

ISOTRON® Force Sensor

**ENDEVCO
MODEL
2311-1**
-10
-100
-500

Model 2311-1, -10, -100, -500

- Designed for Modal Exciter
- Measure Compression and Tension
- Low Impedance Output
- Impact Caps Included
- Stiff Construction, 17-4 PH Stainless



Actual size

DESCRIPTION

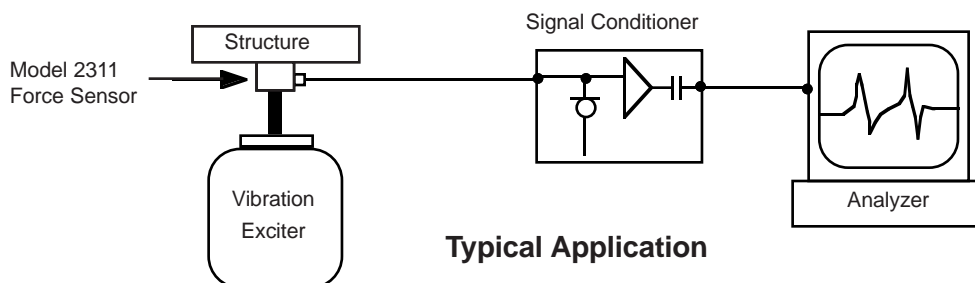
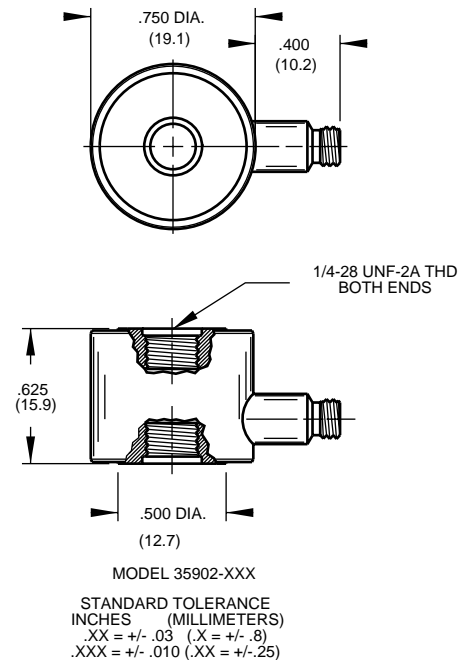
The ENDEVCO® Model 2311 is a series of ISOTRON® Force Sensors designed specifically for use with vibration exciters in modal measurement.

Model 2311 has been designed to have very high stiffness and strength. Physically, the sensor is almost as rigid as a comparably proportioned piece of solid steel. When inserted directly between the test article and a vibration exciter, such as an electrodynamic shaker, it accurately measures the input force without changing the mechanical characteristics of the structure.

Model 2311 also features very high resonance frequency which allows short duration, fast rise time force transients to be measured. The force sensor incorporates an internal hybrid signal conditioner in a two-wire system, which transmits its low impedance voltage output through the same cable that supplies the constant current power. Signal ground is connected to outer case of the unit. A model number suffix indicates force sensitivity in mV/lbf; i.e., 2311-100 features output sensitivity of 100 mV/lbf.

ENDEVCO Signal Conditioner Models 4416B, 133, 2792B, 2793, 2775A are recommended for use with this force sensor.

Self-contained Modal Measurement Sets which include Impact Hammer, Modal Accelerometers, battery-powered signal conditioners are available. Call ENDEVCO Application Engineers at 1-800-982-6732 for details.



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SPECIFICATIONS

The following performance specifications are typical values, referenced at +75°F (+24°C), 4 mA, and 100 Hz, unless otherwise noted.

DYNAMIC CHARACTERISTICS	Units	-1	-10	-100	-500
RANGE, F.S.	lbf	+5000/-500 [1]	+500/-500	+50/-50	+10/-10
	N	+22 000/-2200	+2200/-2200	+220/-220	+44/-44
VOLTAGE SENSITIVITY, Typical	mV/lbf	1	10	100	500
FREQUENCY RESPONSE					
Resonance Frequency	kHz	75			
MAXIMUM COMPRESSION	lbf (N)	+15 000 (+66 000)	+10 000 (+44 000)	+1000 (+4400)	+200 (+880)
MAXIMUM TENSION	lbf (N)	-500 (-2200)	-500 (-2200)	-500 (-2200)	-200 (-880)

OUTPUT CHARACTERISTICS

OUTPUT POLARITY	Compression force produces positive output, tension force produces negative output				
DC OUTPUT BIAS VOLTAGE	Vdc	+9 to +12			
OUTPUT IMPEDANCE	Ω	≤ 100			
FULL SCALE OUTPUT VOLTAGE	V	± 5			
RESIDUAL NOISE	equiv. lbf rms	0.07	0.007	0.0007	0.00014
GROUNDING	Signal ground connected to case				

POWER REQUIREMENT

COMPLIANCE VOLTAGE	Vdc	+18 to +24
SUPPLY CURRENT	mA	+2 to +10

ENVIRONMENTAL CHARACTERISTICS

TEMPERATURE RANGE	-67°F to +257°F (-55°C to +125°C)	
HUMIDITY	Epoxy sealed	
SINUSOIDAL VIBRATION LIMIT	g pk	5000
SHOCK LIMIT	g pk	10 000

PHYSICAL CHARACTERISTICS

DIMENSIONS	See Outline Drawing	
WEIGHT	gm (oz)	28 (1)
CASE MATERIAL	17-4 PH Stainless Steel	
CONNECTOR/CABLE	Side mounted 10-32 receptacle, mates with Endevco 3000 Series Cable	
MOUNTING THREADS	1/4-28 UNF-2B, 0.175 deep	
MOUNTING TORQUE	lbf-in (Nm)	24 (2.7)

CALIBRATION

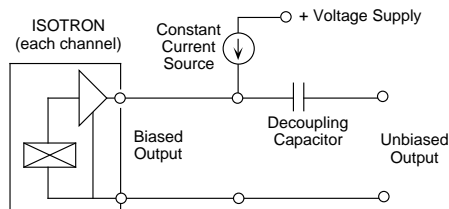
SUPPLIED:	
VOLTAGE SENSITIVITY	mV/lbf

ACCESSORIES

EHM 1213	MOUNTING STUD, 1/4-28 to 1/4-28, 0.38" length
EHM 1214	IMPACT CAP, stainless steel
Model 3061-120 (10 ft)	CABLE ASSEMBLY

NOTES

1. Tension rating is limited by the transducer design.



Modal Measurement Sets Model 28982-X available in different configurations

Continued product improvement necessitates that Endevco reserve the right to modify these specifications without notice. Endevco maintains a program of constant surveillance over all products to ensure a high level of reliability. This program includes attention to reliability factors during product design, the support of stringent Quality Control requirements, and compulsory corrective action procedures. These measures, together with conservative specifications have made the name Endevco synonymous with reliability.