



Dynamic Transducers and Systems

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OG3316C2
REV A, ECN 12260 , 10/06/15

OPERATING GUIDE

MODEL 3316C2

HIGH TEMPERATURE CHARGE MODE ACCELEROMETER, BASE ISOLATED



Model 3316C2 is a high temp accelerometer featuring a charge-mode element with 10-32 connector mounted on an Alloy 600 housing. It has low mass and high sensitivity (1 to 2 pC/g). Planar shear design is employed for high resonant frequency.

OPERATING GUIDE

MODEL 3316C2 ACCELEROMETER

HANDLING

It is extremely important to read this manual before handling model 3316C2!

In order to operate at its highest temperature specification, 3316C2 was designed with a special feature. There is a "silver window" on the top cover of model 3316C2. Silver is a soft material in comparison to the Alloy 600 material that the housing is made from, therefore special care is required when in contact with the top cover of the accelerometer.

While robust, the silver window may be damaged by excessive application of force, which will break the hermeticity of the sensor. Although the accelerometer would still function, its hermeticity would be compromised, and its insulation resistance may deviate depending on the humidity level.

INTRODUCTION

Model 3316C2 is a miniature accelerometer using the latest piezoelectric planar shear technology. The output is charge mode with sensitivity of 1 to 2 pC/g. Exact sensitivity is provided on the calibration certificate supplied with each accelerometer.

This accelerometer contains a piezoelectric planar shear mode element mounted in an Alloy 600 housing. Model 3316C2 is hermetically sealed using laser welds and ceramic-to-metal sealed connector.

Model 3316C2 can be mounted using a 10-32 mounting stud, Model 6200S (supplied).

Element is electrically isolated from the bottom mounting base for best noise immunity.

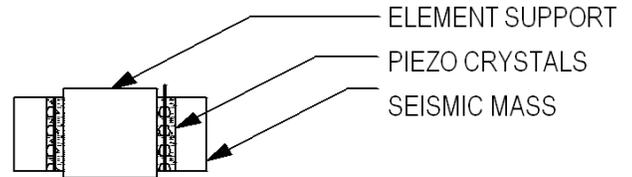
DESCRIPTION

Refer to the Outline/Installation drawing 127-3316C2 for the dimensions of Model 3316C2.

The electrical connection from the element is brought out to a 10-32 hermetic coaxial connector. The performance specifications and criteria for Model 3316C2 are delineated on the specification sheet supplied.

Figure 1 Representative cross section, 3316C2 element assembly.

(Refer to Outline/Installation drawing 127-3316C2 provided with this operating guide for a detailed outline representation of model 3316C2).



INSTALLATION

This accelerometer is designed to be mounted using a 10-32 mounting stud, Model 6200S, provided with each accelerometer.

At elevated temperatures, there is a high chance to experience a phenomena called "ground loops". Due to this phenomena, high temperature accelerometers require an isolated mounting block to be used in conjunction. Drawbacks to this approach include increased overall physical size and reduced frequency response.

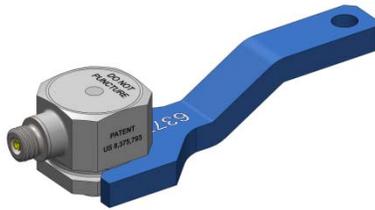
Model 3316C2 solves the "ground loops" problem by implementing the isolated base design into the sensor while still keeping its miniature size.

Select a smooth surface at least 3/4 in. ($\varnothing.75$) in diameter and clean off all oil, debris and any contaminants or foreign matter that would preclude good contact between mating surfaces. This is important for best frequency response. Drill and tap a 10-32 mounting port at the center of the .75 diameter surface in accordance with instructions on drawing 127-3316C2, provided.

The selected mounting area should be flat to within .001 in TIR for best high frequency response.

NOTE: Before mounting, be sure to clean the mounting surface thoroughly to avoid inclusion of machining chips and other debris between mating surfaces. Intimate contact between mating surfaces is important for best performance.

Install the accelerometer to the test surface using the supplied 10-32 stud, model 6200S. Torque unit to **10-12 lb-in** using the supplied wrench, model 6377.



Note: Apply torque only on bottom flats using the supplied wrench. Excessive torque on the top flats could damage the accelerometer.

Connect the accelerometer to the charge amplifier using hardline cables (6979A or 6946A Dytran model numbers) or, if the test temperature is not greater than 400°F, low noise miniature coaxial cable such as Dytran's Model 6013A (10-32 to 10-32).

If a fair amount of motion is expected during the test, it is good practice to tie the cables down to a stationary point as close as possible to the accelerometer (but not closer than 1 inch) to avoid potentially damaging cable whip.

You are now ready to connect model 3316C2 to the charge amplifier.

Since the insulation resistance of model 3316C2 at high end of its temperature range might drop to hundreds of kilo-ohms, there is a need for special charge amplifier that would be able to accept such a low level of insulation resistance. For that purpose, Dytran model 4754B in-line charge amplifier would be a suitable choice.

OPERATION

Apply power to the charge amplifier and allow several seconds for coupling capacitors to fully charge. You are now ready to take data.

The polarity of 3316C2 is shown on the Outline/Installation drawing 127-3316C2. The arrow indicates the direction and sense of motion of the accelerometer that will produce negative-going output signal.

MAINTENANCE AND REPAIR

This instrument is not field repairable. The only field maintenance required, or possible is the cleaning of contaminated connectors should this become necessary.

If a problem occurs, contact the factory for help. You will be assigned a Returned Material Authorization (RMA) number should the instrument need to be returned to the factory for evaluation. A short note describing the problem will facilitate the repair procedure.

There is no charge for evaluation of the instrument and we will perform no repair work until you are notified of any charges.

It is good practice to return the instrument to the factory for recalibration annually.