

# MOTION SYSTEMS E60 SERIES

The New Standard for Reliable, High Fidelity  
Electric Flight Simulation.



Rev. A, December 2024

**MOOG** | Shaping the way our world moves™

# ENHANCED RELIABILITY

# SIMPLIFIED MAINTENANCE

# SUPERIOR PERFORMANCE



PREVIOUS CABINET

E60 SERIES CABINET

## Fewer Parts, Greater Reliability

By reducing the number of parts by 1/3 and removing the RTH battery system, we improved the operational MTBF (mean time between failures) from previous generations' systems by 15%. These upgrades provide exceptional reliability and performance, further reinforcing the quality and longevity you've come to expect from Moog.

## No Batteries Means No Battery Maintenance

Battery systems have limited shelf life and are costly to repair or dispose of. Our newest Motion Systems eliminate the need for batteries in the return-to-home feature and replaces them with a more sustainable energy storage technology.

## Reduced Size

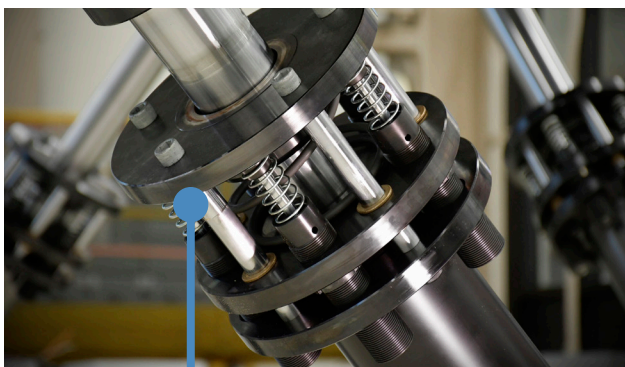
Not only are the latest power cabinets half the size of previous systems thanks to modern electronics, they are also backward compatible with previous systems, allowing for greater flexibility and extending the usefulness of existing actuators.

## Ready for What's Next

Even with their reduced size, the new power cabinets are designed with additional capacity to accommodate new features and solutions to be implemented in the field as needed. Additionally, the newest systems are designed with proven and commercially available components, making it easier to adapt to changing technology and extend system life cycles.

## Field-Replaceable Parts

In addition to updated software with improved diagnostic capabilities, technicians can repair the system's shocks (snubber) with field-replaceable parts, eliminating the need to return and repair the entire actuator and significantly reducing downtime.



FIELD-REPLACEABLE SNUBBER

# NEW DESIGN, SAME EXCEPTIONAL QUALITY AND SUPPORT MOOG IS KNOWN FOR

## MOOG AT A GLANCE:

- Over 40 years of experience creating solutions for simulation.
- First company to reach Level D Certification (now certified across 24 countries).
- Over 2,000 electric motion systems installed globally.
- Global network of repair, maintenance and engineering support professionals.
- Less than 1% return rate on actuators, resulting in 99.8% system uptime for customers.

## Leaders in Motion

Our industry-leading simulation solutions have been trusted for their reliability and precision for over 40 years. Currently we have over 2,000 electric motion systems installed globally. We were also the first to reach Level D Certification and, are now certified across 24 countries.

## Exceptional Fidelity and Performance

Our dedication to quality and reliability has allowed us to maintain a less than 1% return rate on actuators for repair at Moog. This allows for a 99.8% uptime rate on installed motion solutions.

## Product Lifecycle Management

Moog is dedicated to supporting our customers and their systems throughout the product's lifecycle. Key components are sourced from Moog, providing enhanced control of Product Lifecycle Management.

## Global Support

Our international support team is far-reaching and readily available, which means our local technicians can quickly access spare parts, conduct on-site repairs, and refresh rotatable stock without wasting valuable resources.



# TECHNICAL DATA

Model	E60 Series   MB-E-6DOF/60/14000KG	E60 Series   MB-E-6DOF/62.5/14000KG
<b>DOF max. excursion</b>		
Surge (single) (max.)	-1.07 m / +1.30 m    -42.4 in / +51.7 in ± 1.32 m    ± 51.8 in	-1.14 m / +1.38 m    -45.0 in / +54.5 in -1.26 / +1.51 m    -49.5 / +59.55 in
Sway (single) (max.)	± 1.08 m    ± 42.7 in ± 1.20 m    ± 47.2 in	± 1.14 m    ± 45.2 in ± 1.26 m    ± 49.7 in
Heave (single) (max.)	± 0.87 m    ± 34.3 in ± 0.97 m    ± 38.4 in	± 0.90 m    ± 35.5 in ± 1.00 m    ± 39.4 in
Roll (single    max.)	± 26.2 °    ± 28.9 °	± 27.2 °    ± 29.8 °
Pitch (single    max.)	-24.1 ° / +26.5 °    -27.0 ° / +29.9	-25.0 ° / +27.3 °    -27.8 ° / +30.7 °
Yaw (single    max.)	± 33.0 °    ± 36.9 °	± 35.2 °    ± 39.2 °
<b>DOF max. velocity</b>		
Surge	± 1.00 m/s    ± 39.4 in/s	± 0.71 m/s    ± 28.0 in/s
Sway	± 1.00 m/s    ± 39.4 in/s	± 0.71 m/s    ± 28.0 in/s
Heave	± 0.80 m/s    ± 31.5 in/s	± 0.61 m/s    ± 24.0 in/s
Roll	± 22.0 °/s	± 20.0 °/s
Pitch	± 21.0 °/s	± 20.0 °/s
Yaw	± 25.0 °/s	± 20.0 °/s
<b>DOF max. acceleration</b>		
Surge	± 5.9 m/s <sup>2</sup>    ± 0.6 g	5.9 m/s <sup>2</sup>    0.6 g
Sway	± 5.9 m/s <sup>2</sup>    ± 0.6 g	5.9 m/s <sup>2</sup>    0.6 g
Heave	± 7.9 m/s <sup>2</sup>    ± 0.8 g	± 7.9 m/s <sup>2</sup>    0.8 g
Roll	± 150 °/s <sup>2</sup>	± 150 °/s <sup>2</sup>
Pitch	± 150 °/s <sup>2</sup>	± 150 °/s <sup>2</sup>
Yaw	± 250 °/s <sup>2</sup>	± 250 °/s <sup>2</sup>
<b>Gross Moving Load (GML) up to</b>		
GML moment of inertia about X-axis	14,000 kg    30,865 lb 50,000 kg.m <sup>2</sup>    36,878 slug.ft <sup>2</sup>	14,000 kg    30,865 lb 67,790 kg.m <sup>2</sup>    50,000 slug.ft <sup>2</sup>
GML moment of inertia about Y-axis	81,348 kg.m <sup>2</sup>    60,000 slug.ft <sup>2</sup>	81,348 kg.m <sup>2</sup>    60,000 slug.ft <sup>2</sup>
GML moment of inertia about Z-axis	50,000 kg.m <sup>2</sup>    36,878 slug.ft <sup>2</sup>	50,000 kg.m <sup>2</sup>    36,878 slug.ft <sup>2</sup>
GML CoG above moving platform centroid	< 1.651 m    < 65.0 in	< 1.651 m    < 65.0 in
<b>Top of platform</b>		
Ground frame dia.	2.14 m    84.4 in Approximately 6.73 m    265.0 in	2.24 m    88.2 in Approximately 6.73 m    265.0 in
Actuator stroke	1.52 m    60.0 in	1.59 m    62.5 in
<b>Voltage requirements</b>		
Optional transformer	480 VAC, 3 ph - 50/60 Hz 75 kVA isolation transformer, multiple primary voltages	480 VAC, 3 ph, 50/60 Hz 75 kVA isolation transformer, multiple primary voltages
Electronics & Software	Motion control cabinet, computer, software, maintenance & diagnostic web interface, Ethernet UDP API.	Motion control cabinet, computer, software, maintenance & diagnostic web interface, Ethernet UDP API.
Typical application	FAA & EASA level C/D full flight simulation, car, truck and tank simulation	FAA & EASA level C/D full flight simulation, car, truck and tank simulation

## MODEL NUMBER EXPLANATION

MB = Motion Base, E or EP = Electric or Electric Pneumatic, 6 DOF = 6 Degrees of Freedom, XX or 60 = actuator stroke inches, XXXXX or 14000 KG = Gross Moving Payload

System performance specifications are estimates that are subject to change. Please consult with Moog for technical information.



# FLEXIBLE SERVICE WITH A GLOBAL REACH

At Moog, we are committed to providing exceptional support to our customers, no matter where they are located. Our extensive network of service providers spans over 20 countries across five continents, ensuring that help is always within reach.

With more than 2,000 motion systems installed worldwide, we have the right personnel in the right places at the right times. Our experts ensure that your training programs run smoothly, efficiently, and profitably.

Our range of services supports you throughout the entire life cycle of your system, from commissioning to planned maintenance to upgrades. Whether you need support or spare parts, we are ready to assist you.



## Not ready for the latest Motion System? Consider these key programs:

- Actuator life extension
- Motion computer upgrade
- Electrical cabinet upgrade and replacement
- Control Loading upgrade
- Hydraulic to electromechanical conversion



## ADDITIONAL SIMULATION PRODUCTS

Moog has a complete suite of flight simulation products to complete your program.

### CONTROL LOADING SYSTEMS

Moog control loading solutions range from basic flight training to high fidelity full flight simulations that meet global certifications from EASA, FAA, and military equivalents.



[www.moog.com/products/control-loading-systems/](http://www.moog.com/products/control-loading-systems/)

### G-SEATS

Simulate realistic, sustained G-Force in helicopter and fighter G-Seats with high fidelity controllers and user-friendly interfaces.



[www.moog.com/products/g-seats/](http://www.moog.com/products/g-seats/)

# TAKE A CLOSER LOOK

Moog designs a range of motion control products to complement those featured in this document. Moog also provides service and support for all of our products. For more information, contact the Moog facility closest to you.

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