

# Modal Hammer

## Model 2302

- Model 2302 -5, -10, -50, -100
- Four Ranges
- 3 Replaceable Tips
- Low impedance (ISOTRON®) Output
- Acceleration Compensated
- Ergonomically Designed Grip

### DESCRIPTION

Scaled modal models require a precise force measurement. This can be achieved by electrodynamic and servohydraulic exciters controlled by a signal generator via a power amplifier. A more convenient and economical excitation method is a hammer fitted with a high-quality piezoelectric force transducer. In applications where a high crest factor and a limited ability to shape the input force spectrum is of no concern, impact hammer testing is an ideal source of excitation. Impact hammers are highly portable for field work and provide no unwanted mass loading to the structure under test.

The Modal Hammer excites the structure with a constant force over a frequency range of interest. Three interchangeable tips are provided which determine the width of the input pulse and thus the bandwidth. Typical force spectra produced with different tips are shown on the right.

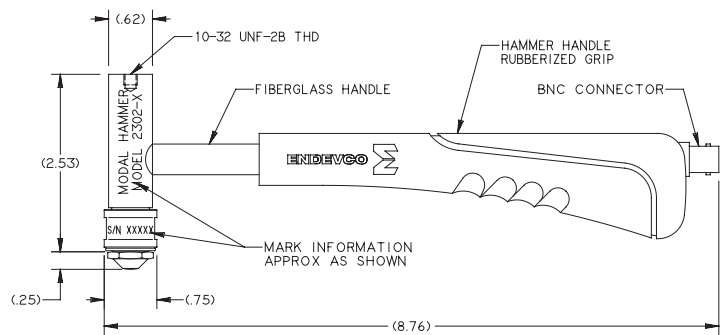
For larger structures, an optional head extender is available to increase the head's mass. The hammer structure is acceleration compensated to avoid glitches in the spectrum due to hammer structure resonances. The ergonomically designed handle grip helps the user optimize control and reduce the possibility of "double hits".

The hammer features an ISOTRON impedance converter providing an IEPE output which is compatible with most FFT analyzers and data acquisition systems. ENDEVCO's 4416B single channel signal conditioner or the model 133 three channel conditioner are recommended for use with the 2302. To excite larger structures, see Endeveco Model 2303, 2304 and 2305 sledge hammers.

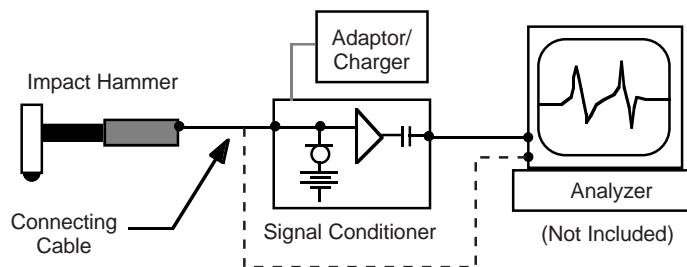
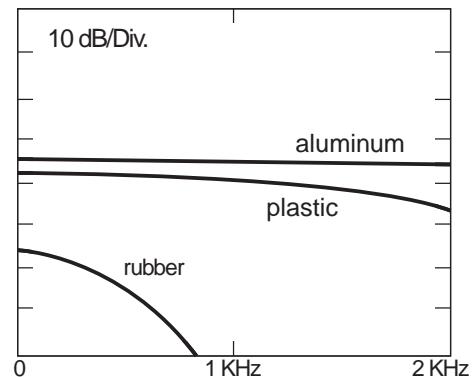
**ENDEVCO**  
**MODEL**  
**2302**



Not actual size



BRAVO: 23XX



Directly into FFT Analyzer IEPE Input

# Modal Hammer

## SPECIFICATIONS

The following performance specifications are typical values, referenced at +75°F (+24°C), 4 mA, and 100 Hz, unless otherwise noted.

MODEL 2302 MODAL HAMMER	Units	-5	-10	-50	-100
RANGE, full scale	lbf (N)	1000 (4448)	500 (2200)	100 (445)	50 (220)
SENSITIVITY, typical	mV/lbf (mV/N)	5 (1.14)	10 (2.27)	50 (11.4)	100 (22.7)
MAXIMUM FORCE, typical	lbf (N)	1000 (4448)			
RESONANCE FREQUENCY	kHz	50			
FREQUENCY RANGE, max.	kHz	8			
HEAD MASS	grams	100			
HEAD DIAMETER	inches (mm)	0.75 (19)			
IMPACT TIP DIAMETER	inches (mm)	0.25 (6.4)			
DC OUTPUT BIAS	Vdc	9 to 10			
OUTPUT IMPEDANCE	Ohms	<100			
FULL SCALE OUTPUT	V	±5			
SUPPLY VOLTAGE	Vdc	18 to 24			
SUPPLY CURRENT	mA	2 to 10			
TEMPERATURE RANGE	°F (°C)	-67 to 257 (-55 to 125)			
OVERALL LENGTH	in (mm)	8.76 (223)			
SENSOR MATERIAL		17-4 PH Stainless Steel			
HANDLE MATERIAL		Fiberglass with rubber grip			
CONNECTOR		BNC			

### ACCESSORIES

P/N EHM 1208  
P/N EHM 1209  
P/N EHM 1210

IMPACT TIP, POLYURETHANE  
IMPACT TIP, DELRIN  
IMPACT TIP, ALUMINUM  
CARRYING CASE

### OPTIONAL ACCESSORIES

P/N EHM1653

40 GRAM HEAD EXTENDER

### NOTES

1. Only 2-gram tips supplied with the hammer set should be used. Heavier or lighter tips may affect acceleration compensation.
2. To prevent damage to mounting threads, do not use excessive torque when installing/changing impact tips.
3. 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.



Endevco complete Modal Front End System

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.

ENDEVCO CORPORATION, 30700 RANCHO VIEJO ROAD, SAN JUAN CAPISTRANO, CA 92675 USA (800) 982-6732 (949) 493-8181 fax (949) 661-7231  
www.endevco.com Email:applications@endevco.com