

SOIL DYNAMICS

LQ-080U

The LQ-080U Series of soil stress gages is designed to meet the requirements of weapons test labs civil engineering field to make accurate measurements of blast induced soil reactions.

Insertion of a gage in soil disrupts the stress field and induces either stress concentrations or reliefs depending on gage thickness. This stress-transfer phenomenon can seriously affect gage accuracy. To overcome this problem, the LQ-080U employs a pair of extremely stiff diaphragms with a diameter-to-thickness ratio of greater than 5 and a diameter-to-deflection ratio of greater than 2000. This design together with good gage-medium matching ensures accuracy and repeatability of readings.

The DC energized sensing element of the LQ-080U comprises 4-active semiconductor strain gages directly bonded to the measuring diaphragms. The output may be conveniently monitored on most conventional instrument systems. During assembly, the entire unit is given a conformal coating to prevent any ingress of moisture after final on-site-installation.

The LQ-080U Series is available calibrated or uncalibrated, with or without mounting ring. No mounting ring available for 10K PSI.



SOIL STRESS GAGE LQ-080U SERIES

Designed and developed in cooperation with the U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg, Mississippi.



SOIL PRESSURE CELL TYPE 0234

The BG Series of solid state load cells is designed to meet the demands of soil stress measurement. Being fluid filled the diaphragms exhibit virtually zero deflection under load and the active/total area ratio has been designed so that the intrusion of the cell into the material under study has the minimum effect on its properties. The transducer utilizes a solid state silicon pressure transducer as the basic sensing element coupling extreme robustness with high output. The unit is available with or without an additional reinforcing plate.

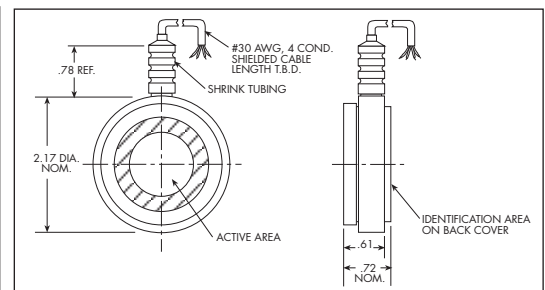
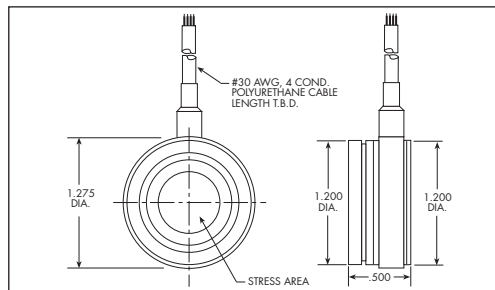
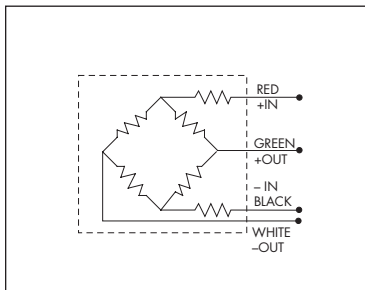
Range PSI (Nom.)	Diaphragm Thickness	Overpressure With No Change in Calibration
200	0.025"	300%
3000	0.075"	200%
10000	0.150"	130%

Range PSI	Overpressure
0-15	2 Times Rated Pressure Range
0-50	
0-100	

Deflection	NA
Natural Frequency (KHz)	17 (Nom.) 200 PSI 80 (Nom.) 10000 PSI
Operational Mode	Compression
Pressure Media	Any Liquid, Solid or Gas Compatible With 17-4 SS (H 900 Condition)
Rated Electrical Excitation	10 VDC (Nom.)
Maximum Electrical Excitation	15 VDC (Max.)
Input Impedance	2000 Ohms (Max.)
Output Impedance	1000 Ohms (Nom.)
Full Scale Output	100mV (Nom.)
Residual Unbalance	± 5mV (Max.)
Combined Non-Linearity, Hysteresis and Repeatability	± 0.1% FSO BFSL (Typ.) ± 0.5% FSO (Max.)
Resolution	Infinitesimal
Operating Temperature Range	-40°F to +200°F (-40°C to +93°C)
Compensated Temperature Range	NA
Thermal Zero Shift	NA
Thermal Sensitivity Shift	NA
Acceleration Sensitivity	Less Than .03 psi/G 200 PSI and 0.1 psi/G 10000 PSI
Humidity	100% Relative Humidity
Response Time (To Step Input)	Less Than 6 x 10 ⁶ Sec
Active/Total Area Ratio	NA
Electrical Connection	10' #30 AWG 4 Conductor Shielded Polyurethane Cable
Insulation Resistance	100 Megohms @ 50 VDC
Case Material	17-4 PH (H 900) Stainless Steel
Weight	8.75 Oz. (250 Grams Nom.) With 10' Cable
Sensing Principle	2 or 4 Arm Strain Gage Bridge

Deflection	NA
Natural Frequency (KHz)	17 (Nom.) 200 PSI 80 (Nom.) 10000 PSI
Operational Mode	Compression
Pressure Media	Any Liquid, Solid or Gas Compatible With 17-4 SS (H 900 Condition)
Rated Electrical Excitation	10 VDC (Nom.)
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Input Impedance	2000 Ohms (Max.)
Output Impedance	1000 Ohms (Nom.)
Full Scale Output	100mV (Nom.)
Residual Unbalance	± 5mV (Max.)
Combined Non-Linearity, Hysteresis and Repeatability	± 0.1% FSO BFSL (Typ.) ± 0.5% FSO (Max.)
Resolution	Infinitesimal
Operating Temperature Range	-40°F to +200°F (-40°C to +93°C)
Compensated Temperature Range	NA
Thermal Zero Shift	NA
Thermal Sensitivity Shift	NA
Acceleration Sensitivity	Less Than .03 psi/G 200 PSI and 0.1 psi/G 10000 PSI
Humidity	100% Relative Humidity
Response Time (To Step Input)	Less Than 6 x 10 ⁶ Sec
Active/Total Area Ratio	NA
Electrical Connection	10' #30 AWG 4 Conductor Shielded Polyurethane Cable
Insulation Resistance	100 Megohms @ 50 VDC
Case Material	17-4 PH (H 900) Stainless Steel
Weight	8.75 Oz. (250 Grams Nom.) With 10' Cable
Sensing Principle	2 or 4 Arm Strain Gage Bridge

Deflection	.0001" (0.0025mm) at Rated Pressure
Natural Frequency (KHz)	2
Operational Mode	Compression
Pressure Media	Any Liquid, Solid or Gas Compatible With 17-4 SS (H 900 Condition)
Rated Electrical Excitation	10 VDC (Nom.)
Maximum Electrical Excitation	15 VDC (Max.)
Input Impedance	2000 Ohms (Max.)
Output Impedance	1000 Ohms (Nom.)
Full Scale Output	100mV (Nom.)
Residual Unbalance	± 5mV (Max.)
Combined Non-Linearity, Hysteresis and Repeatability	± 0.1% FSO BFSL (Typ.) ± 0.5% FSO (Max.)
Resolution	Infinitesimal
Operating Temperature Range	0°F to 250°F (-18°C to 120°C)
Compensated Temperature Range	0°F to 105°F (-18°C to 40°C)
Thermal Zero Shift	± 0.01% FRO/°F
Thermal Sensitivity Shift	± 0.01% /°F
Acceleration Sensitivity	NA
Humidity	100% Relative Humidity
Response Time (To Step Input)	NA
Active/Total Area Ratio	43%
Electrical Connection	Sealed Cable Assembly in Lengths Up to 33' (10 Meters) 10 Foot Length Standard
Insulation Resistance	100 Megohms @ 50 VDC
Case Material	17-4 PH (H 900) Stainless Steel
Weight	250 Grams
Sensing Principle	4 Arm Strain Gage Bridge



Note: Custom pressure ranges, accuracies and mechanical configurations available. Dimensions are in inches. Dimensions in parenthesis are in millimeters.

Continuous development and refinement of our products may result in specification changes without notice. All dimensions are in inches.