

## Model 3719

### Bolt and Engine Mount Force Sensor



#### DESCRIPTION

The bolt force sensor is a unique transducer which is essentially a hollow-compression strain gage load cell. It is designed to be used with most strain gage indicators. The bolt force sensor is a three-piece assembly consisting of: 1. a large hardened and ground flat washer with one side beveled, 2. the sensor, and 3. a small hardened and ground washer.

The three pieces are assembled for various applications. The large washer isolates the sensor from the force application tool.

The beveled hole in this washer, which always faces away from the sensor, provides clearance for the bolt head radius. When a torque wrench is used, a torque vs. clamp force curve can be generated. The 3719 bolt force sensor is designed for use in fastener testing where the compression loading of the sensor is induced by the tensile loading of the fastener. The bolt force sensor must be used with the size fastener for which it was designed.

#### FEATURES

- Compact
- High output
- Standard models for bolts size no. 6 thru 2 in and up to 20 mm
- Sensor and washers - carpenter 440C stainless steel
- Sensitive to neither bolt nor nut-applied torque

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## PERFORMANCE SPECIFICATIONS

Characteristic	Measure
Load range <sup>1</sup>	1200 lb to 300000 lb
Non-linearity - ranges up to 25K lb (67K N)	±3.0 % of rated output
Non-linearity - ranges 30K lb and up (102K N)	±4.0 % of rated output
Hysteresis ranges up to 25K lb (67K N)	±5.0 % of rated output
Hysteresis - ranges 30K lb and up (102K N)	±7.0 % of rated output
Repeatability	±0.10 % of rated output
Output @ rated capacity	±2 mV/V to 3.5 mV/V depending on size (nominal)
Resolution	Infinite
Standard calibration	Compression

## ENVIRONMENTAL SPECIFICATIONS

Characteristic	Measure
Temperature, operating	-54 °C to 93 °C [-65 °F to 200 °F]
Temperature, compensated	21 °C to 77 °C [70 °F to 170 °F]
Temperature effect, zero ranges up to 12K lb	±0.01 % of full scale/°F
Temperature effect, zero ranges 18K lb and up	±0.007 % of full scale/°F
Temperature effect, output ranges up to 12K lb	±0.02 % of reading/°F
Temperature effect, output ranges 18K lb and up	±0.0035 % of reading/°F

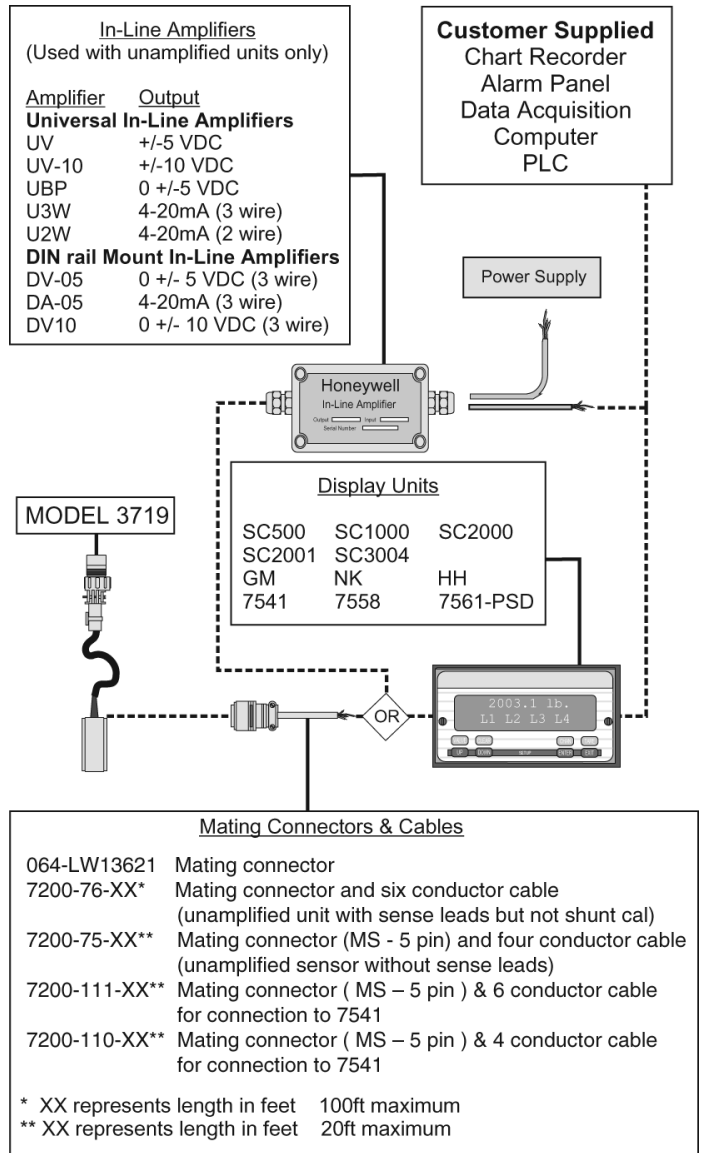
## ELECTRICAL SPECIFICATIONS

Characteristic	Measure
Excitation (maximum)	10 Vdc or Vac RMS
Insulation resistance, bridge case	> 5000 mOhm @ 50 Vdc
Bridge resistance (tolerance)	350 ohm
Number of bridges	1
Zero balance	±1.0

## MECHANICAL SPECIFICATIONS

Characteristic	Measure
Static overload capacity	150 % of nominal capacity

## TYPICAL SYSTEM DIAGRAM

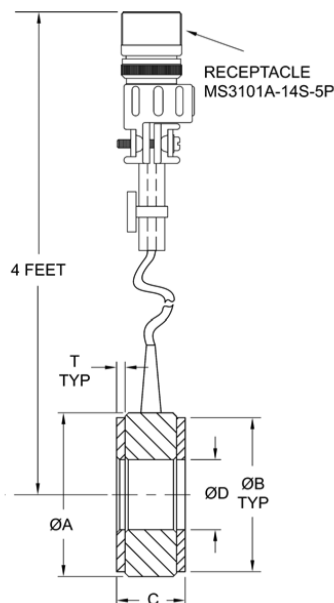


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### MOUNTING DIMENSIONS

Model	Bolt size	Capacity lb	C in	ØD in	ØA in	ØB in	T in
3719-138	No. 6	1200	0.330	0.140	0.42	0.250	0.040
3719-164	No. 8	1800	0.330	0.166	0.47	0.300	0.040
3719-190	No. 10	2400	0.330	0.192	0.52	0.350	0.040
3719-250	1/4	5000	0.370	0.262	0.65	0.470	0.060
3719-312	5/16	7000	0.495	0.326	0.78	0.550	0.060
3719-375	3/8	10000	0.495	0.396	0.80	0.639	0.060
3719-437	7/16	12000	0.495	0.454	0.95	0.720	0.060
3719-500	1/2	20000	0.660	0.517	1.14	0.910	0.080
3719-562	9/16	25000	0.660	0.580	1.23	0.990	0.080
3719-625	5/8	30000	0.660	0.644	1.35	1.150	0.080
3719-750	3/4	45000	0.815	0.770	1.62	1.350	0.095
3719-875	7/8	60000	0.815	0.897	1.72	1.600	0.095
3719-1000	1	90000	0.815	1.024	2.00	1.800	0.095
3719-1125	1 1/8	80000	1.065	1.151	2.20	1.900	0.095
3719-1250	1 1/4	125000	1.125	1.279	2.40	2.250	0.125
3719-1500	1 1/2	190000	1.125	1.533	2.80	2.600	0.125
3719-1750	1 3/4	260000	1.300	1.787	3.20	3.000	0.150
3719-2000	2	300000	1.650	2.041	3.60	3.500	0.200
3719-6MM	6 mm	17000*	9,40*	6,0*	16,3*	10,7*	1,5*
3719-7MM	7 mm	27000*	12,57*	7,1*	16,8*	12,2*	1,5*
3719-8MM	8 mm	31000*	12,57*	8,3*	19,8*	14,5*	1,5*
3719-9MM	9 mm	36000*	12,57*	9,0*	20,3*	15,2*	1,5*
3719-10MM	10 mm	46000*	12,57*	10,1*	20,3*	16,2*	1,5*
3719-12MM	12 mm	67000*	15,75*	12,0*	27,9	22,1*	1,5*
3719-14MM	14 mm	102000*	16,76*	14,0*	31,8*	25,9*	2,0*
3719-15MM	15 mm	125000*	16,76*	15,5*	32,5*	26,4*	2,0*
3719-16MM	16 mm	135000	16,76*	16,1*	34,3*	29,2*	2,0*
3719-18MM	18 mm	156000	19,94*	18,1*	36,8*	31,8*	2,0*
3719-20MM	20 mm	220000	20,70*	20,1*	43,2*	36,8*	2,4*

\* Capacities in Newtons, \* Dimensions in millimeters



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## NOTES

1. This unit calibrated to Imperial (non-Metric) units.

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**Failure to comply with these instructions could result in death or serious injury.**

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- Complete installation, operation and maintenance information is provided in the instructions supplied with each product.

**Failure to comply with these instructions could result in death or serious injury.**

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