

Piezoelectric Charge Accelerometer Type 8346-C

Uses

- Low-level vibration measurements

Features

- Hermetically sealed
- High sensitivity



180087

Description

Type 8346-C is a DeltaShear™ piezoelectric charge accelerometer. It features a 10–32 UNF-2A top connector and a 10–32 UNF threaded hole for mounting.

Characteristics

This piezoelectric accelerometer may be treated as a charge source. Its sensitivity is expressed in terms of charge per unit acceleration (pC/ms^{-2} , pC/g).

The DeltaShear design consists of three piezoelectric elements and three seismic masses arranged in a triangular configuration around a triangular centre post. They are held in place by a clamping ring that isolates the configuration from the base. The ring also prestresses the piezoelectric elements to give a high degree of linearity. This design provides a high sensitivity-to-mass ratio, a relatively high resonance frequency and high isolation from base strains and temperature transients.

The piezoelectric element used is PZ 27 lead zirconate titanate, and the housing material is stainless steel.

Calibration

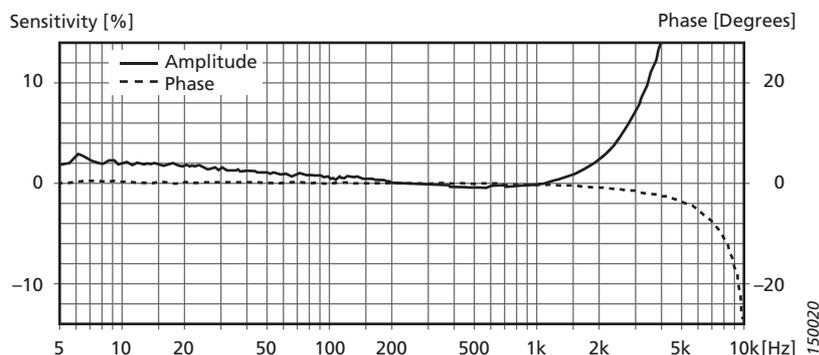
Each accelerometer is calibrated using random excitation and 1600-line FFT transformation to provide a high-resolution (amplitude and phase) frequency response. This yields a unique characterization and secures the integrity of your vibration measurements.

The sensitivity given on the calibration chart is measured at 159.2 Hz with 95% confidence level using coverage factor $k = 2$.

The upper frequency limits given on the calibration chart are frequencies where the deviation from the reference sensitivity at 159.2 Hz is within $\pm 10\%$. The upper frequency limit is approximately 30% of the mounted resonance frequency. This assumes that the accelerometer is correctly mounted on the test structure – poor mounting can have a marked effect on the mounted resonance frequency.

The lower frequency limits and phase response are determined by the built-in preamplifiers. The lower frequency limits are given in the specifications for deviations from reference sensitivity within $\pm 10\%$.

Fig. 1 Individual frequency response curve for Type 8346-C, taken from a calibration chart



Type Number		8346-C	
General			
Weight	g (oz)	176 (6.2)	
Charge Sensitivity (at 159.2 Hz)	pC/ms ⁻²	42 ±15%	
	pC/g	412 ±15%	
Frequency Range	±10% limit	Hz	0.1 to 3000
	±5% limit		0.1 to 1000
Mounted Resonance Frequency	kHz	10	
Max. Transverse Sensitivity (at 30 Hz, 100 ms ⁻²)	%	<5	
Transverse Resonance Frequency	kHz	3.5	
Max. Operational Continuous Sinusoidal Acceleration (peak)	kms ⁻²	20	
	g	2000	
Electrical			
Residual Noise Level (measured with NEXUS Type 2692-001 in the specified frequency range)	mms ⁻²	1.0	
	mg	0.1	
Capacitance (excluding cable)	pF	1100	
Min. Leakage Resistance (at 20 °C)	GΩ	>20	
Environmental			
Temperature Coefficient of Sensitivity	%/°C	0.12	
Temperature Transient Sensitivity (3 Hz Low. Lim. Freq. (-3 dB, 6 dB/octave))	ms ⁻² /°C	0.001	
	g/°F	0.00006	
Base Strain Sensitivity (at 250 µε in the base plane)	ms ⁻² /µε	0.002	
	g/µε	0.0002	
Acoustic Sensitivity (154 dB SPL)	ms ⁻²	0.001	
	g	0.0001	
Magnetic Sensitivity (50 Hz, 0.038 T)	ms ⁻² /T	0.5	
	g/kG	0.005	
Max. Non-destructive Shock (± peak)	kms ⁻²	50	
	g	5000	
Mechanical			
Housing Material	Stainless Steel AISI 316-LS		
Piezoelectric Sensing Element	PZ 27		
Construction	DeltaShear		
Sealing	Hermetic		
Electrical Connector	10–32 UNF-2A		
Mounting	10–32 UNF × 4.5 mm threaded hole		
Mounting Torque	Max.	Nm (lbf-in)	1.5 (13)
	Min.		0.5 (4.4)

Type 8346-C

Includes the following:

- Calibration chart

Optional Accessories [†]	
AO-0038-x-yyy [‡]	Low-noise coaxial cable, 10–32 UNF connectors, 250 °C (482 °F)
JP-0145	Plug adaptor, 10–32 UNF to BNC
UA-0186	Extension connector, 10–32 UNF (set of 25)
UA-2063	Steel stud, length 7.9 mm (set of 10)
QA-0029	Tap for 10–32 UNF thread
QA-0013	Hexagonal key for 10–32 UNF studs
QS-0007	Tube of cyanoacrylate adhesive
YJ-0216	Beeswax for mounting
Type 4294	Calibration Exciter
Calibration Services	
ACC-M-CAI	Accredited initial calibration
ACC-M-CAF	Accredited calibration
ACC-M-CFF	Factory standard calibration

[†] Additional accessories, cables and services are available (see www.bksv.com)

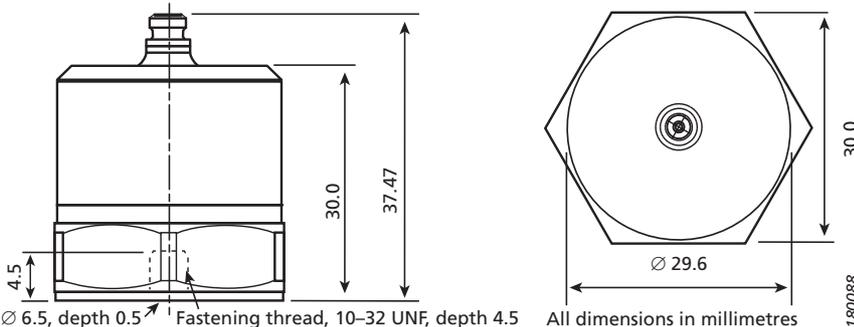
[‡] x = D (decimetres) or M (metres)
yyy = length in decimetres or metres
Please specify cable length when ordering

COMPLIANCE WITH STANDARDS



All values are typical at 25 °C (77 °F) unless measurement uncertainty is stated

Fig. 1 Dimensions of Type 8346-C



Brüel & Kjær and all other trademarks, service marks, trade names, logos and product names are the property of Brüel & Kjær or a third-party company.

