extended down to -30°C (-22°F). Providing there is no condensation, humidity does not effect the operation of the 4223.

The operating frequency of the 4223 can be varied from less than 30 Hz to 320 Hz by using an appropriate external DC power supply. In this frequency range the variation of the sound pressure level with frequency is within ± 2 dB. Further details can be found in the Instruction Manual.

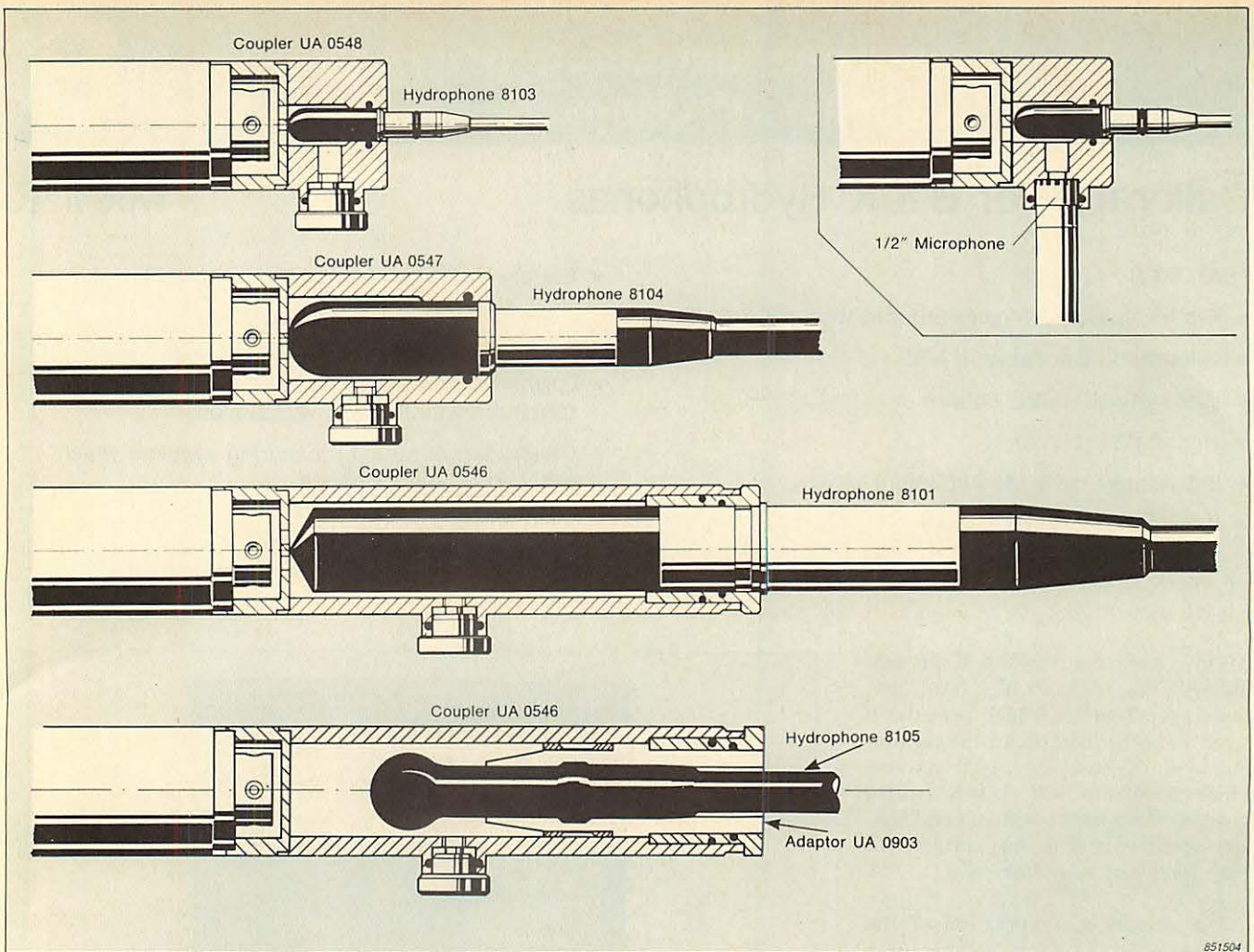


Fig. 1. Mounting of B & K hydrophones and their respective couplers onto the Calibrator. The inset shows a 1/2" microphone inserted into a coupler for monitoring the sound pressure level

Specifications 4223

FREQUENCY:

Pos. "On": 250 Hz \pm 2%

Pos. "Batt.": Approximately 320 Hz with new batteries

TYPICAL SOUND PRESSURE LEVELS IN COUPLERS:

Coupler UA 0546: 157 dB re 1 μ Pa for 8101 of 24 mm (0.945 in) diam.
 Coupler UA 0546: 154 dB re 1 μ Pa for 8101 of 21 mm (0.83 in) diam. (earlier type)
 Coupler UA 0546 with adaptor UA 0903: 151 dB re 1 μ Pa for 8105
 Coupler UA 0547: 162 dB re 1 μ Pa for 8104 (8100)
 Coupler UA 0548: 166 dB re 1 μ Pa for 8103
 Coupler UA 0548: 166 dB re 1 μ Pa for 1/2" microphone

ACCURACY:

\pm 0.3 dB (relative to nominal hydrophone volumes)

DISTORTION:

< 3% at 250 Hz

TEMPERATURE RANGE:

Using an external power supply: -30°C to $+55^{\circ}\text{C}$ (-22°F to 130°F)

Using batteries: -10°C to $+55^{\circ}\text{C}$ ($+14^{\circ}\text{F}$ to $+130^{\circ}\text{F}$)

HUMIDITY:

Does not influence calibration providing condensation does not occur

BATTERIES:

6 alkaline batteries IEC LR 6 (QB 0013), size AA, giving approximately 24 hours continuous operation

or

6 dry cell batteries IEC R 6, size AA, giving approximately 8 hours continuous operation

DIMENSIONS:

	Length mm/in	Diameter mm/in
4223 without coupler	205 (8.07)	36 (1.4)
Coupler UA 0546	137 (5.4)	36 (1.4)
Coupler UA 0547	61 (2.4)	36 (1.4)
Coupler UA 0548	31 (1.2)	36 (1.4)

WEIGHT:

4223 with batteries but without couplers 0.7 kg (1.5 lb)

Coupler UA 0546: 0.5 kg (1.10 lb)

Coupler UA 0547: 0.3 kg (0.66 lb)

Coupler UA 0548: 0.25 kg (0.55 lb)

Adaptor UA 0903: 0.06 kg (0.13 lb)

Total weight of case containing 4223 with couplers and barometer: 2.5 kg (5.5 lb)

ACCESSORIES INCLUDED:

6 alkaline batteries, IEC LR 6,

size AA	QB 0013
1 Battery Container.....	DH 0236
1 Coupler for Type 8101	UA 0546
1 Coupler for Type 8103	UA 0548
1 Coupler for Type 8104	UA 0547
1 Adaptor for Type 8105.....	UA 0903
1 Barometer	UZ 0003
1 Bottle of glycerine.....	UA 0552
1 Dummy Hydrophone.....	DO 0077