

Impact Hammer Kit

Bently Nevada* Asset Condition Monitoring



Description

The Bently Nevada* Impact Hammer Kit is used with our ADRE* 408 DSPi and other compatible instruments to determine the dynamic behavior of mechanical structures.

Impact hammer testing involves striking a mechanical structure with an instrumented hammer and collecting response information from transducers mounted on the structure. The response from a single accelerometer yields transfer and transactional characteristics of the structure. The integration of response information from multiple accelerometers at various points of interest allows for modal analysis (velocity compliance, impedance, mobility).

The hammer excites resonance frequencies in the structure over a broad range. The physical properties of the hammer (size and mass) and the strike velocity determine the amplitude and frequency content in the force impulse. The hammer tip material determines the energy content of the impulse. Extender masses can be used to concentrate more energy at lower frequencies.

Specifications

The Impact Hammer Kit is customizable. There are three modal impact hammers available, and each comes with an accessory set. If one or more hammers are purchased with the kit, a cable and an adapter are provided for signal transmission and transducer power.

Accelerometers can be supplied with the kit in quantities of 4 or 8, and each comes with an accessory set. For each accelerometer purchased, a cable and an adapter are provided for signal transmission and transducer power.

Modal Impact Hammers

Hammer Options:

285570-01

8.5", 0.34lbm, ±500lbf peak, 10mV/lbf

285570-02

8.5", 0.34lbm, ±1000lbf peak, 5 mV/lbf

285570-03

14.5", 2.4lbm, ±5000lbf peak, 1 mV/lbf

Performance

	285770-01	285770-02	285770-03
Sensitivity (± 15 %)	10 mV/lbf (2.3 mV/N)	5 mV/lbf (1.1 mV/N)	1 mV/lbf (0.23 mV/N)
Measurement Range (pk)	± 500 lbf (± 2,224 N)	± 1,000 lbf (± 4,448 N)	± 5,000 lbf (± 22,240 N)
Resonant Frequency	≥ 22 kHz		≥ 12 kHz
Non-Linearity	≤ ± 1 %		

Electrical

	285770-01	285770-02	285770-03
Excitation Voltage	20 to 30 VDC		
Constant Current Excitation	2 to 20 mA		
Output Impedance	< 100 Ω		
Output Bias Voltage	8 to 14 VDC		
Discharge Time Constant	≥ 2,000 seconds	≥ 1,400 seconds	

Physical

	285770-01	285770-02	285770-03
Sensing Element	Quartz		
Sealing	Epoxy	Hermetic	
Mass	0.34 lbm (0.16 kg)	2.4 lbm (1.1 kg)	
Head Diameter	0.62" (1.57 cm)	2.0" (5.1 cm)	
Tip Diameter	0.25" (0.63 cm)	2.0" (5.1 cm)	
Length	8.5" (21.6 cm)	14.5" (37 cm)	
Electrical Connection	BNC Jack, Bottom of Handle		

Cables and Adapters:

286204

BNC to SMA/PWR Cable

286241

BNC Male to SMA Female Adapter

Accessories:

Each hammer comes with a calibration certificate. Periodic hammer recalibration and recertification is optional.

**Standard with 285570-01 and
285570-02**

- 2 Mounting Studs, 10-32 to 10-32
- 1 Extender, Steel, 0.6" diameter, 2.6 oz (75 gm)
- 1 Hard Tip, Stainless Steel
- 1 Medium Tip, Plastic, White
- 2 Soft Tips, Black
- 2 Supersoft Tips, Red
- 2 Covers for Medium Tip, Vinyl, Blue

**Standard with
285570-03**

- 1 Hard Tip, Plastic, Black
- 1 Medium Tip, Plastic, Red
- 1 Soft Tip, Plastic, Brown
- 1 Supersoft Tip, Plastic, Gray

Accelerometers

Accelerometer Options:

200350

100mV/g, ±50g

Cables and Adapters:

285961

2 Pin Transducer to SMA/PWR
Cable

286241

BNC Male to SMA Female Adapter

Accessories:

286244

Magnetic Mounting Base with
1/4-28 Mounting Stud

Carrying Case

The Impact Hammer Kit carrying case has a durable plastic exterior with a molded foam interior. The case fits two 285570-01 or 285570-02 hammers, one 285570-03 hammer, and 8 accelerometers.

285714

Impact Hammer Kit Carrying Case

Ordering Information

Impact Hammer Kit

Impact_Hammer_Kit-AXX-BXX-CXX-DXX-EXX-FXX

NOTE: The impact hammers and accels require a constant current power source. If the end user does not already have a method to power these devices, a Transducer Power Supply Card (168908-AA-BB) will be required.

- A: 500lbf pk, 10mV/lbf, 0.3lbm Hammer (285570-01)
 - 00 None
 - 01 Hammer Included
- B: 1000lbf pk, 5mV/lbf, 0.3lbm Hammer (285570-02)
 - 00 None
 - 01 Hammer Included
- C: 5000lbf pk, 1mV/lbf, 2.4lbm Hammer (285570-03)
 - 00 None
 - 01 Hammer Included†
- D: Standard Accelerometer Set (200350)
 - 00 None
 - 04 Set of 4
 - 08 Set of 8
- E: Micro Accelerometer Set
 - 00 None
 - 04 Set of 4†
 - 08 Set of 8†
- F: Triax Accelerometer Set
 - 00 None
 - 04 Set of 4†
 - 08 Set of 8†

† Option currently unavailable



Figure 1. Impact Hammer Kit

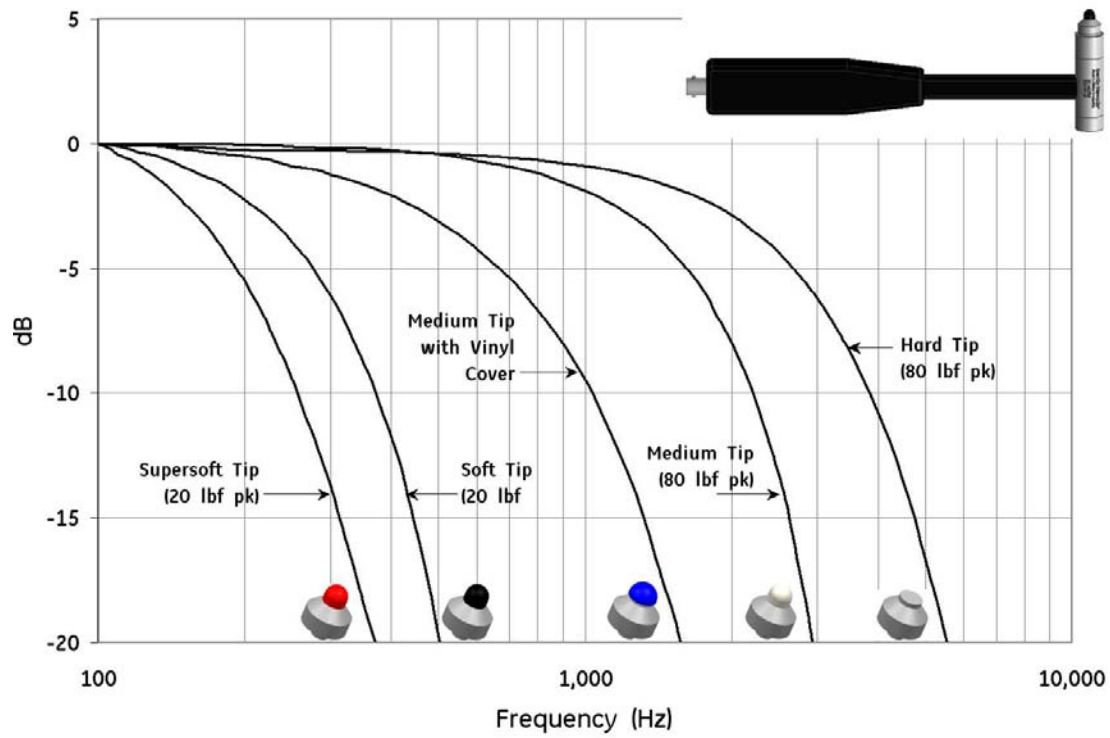


Figure 2. Impact Hammer Response Curves for 285570-01 and 285570-02

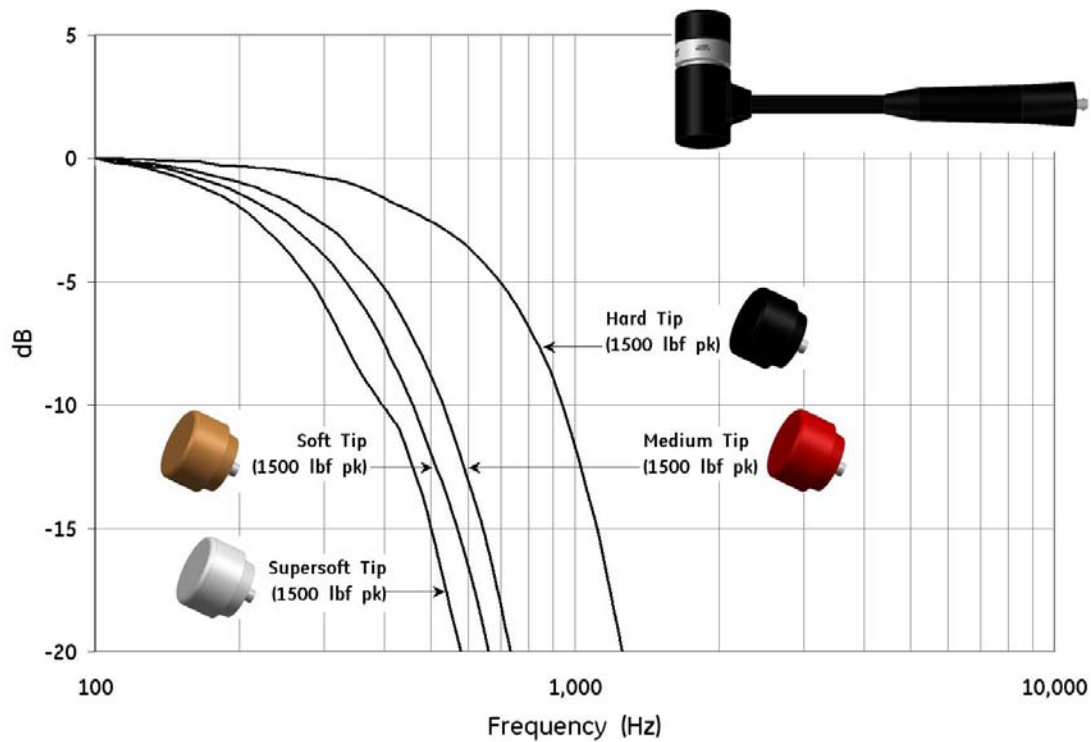


Figure 3. Impact Hammer Response Curves for 285570-03

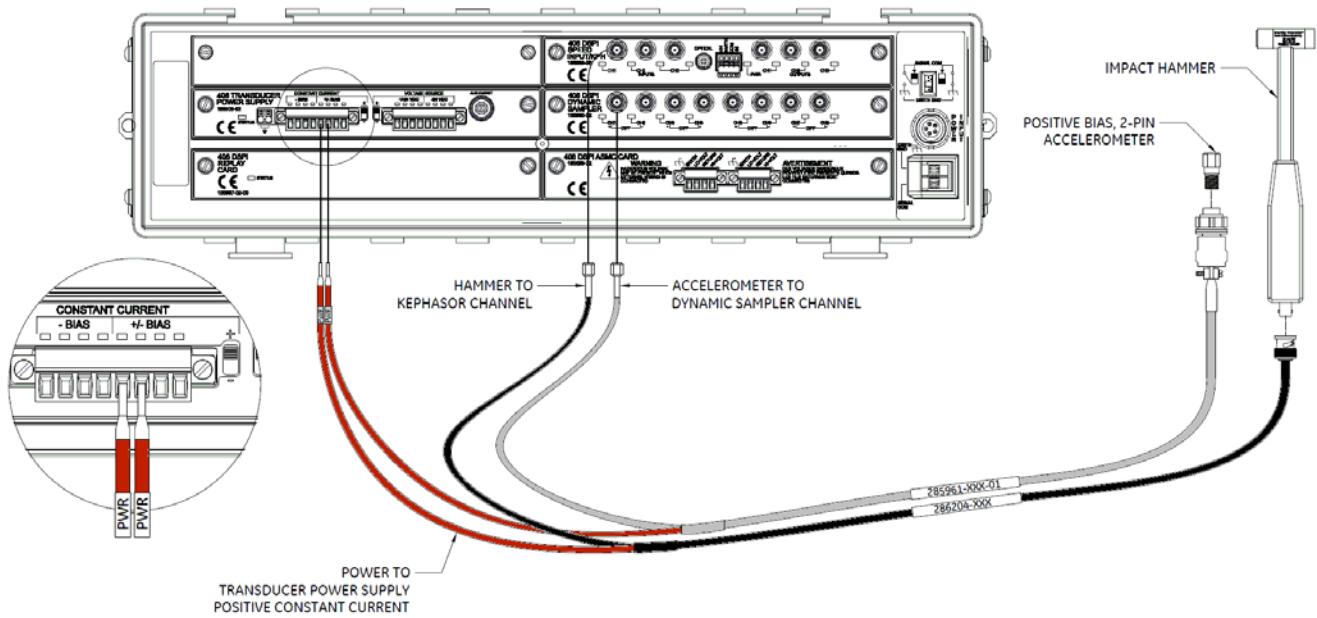


Figure 4. Impact Hammer and Accelerometer Wiring Diagram with ADRE 408DSPi

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