

13 LBF MODAL SHAKER



Model 2025E

For many experimental modal test applications, an electrodynamic shaker system is best suited for creating an appropriate input forcing function. Distributing adequate input force energy across the test structure and obtaining accurate and reliable input force measurements is critical for successful modal testing. This requires a shaker that is highly portable, rugged and easy to set up in order to position in the best exciter location while minimizing any unwanted interaction between the exciter and test structure.

The Modal Shop 2025E, a very lightweight electrodynamic modal exciter, is capable of providing up to 13 lbf (58 N) of peak force excitation in a small footprint weighing just 13 lb (6 kg). With a 0.7 in (18 mm) general purpose stroke and useful frequency range beyond 9 kHz, the 2025E is suitable for structural testing and experimental modal analysis applications, including single and multiple inputs (SIMO and MIMO) using random, burst random, sine dwell or chirp excitation signals.

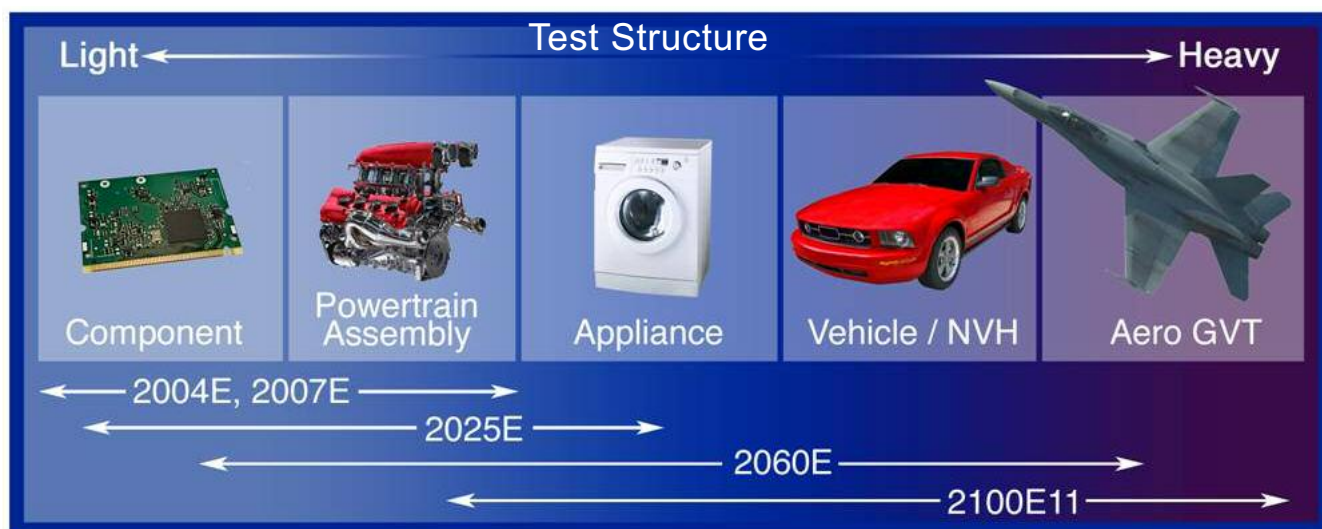
The 2025E modal exciter is supplied in a trunnion base allowing full rotation for easy set-up. The through-hole armature design with chuck and collet attachment is ideal for use with either traditional modal stinger rods or piano wire stingers. These stingers greatly simplify test set-up with an easy connection to the force sensor and test structure, and help decouple cross-axis force inputs, minimizing input force measurement errors while using the modal shaker.

BENEFITS:

- Through-hole armature with chuck and collet attachment provides simple set-up with modal stingers.
- Lightweight and portable – weighing just 13 lb (6 kg) with an approximately 5 in (125 mm) square footprint.
- Trunnion base provides flexibility when choosing best exciter location(s).
- 0.7 in stroke and broad frequency range supply adequate input energy for most small to mid-sized modal test applications.
- Ambient air cooling sufficient to meet full shaker performance (13 lbf_{pk}) specifications.



EXPERIMENTAL MODAL ANALYSIS APPLICATION CHART



SPECIFICATIONS:

PERFORMANCE:

Output Force, sine pk, ambient air cooling	13 lb (58 N)
Stroke Length, pk - pk	0.7 in (18 mm) ^[1]
Frequency Range, nominal	DC - 9000 Hz ^[2] ^[3]
First Resonance Frequency, nominal	> 6000 Hz ^[3]
Maximum Acceleration, bare table	72 g (700 m/s ²) pk
Maximum Velocity	120 in/s (3 m/s) pk
Protection Features	Mechanical stops Over-current (in-line fuse)

PHYSICAL:

Maximum Current, ambient air cooling	12.5 A RMS
DC Resistance, armature, nominal	0.5 Ω ^[4]
Armature Suspension System	8 pcs carbon fiber composite flexures
Effective Armature Mass	0.35 lb (0.159 kg)
Dimensions (H x W x D), nominal	8.65 x 8.82 x 4.25 in (220 x 224 x 108 mm) ^[5]
Weight, nominal	13 lb (6 kg)
Operating Range	40 °F – 100 °F (4 °C – 38 °C), < 85 % RH

[1] Mechanical stops at 0.75 in (19 mm)

[2] Frequency range based upon ISO 5344 recommended useful range of 1.5 times first resonance frequency

[3] Load dependent

[4] Room temperature, 68 °F (20 °C)

[5] Reference outline drawing for exact dimensions

SUPPLIED ACCESSORIES:

Trunnion base with EasyTurn™ handles, shaker cable 10 ft (3 m), chuck with collets, 10-32 mounting adaptor and a variety of rod and piano wire stinger kits (models 2150G12, 2155G12 and K2160G).

SUGGESTED ACCESSORIES:

2100E21-400 SmartAmp™ Power Amplifier 400 W, 92 % efficient, continuous gain adjustment
PCB 288D01 ICP® impedance head driving point sensor, PCB 208 series ICP® force sensors

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