EMA Damper Test Systems

TECH BRIEF

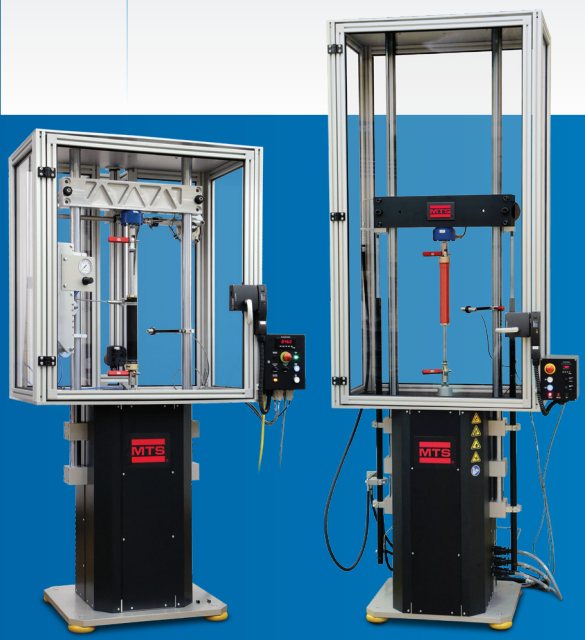
Applications: Characterization, Quality Assurance, NVH, RPC Road Profile Playback, mechanical Hardware-in-the-Loop (mHIL)

Models/Dynamic Force: 9kN, 18kN, 27kN

Peak Velocity: 4 m/sec

Frequency Response: 100Hz

Facility Requirements: 380-480, 50/60 Hz



Versatile FlexTest Controller: expand testing utility and harmonize lab maintenance and training.

Full-featured MTS Damper Software: leverage advanced test creation, execution, analysis and reporting tools.

Enhanced Linear Electric Load Frame: reduce maintenance and down time and increase system longevity.

EtherCAT-enabled Power Drive: achieve PLd rated safe-torque-off operation.

EMA (Electro-Magnetic Actuation) Damper Test Systems offer a high-fidelity, cost-effective solution for single-specimen damper performance testing, supporting applications such as characterization, quality verification, and custom scenarios like NVH analysis, high-velocity testing, and road profile playback.

Electrically actuated EMA systems are renowned among damper R&D engineers, manufacturers, and OEMs for their high frequency response, programmability, and clean, quiet and efficient operation. Easy to set up and maintain, compact EMA systems are ideal for both test lab and trailer deployment.

EMA Gen 2 systems build on proven EMA performance with an array of customer-driven innovations that enhance test integrity, increase system utility, and improve operational efficiency and safety.

Available in 9, 18, and 27 kilonewton models, Gen 2 systems feature a more robust, easier-to-maintain design, including redesigned actuator bearings for improved longevity and larger end stop bumpers that prevent actuator damage. A new EtherCAT-enabled motor drive provides PLd-rated safe-torque-off protection.

Now standard on EMA Gen 2 systems, versatile FlexTest® controllers expand EMA testing utility with multi-channel control for adaptive dampers, RPC road profile playback, and advanced quality assurance features. This harmonizes EMA with all MTS damper equipment, enhancing efficiency in lab maintenance and training.

Also standard, full-featured MTS Damper software with enhanced waveform customization and data analysis provides the flexibility to pursue a broader spectrum of damper performance testing.

Standard Equipment

- Linear Electric Load Frame
- FlexTest Controller
- MTS Damper Software
- System PC and Monitor
- Drive Cabinet
- System Cables
- Clevis Grips

Optional Equipment

- Pneumatic Static Support
- Electric Crosshead Lift and Locks
- CE-Rated Safety Enclosure
- Vibration Isolation Kit
- NVH Package
- Quality Assurance Testing (software)

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Compact, easy-to-set-up EMA systems optimize space while delivering high-fidelity damper performance testing, making them ideal for deployment in test labs and proving ground trailers.

EMA Specification[1]	Units	EMA-9kN	EMA-18kN	EMA-27kN
Dynamic Force	kN lbf	8.9 2000	17.8 4000	26.7 6000
Static Force	kN lbf	2.1 475	4.2 950	6.2 1400
Static Force with Static Load Compensation	kN lbf	7 1475	13 2950	20 4400
Peak Velocity	m/sec in/sec	4 157	4 157	4 157
Maximum Force at 3 m/s (480V)	kN lbs	6 1,350	12 2,700	18 4,050
Stroke	mm in	203 8	203 8	254 10
Frequency Response	Hz	100	100	100
Temperature Monitoring	Specimen Motor	Non-contacting IR with software monitoringv Non-contacting IR with process meter monitoring		
Digital Encoder Resolution	nm	1	1	1
Noise Level –Typical	dbA	65	65	65
Load Cell	kN lbf	10kN 2,200	35kN 5,500	50kN 11,000
Waveforms Supported	Type Software	Sine, Triangle, Square, Frequency Sweep, Sine-on-Sine, Custom Profile, RPC Playout MTS Damper Analysis Software		
Bearing Material	Type	Dry Linear Bearing – Maintenance Free Replacement Interval: 2-5 yrs		
Facility Requirements[2]	Vac kVA	135	380-480, 50/60 hz 135	270
Air Supply	SM^3/min SCFM	0.65 23	1.3 45	1.9 68

[1] Specifications subject to change.
[2] Maximum performance achieved at 480 Vac.

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