

# Quartz

Type 9728A...

## Impulse Force Hammer; Extended High Force Range

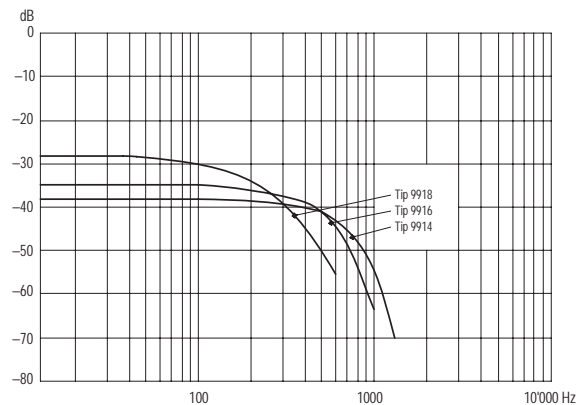
Dynamic quartz sensor element contained within instrumented hammer is used to deliver a measurable force impulse (amplitude and frequency content) to excite a mechanical structure under test. A response signal measured with an accelerometer in conjunction with a FFT analyzer provides the transfer function of the structure.

- Low impedance, voltage mode
- Quartz sensing element guarantees long-term stability
- Accessories for various applications
- Sensor cable integrated to hammer handle
- Conforming to CE



### Description

The dynamic response of a mechanical structure while either in a development phase or an actual use environment can readily be determined by impulse force testing. Using a FFT analyzer, the transfer function of the structure can be determined from a force pulse generated by the impact of a hammer and the response signal measured with an accelerometer. The impulse force test method, yields extensive information about the frequency and attenuation behavior of the system under test.



The stainless steel head of an impulse force hammer, is equipped with a quartz, low impedance force sensor which accepts impact tips varying in hardness. A selection of steel, plastic, PVC and rubber tips along with an extender mass allow the hammer to be tailored to impart to the test structure, a desired spectrum of frequencies. Shear quartz accelerometers operating in a voltage mode and featuring insensitivity to base strain, thermal transients and transverse motion are available to measure the response of the test specimens ranging from thin-walled structures to steel bridge members.

### Application

The hammer is ideal for testing heavy structures such as large rotating machinery, machine tool centers, truck frames, structural members at low frequencies. The impulse force hammer is used to analyze the dynamic behavior of mechanical structures. The vibrations induced by the hammer impact are measured by an accelerometer.

The hammer incorporates a quartz measuring cell with built-in Piezotron® low impedance electronics. The cell's voltage mode operation, guarantees a stable signal transmission insensitive to ambient influences. A wide selection of single or multi-channel couplers are available to provide power and signal processing for the hammer and accelerometers.

9728A\_000-275e-05.05

**Technical Data**

Type	Units	9728A20000
Force Range	N	0 ... 20000
Maximum Force	N	25000
Sensitivity nom.	mV/N	0.2
Resonant Frequency	kHz	20
Frequency range with rubber impact tip (-10 dB)	Hz	1000
Time Constant nom.	s	500
Rigidity	N/μm	15.4
Temperature Range Operating	°C	-20 ... 70
Output:		
Voltage F.S.	V	±5
Bias nom.	VDC	11
Impedance	Ω	<100
Source:		
Voltage	V	20 ... 30
Constant Current	mA	2 ... 20
Hammer head dimensions:		
Diameter	mm	51
Length	mm	154
Weight	grams	1500
Length of handle	mm	343
Connector	type	BNC neg.

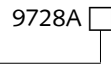
1 N = 0,2248lb, 1 g = 9,80665 m/s<sup>2</sup>, 1 inch = 25,4 mm, 1 gram = 0,03527 oz

**Accessories Included**

- |                                   | Type |
|-----------------------------------|------|
| • impact tip, rubber medium (red) | 9914 |
| • impact tip, rubber hard (green) | 9916 |
| • impact tip, rubber soft (gray)  | 9918 |
| • extender mass (760 grams)       | 9930 |
| • Plastic carrying case           |      |

**Ordering Key**

Measuring Range  
20000 N



9728A\_000-275e-05.05