

## Model 2270 Comparison standard accelerometer

### Features

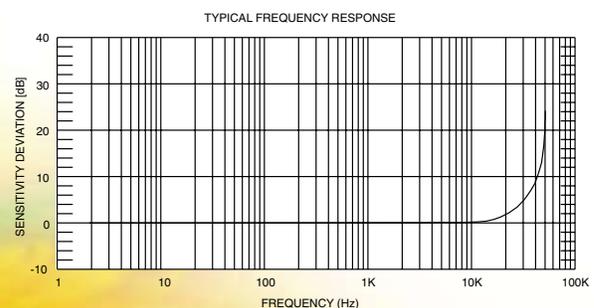
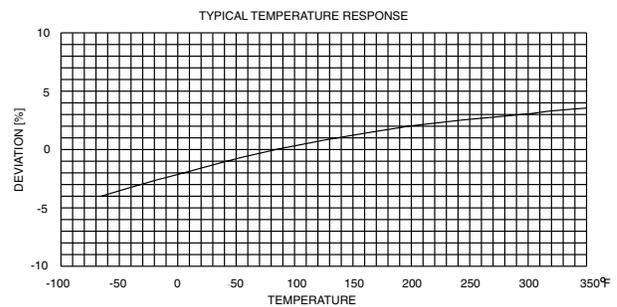
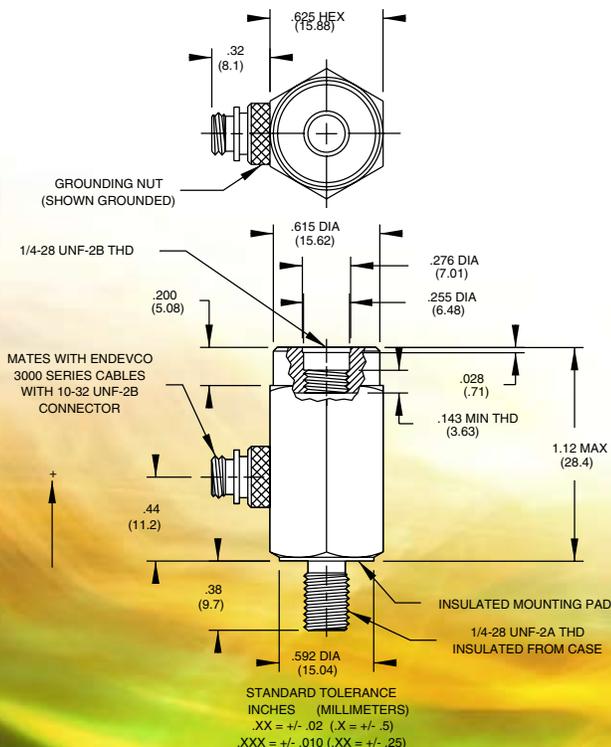
- Laboratory grade primary standard Accelerometer for back-to-back comparison calibration
- Stable P-10 crystal material
- Supplied with absolute calibration at 100 Hz traceable to NIST
- Selectable connection/isolation of signal ground and case



### Description

The Endevco® Model 2270 primary comparison calibration standard accelerometer is a combination standard accelerometer and calibration fixture used for performing comparison calibrations of other accelerometers. The extremely high stability and very flat frequency response of the accelerometer is achieved through the use of sensing elements made of Endevco P-10 crystal material. The Model 2270 has a 1/4-28 tapped hole 0.5 inches deep for attaching units under test. Accessory bushings are provided to mount accelerometers that use 2-56, 6-32, or 10-32 sizes. Additional adapters with 4-40, 4-48, 8-32, and metric M3x0.5 threads are available.

Signal ground can be switched from grounded to isolated at the user's option by means of a knurled nut on the output signal receptacle.



# Model 2270 Comparison standard accelerometer

Endevco

## SPECIFICATIONS

All specifications are typical at 75°F (24°C), referenced at 100 Hz and conform to ISA-RP 37.2 (1-64) unless otherwise indicated.

### DYNAMIC CHARACTERISTICS

CHARGE SENSITIVITY	2.2 pC/g $\pm 20\%$ (0.22 pC/ms <sup>2</sup> )
FREQUENCY RANGE [1]	accelerometers up to 35 grams 2 Hz to 20 000 Hz accelerometers between 35 grams and 100 grams 2 Hz to 5000 Hz
MASS LOADING EFFECT	Sensitivity change due to relative motion resulting from the mass of the test accelerometer plus adapters or fixtures $\pm 0.2\%$ maximum for up to 100 gm at 100 Hz -2% for 50 gm at 10 kHz or 100 gm at 5 kHz
SHOCK MOTION PULSE DURATION [3]	100 $\mu$ s to 25 ms half size for accelerometers up to 35gm 200 $\mu$ s to 25 ms half-size for accelerometers between 35gm and 100gm
TRANSVERSE SENSITIVITY	3% maximum in any direction, 1% available on special order
AMPLITUDE LINEARITY	Sensitivity increases approximately 0.1% per 1000 g, 0 to 15 000 g
TEMPERATURE RESPONSE	$\pm 3\%$ typical -65°F to 350°F (-54°C to 177°C) referenced to room temperature
CHARGE SENSITIVITY TIME STABILITY	$\pm 0.2\%$ maximum per year

### ELECTRICAL CHARACTERISTICS

CAPACITANCE	1600 pF $\pm 20\%$
RESISTANCE	20 G $\Omega$ minimum; 5000 M $\Omega$ minimum at 350°F (177°C)
ISOLATION	10 M $\Omega$ minimum case to mounting stud and signal ground
POLARITY	Positive output for acceleration into the base

### ENVIRONMENTAL CHARACTERISTICS

TEMPERATURE RANGE	-65°F to 350°F (-54°C to 177°C)
HUMIDITY	Epoxy Sealed
ACCELERATION LIMIT	15 000 g peak shock, 1000 g peak sinusoidal
BASE STRAIN SENSITIVITY	0.001 equivalent g peak per $\mu$ strain peak
ELECTROMAGNETIC SENSITIVITY	0.03 equivalent g rms at 100 gauss rms, 60 Hz
STRAY VOLTAGE SENSITIVITY	0.003 equivalent g per Volt at the mounting stud

### PHYSICAL CHARACTERISTICS

WEIGHT	1.4 oz. (40 gm)
CASE MATERIAL	17-4 PH Stainless Steel
SENSOR	ENDEVCO PIEZITE type P-10 in the single-ended compression mode
OUTPUT RECEPTACLE [4]	10-32 UNF threaded coax socket type side connector with grounding nut. Mates with ENDEVCO Model 3090C Cable Assembly
MOUNTING [5]	Integral mounting stud 1/4-28 UNF thd x 3/8" long 1/4-28 UNF thd x 1/2" deep for mounting test transducers

### CALIBRATION DATA STANDARD

See ENDEVCO Calibration Service Bulletin

CS120 Reciprocity Calibration includes an absolute reciprocity sensitivity at 100 Hz and 2 g peak, and a comparison frequency response from 20 to 10 000 Hz. Test results are furnished in a formal report that includes transverse sensitivity, resistance, capacitance, and frequency response plots.

### OPTIONAL

CS120L Extends the frequency response calibration down to 2 Hz.  
CS120H Extends the frequency response calibration up to 20 000 kHz  
CS310 Temperature Response Calibration, -65°F to 350°F (-54°C to 177°C).

- Sensitivity is the standard output divided by the acceleration motion at the surface provided for attaching test accelerometers.
- For calibrations with 100  $\mu$ s duration pulses, the resonance frequency of the test accelerometer should be above 50 kHz.
- Tighten the grounding nut to the case finger tight - approximately 4 lbf - in (0.7 Nm). Excessive torque could damage the isolated receptacle assembly. The grounding nut should be in contact with the accelerometer housing when case isolated test transducers are being calibrated, and should be disengaged from the accelerometer housing when case grounded test transducers are being calibrated.
- Recommended torque for attachment is 18 lbf - in (2Nm). Torque values above 24 lbf - in could cause permanent damage to the isolated bushing assembly.
- Maintain high levels of precision and accuracy using Endevco's factory calibration services. Call Endevco's inside sales force at 800-982-6732 for recommended intervals, pricing and turn-around time for these services as well as for quotations on our standard products.

### ACCESSORIES

3090C-120	CABLE ASSEMBLY
15071	ADAPTER STUD, 1/4-28 UNF to 10-32 UNF
14159-1	ADAPTER BUSHING, 10-32 UNF
14159-2	ADAPTER BUSHING, 6-32 UNC
14159-4	ADAPTER BUSHING, 2-56 UNC

### OPTIONAL ACCESSORIES

14159-3	ADAPTER BUSHING, 4-40 UNC
14159-5	ADAPTER BUSHING, 4-48 UNF
14159-6	ADAPTER BUSHING, 8-32 UNC
14159-7	ADAPTER BUSHING, M3x0.5

### NOTES:

- Low frequency response will be determined by the characteristics of the charge amplifier used with the 2270 standard accelerometer.

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.

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