



S&R Energizers Family of Vibration Exciters

Buzzes, squeaks and rattles (S&Rs) in vehicles and their components are a major source of customer dissatisfaction, perceived poor quality, complaints in J.D. Power surveys, and warranty claims and costs worldwide.

MB Dynamics is a leader in delivering technology, test processes, and people & services to help OEMs & their suppliers develop and produce vehicles free of squeaks & rattles, with measurable quality. One core S&R technology is the family of MB Energizer Exciters.

Whisper **QUIET!**

No exciter noise to mask S&Rs and frustrate root sourcing



Traditional E-D shakers, up to 55 dBA (6-10 sones)

- field coils . . . electrical & audible hum/noise . . . always energized . . . always create heat . . . must be cooled . . . turning blowers OFF is risky
- internal mechanical elements like rolling struts & bearings cause noises

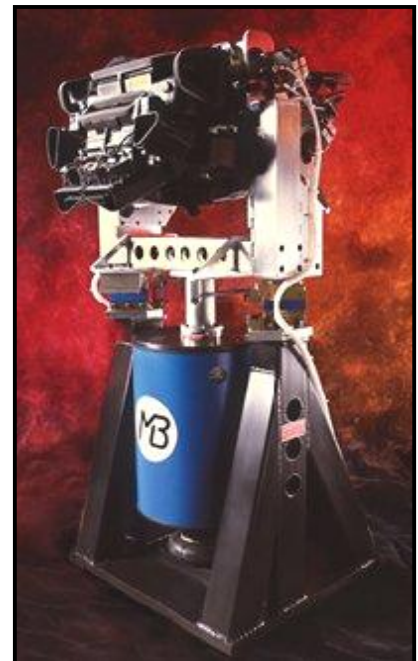
Hydraulic shakers, up to 65 dBA (15-20 sones)

- servo-valve hiss
- oil flow at 3000 psi or 200 bar
- noisy hydraulic power supplies

MB Energizers 29-30 dBA (1.0 - 1.2 sones)

- permanent magnets
- no cooling blowers: permanent magnets don't need cooling
- patented flexures: quiet & stiff
- noiseless, friction-less suspension

**Recommended in
GMW14011
Subsystem &
Component
S&R Test Spec**



Bullet-proof Load Support

Radially-stiff, patented flexures support

- payloads with large footprints, and
- unwieldy payloads with offset cg's without damaging the Energizer

Large, integral payload mounting tables

- 200mm diameter, BLUE
- 250mm diameter, BLACK & SILVER

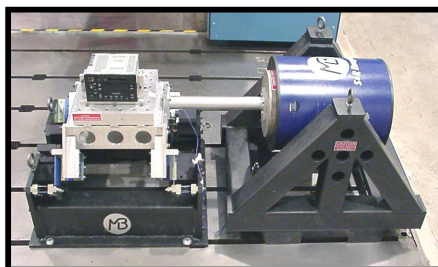
Air spring load re-centering for very heavy payloads

Robust and rugged exciter for durability tests

Virtually no maintenance

| PARAMETER | Energizer BLUE | Energizer BLACK | Energizer SILVER |
|--|---|-----------------------------------|----------------------------------|
| Max. payload, vertical excitation | 12kg (25 lbs.) | 25kg (55 lbs.) | 25kg (55 lbs.) |
| Max. payload, horizontal | 8kg (18 lbs.) | 12kg (25 lbs.) | 12kg (25 lbs.) |
| Max. payload with air spring, vertical | 30kg (65 lbs.) | 90kg (200 lbs.) | 90kg (200 lbs.) |
| Armature plus mounting table | 5.1kg (11 lbs.) | 9.2kg (20 lbs.) | 14.9kg (33 lbs.) |
| Acceleration, 5 kg payload, uncooled | 5.1 g's pk 3.0 g's RMS | 7.2 g's pk 4.3 g's RMS | 11.9 g's pk 7.9 g's RMS |
| Acceleration, 15kg payload, uncooled | 2.4 g's pk 1.5 g's RMS | 4.0 g's pk 2.4 g's RMS | 7.7 g's pk 5.1 g's RMS |
| Acceleration, 30kg payload, uncooled | 1.4 g's pk 0.8 g's RMS | 2.5 g's pk 1.5 g's RMS | 5.2 g's pk 3.4 g's RMS |
| Accelerations with forced air cooling | 2X uncooled | 2X uncooled | 2X uncooled |
| Mounting table diameter (standard) | 200mm (8") | 250mm (10") | 250mm (10") |
| Inserts, and bolt-hole pattern | M6 (1/4"-28), 50mm X 50mm | M6 (1/4"-28), 50mm X 50mm | M6 (1/4"-28), 50mm X 50mm |
| Frequency range (less with air spring) | DC - 2,500 Hz | DC - 2,500 Hz | DC - 2,500 Hz |
| Suspension driven-axis stiffness | 26 kN/m (150 lb/in) | 33 kN/m (190 lb/in) | 33 kN/m (190 lb/in) |
| Suspension transverse-axis stiffness | 1000 kN/m (6000 lb/in) | 1700 kN/m (9500 lb/in) | 1700 kN/m (9500 lb/in) |
| Max. displacement @ test item, pk-to-pk | 50mm (2") | 50mm (2") | 50mm (2") |
| Max. velocity, pk | 1.5m/s (60 in/sec) | 1.5m/s (60 in/sec) | 1.5m/s (60 in/sec) |
| Weight incl. sand-filled trunnion base | 325kg (715 lbs.) | 590 kg (1,300 lbs.) | 545 kg (1,200 lbs.) |
| Footprint | 840mm X 666mm (33" X 26.25") | 978mm X 718mm (38.5" X 28.25") | 890mm X 768mm (35" X 30.25") |
| Height to top of mounting table | 620mm (24.4") | 806mm (31.75") | 688mm (27.1") |
| CE Mark | Yes | Yes | Yes |
| Power requirements | 2000 watts, max. | 6000 watts, max. | 9,500 watts, max. |
| Amplifier input power | 208, 220, 240 VAC, 50-60 Hz, single phase | | |
| Amplifier dimensions, 19" rack; taller cabinets available for PC & instruments | 500mm X 180mm (20"D X 7"H) | 800mm X 760mm (31.5" X 30" H) | 800mm X 760mm (31.5" X 30" H) |
| Weight of power amplifier | 33kg (73 lbs.) | 136kg (300 lbs.) | 136kg (300 lbs.) |

NOTE: Specs for Energizers with various ratio lever arms available upon request.



OPTIONS for Energizer BLUE, BLACK and SILVER

- **Air Spring Load Support for heavy payloads (see Table)**
- **2:1 Lever-Arm Integrated on Trunnion Base & Floor Plate, for force doubling**
- **Other Ratio Lever-Arms with Base & Base Mass + Air Casters, for force multiplication & mobility**
- **Universal Test Fixture Kit (UTF) for testing cockpits, IPs, seats, door modules, sunroofs, etc.**
- **Quiet Cooling Package (<60 dBA) for durability and S&R aging tests**
- **Instrumentation Cabinet for mounting amplifier, controller, instrumentation, etc.**
- **Horizontal Moving Table (HMT) for horizontal vibration of heavy test items; as quiet as BLUES, BLACKS and SILVERS**
- **Chamber Readiness Kit to use Energizers in thermal chambers from -40° C to +60° C**