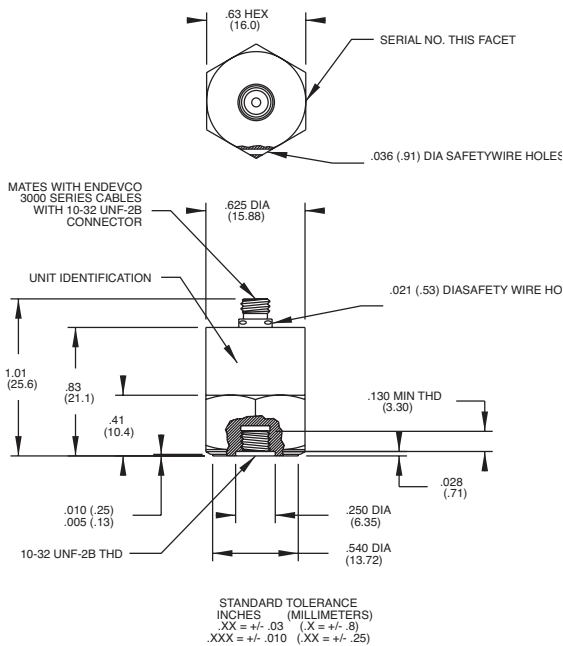


## Piezoelectric accelerometer Model 7704A



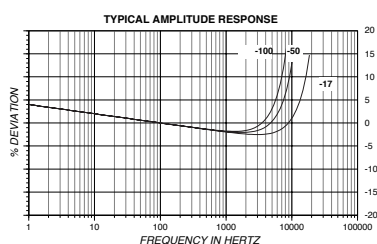
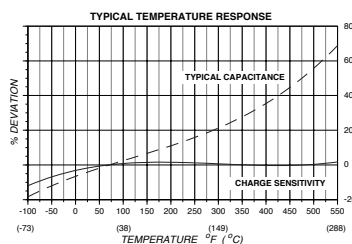
### Key features

- Temperature compensated +550°F (+288°C)
- Hermetically sealed
- Ground isolated
- Top connector
- MIL-STD 740-2 applications

Model 7704A-XXXX Isoshear piezoelectric accelerometer is designed for general vibration measurement on structures and objects. The Isoshear design is extremely stable and insensitive to such environmental inputs as base bending and thermal transients. This accelerometer has been tested in a radiation environment up to  $10^8$  rads without performance degradation. It is also capable of accurate vibration measurement up to +550°F (+288°C). This unit is hermetically sealed against external contamination. The accelerometer is a self-generating device that requires no external power source for operation.

7704A-XXXX features Endevco's Piezite® Type P-8 crystal element, operating in shear mode. Signal ground is isolated from the outer case of the unit. The accelerometer features a 10-32 top-connector. A low-noise coaxial cable is supplied for error-free operation. The model number suffix indicates acceleration sensitivity in pC/g; i.e., 7704A-100 features output sensitivity of 100 pC/g.

Signal conditioner models 133, 2771C, 2775B or Oasis 2000 computer-controlled system are recommended for use with this high impedance accelerometer.



## Piezoelectric accelerometer

### Model 7704A

#### Specifications

The following performance specifications conform to ISA-RP-37.2 [1964] and are typical values, referenced at +75°F (+24°C) and 100 Hz, unless otherwise noted. Calibration data, traceable to National Institute of Standards and Technology (NIST), is supplied.

| Dynamic characteristics                | Units             | -50                                                                                                  | -100                 |
|----------------------------------------|-------------------|------------------------------------------------------------------------------------------------------|----------------------|
| Charge sensitivity                     |                   |                                                                                                      |                      |
| Typical                                | pC/g              | 50                                                                                                   | 100                  |
| Minimum                                | pC/g              | 45                                                                                                   | 90                   |
| Frequency response [4]                 |                   | See typical amplitude response                                                                       |                      |
| Resonance frequency                    | kHz               | 26                                                                                                   | 20                   |
| Amplitude response                     |                   |                                                                                                      |                      |
| ±5%                                    | Hz                | 1 to 6000                                                                                            | 1 to 5000            |
| ±1 dB (ref.)                           | Hz                | 1 to 9000                                                                                            | 1 to 8000            |
| Temperature response                   |                   | See typical curve                                                                                    |                      |
| Transverse sensitivity                 | %                 | < 3                                                                                                  |                      |
| Amplitude linearity                    | %                 | 1/250 g                                                                                              | 1/125 g              |
| Up to vibration limit                  |                   |                                                                                                      |                      |
|                                        |                   |                                                                                                      |                      |
| Output characteristics                 |                   |                                                                                                      |                      |
| Output polarity                        |                   | Acceleration directed into base of unit generates positive output at the center socket of receptacle |                      |
| Resistance [2]                         | GΩ                | < 10                                                                                                 |                      |
| Isolation                              | GΩ                | < 1                                                                                                  |                      |
| Capacitance                            | pF                | 2800                                                                                                 |                      |
| Grounding                              |                   | Signal ground connected to case                                                                      |                      |
|                                        |                   |                                                                                                      |                      |
| Environmental characteristics          |                   |                                                                                                      |                      |
| Temperature range                      |                   | -67°F to +550°F (-55°C to +288°C)                                                                    |                      |
| Humidity                               |                   | Hermetically sealed                                                                                  |                      |
| Sinusoidal vibration limit             | g pk              | 2000                                                                                                 | 1000                 |
| Shock limit [3]                        | g pk              | 10 000                                                                                               | 5000                 |
| Base strain sensitivity at 250 μstrain | eq. g pk/μstrain  | 0.0016                                                                                               | 0.0008               |
| Electromagnetic sensitivity            | eq. g rms/gauss   | 0.0002                                                                                               | 0.0002               |
| Thermal transient sensitivity          | eq. g/°F (/ °C)   | 0.004                                                                                                | 0.003                |
| Radiation                              |                   |                                                                                                      |                      |
| Integrated Gamma Flux                  | rad               | Up to 10 <sup>8</sup>                                                                                |                      |
| Thermal transient sensitivity          | N/cm <sup>2</sup> | Up to 10 <sup>10</sup>                                                                               |                      |
|                                        |                   |                                                                                                      |                      |
| Physical characteristics               |                   |                                                                                                      |                      |
| Dimensions                             |                   | See outline drawing                                                                                  |                      |
| Weight                                 | oz (gm)           | 0.9 (25)                                                                                             | 1.0 (29)             |
| Case material                          |                   | Stainless steel                                                                                      |                      |
| Connector                              |                   | Coaxial receptacle with 10-32 UNF threads designed to mate with Endevco model 3000 series cable      |                      |
| Mounting Torque                        | lbf-in (Nm)       | 18 (2)                                                                                               |                      |
|                                        |                   |                                                                                                      |                      |
| Calibration                            |                   |                                                                                                      |                      |
| Supplied                               |                   |                                                                                                      |                      |
| Charge sensitivity                     | pC/g              |                                                                                                      |                      |
| Capacitance                            | pF                |                                                                                                      |                      |
| Maximum transverse sensitivity         | %                 |                                                                                                      |                      |
| Charge frequency response              | %                 | 20 Hz to 6 kHz                                                                                       | 20 Hz to 5 kHz       |
|                                        | dB                | 6 kHz thru resonance                                                                                 | 5 kHz thru resonance |

## Piezoelectric accelerometer

### Model 7704A

#### Accessories

| Product    | Description                                  | 7704A    |
|------------|----------------------------------------------|----------|
| 3090C-120  | Cable assembly, 10 ft                        | Included |
| 2981-12    | Mounting stud, 10-32 to 10-32                | Included |
| EM464      | Hex key wrench                               | Included |
| 3076M6-120 | Cable assembly, for use above +500° F, 10 ft | Optional |
| 2981-4     | Mounting stud, 10-32 to m5                   | Optional |
| 2981-3     | Mounting stud, 10-32 to 10-32                | Optional |
| 2771C      | In-line charge converter                     | Optional |
| 2950       | Triaxial mounting block                      | Optional |
| 133        | Signal conditioner                           | Optional |
| 2775B      | Signal conditioner                           | Optional |
| 4990A-1    | OASIS 2000 computer-controlled system        | Optional |

#### Notes

1. Low-end response of the transducer is a function of its associated electronics.
2. Prolonged exposure at maximum temperature may decrease the return to room temperature resistance to as low as 25 MΩ but will not degrade the overall performance of the unit. All units are processed to initially meet 10 GΩ at room temperature.
3. Short duration shock pulses, such as those generated by metal-to-metal impact, may excite transducer resonance and cause linearity errors. Read TP290 for more details.
4. Maintain high levels of precision and accuracy using Endevco's factory calibration services. Call Endevco's inside sales force at 866-ENDEVCO for recommended intervals, pricing and turn-around time for these services as well as for quotations on our standard products.

#### Contact

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