

L-4

High Sensitivity Seismometer

1.0 Hz and 2.0 Hz Land or Borehole
Seismometer

Features

- Stable Natural Frequency
- Lowest Distortion
- Instrument Quality
- Humbuck Construction
- Very High Output
- No Spring Sag
- Shallow surface hole, borehole and horizontal versions



The L-4 is an INSTRUMENT QUALITY 1 Hz or 2 Hz multi-purpose seismometer that is small, light, and economical. It is designed specifically for scientific studies, yet has the ruggedness required for petroleum exploration work.

L-4 design ELIMINATES the usual causes of failure in VERY LOW FREQUENCY geophones, such as SPRING FATIGUE, OVER-STRESS and INSTABILITY. This seismometer maintains a close frequency tolerance with tilt and temperature and is TRANSPORTED WITHOUT CLAMPING the moving element.

L-4 is available with or without calibration coils and may be obtained as VERTICAL OR HORIZONTAL elements. A variety of fittings are available for custom application.

Specifications

L-4C 1.0 Hz SEISMOMETER L-4A 2.0 Hz SEISMOMETER

Type	Moving dual coil, humbuck wound	Moving dual coil, humbuck wound
Frequency	1.0 ± 0.05 Hz measured on 200 pound weight at 0.09 inches/second	2.0 ± 0.25 Hz measured on 200 pound weight at 0.09 inches/second
Frequency change with tilt	Less than 0.05 Hz at 5° from vertical	Less than 0.10 Hz at 10° from vertical
Frequency change with excitation	Less than 0.05 Hz from 0 to 0.09 inches/second	Less than 0.10 Hz from 0 to 0.18 inches/second
Suspended mass	1000 g	500 g
Standard coil resistances	500, 2000, 5500	500, 2000, 5500
Leakage to case	100 megohm minimum at 500 V	100 megohm minimum at 500 V
Transduction power	0.0948 $\sqrt{R_c}$	0.0948 $\sqrt{R_c}$
Open circuit damping	(bc) = 0.28 critical	(bc) = 0.28 critical
Coil current damping	$\frac{(bc)}{R_s + R_c} = 1.1 R_c$	$(bc) = \frac{1.1 R_c}{R_s + R_c}$
Coil inductance	Lc = 0.0011 Rc (henries)	Lc = 0.0011 Rc (henries)
Case to coil motion	0.250 inches peak-to-peak	0.250 inches peak-to-peak
Electric analog	$C_C = \frac{73,500}{R_c}$ (microfarads)	$C_C = \frac{36,500}{R_c}$ (microfarads)
Electric analog of inductance	Lm = 0.345 Rc (henries)	Lm = 0.17 Rc (henries)
Case height	13 cm (5 ^{1/8} inches)	13 cm (5 ^{1/8} inches)
Case diameter	7.6 cm (3 inches)	7.6 cm (3 inches)
Total density	3.7 g/cm ³	2.9 g/cm ³
Total weight	2.15 kg (4 ^{3/4} pounds)	1.7 kg (3 ^{3/4} pounds)
Operating temperature Range :	-29° to 60°C (- 20° to 140°F)	-29° to 60°C (- 20° to 140°F)

COIL RESISTANCE, OHMS	500	2000	5500	500	2000	5500
Transduction, Volts/in/sec	2.12	4.23	7.03	2.12	4.23	7.03
Coil inductance, henries	0.55	2.20	6.05	0.55	2.20	6.05
Analog capacitance, microfarads	147	36.8	13.4	73.0	18.3	6.64
Analog inductance, henries	173	690	1900	85.0	340	935
Shunt for 0.70 damping, ohm	810	3238	8905	810	3238	8905