

TURRET TEST SYSTEMS

HIGH PERFORMANCE
6-DEGREES-OF-FREEDOM
ELECTRIC MOTION SYSTEMS
FOR TANK TURRETS

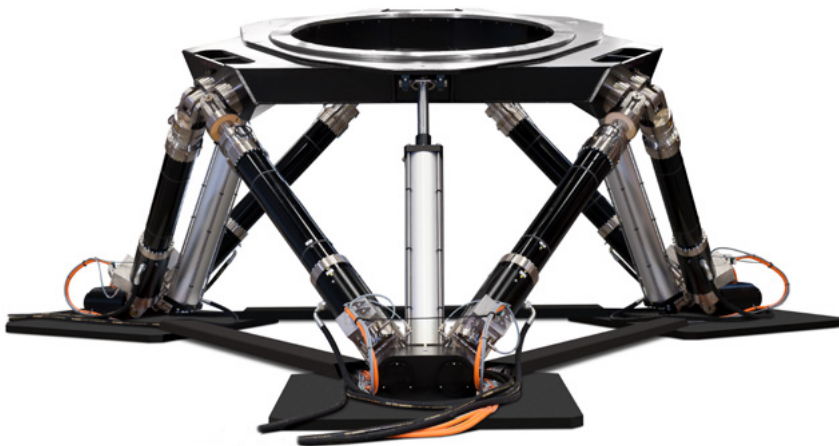


Moog is a world-leading supplier of integrated control actuation systems, with the capability and expertise to design and build both standard and fully customized Turret Test Systems. Supported by global manufacturing and an international service infrastructure, Moog is a trusted partner to the world's leading armies and weapons-platform manufacturers. Having delivered thousands of motion systems, we provide reliable, low-maintenance solutions and worldwide support that deliver measurable customer value.

The Moog Turret Test System is based on a high-performance six-degrees-of-freedom (6 DOF) electric motion system that uses advanced test software to simulate test tracks and evaluate turret-stabilizer performance. At the top of the platform, the user can install either an actual turret or a remote weapon station. The system supports payloads of up to 28,000 kg (61,700 lb) and can be custom-engineered for higher capacities to meet application-critical requirements related to excursions, velocity, and acceleration.

The Moog Replication Software Module precisely simulate vehicle movements recorded on the test track using high-precision accelerometers. System identification and iteration use state-of-the-art algorithms for quick and easy drive-file development.

Engineered to go beyond demanding customer expectations, the system delivers precise and reliable test results – building confidence in every performance.



ADVANTAGES

- ✓ Develop and test in-house under controlled conditions vs. uncontrolled remote test track conditions
- ✓ 100 % motion repeatability
- ✓ System is designed to be low-noise and compliant to Human Rated Safety Standards
- ✓ Speed up of new development process or end-of-line testing
- ✓ Accurate playback of the target file (RMS error typically <5 %)
- ✓ User friendly GUI and system design contribute to reduced training time for end-users
- ✓ Possibility to customize the design of the Turret Tester

KEY FEATURES

- ✓ Proven Moog software modules for system identification, model analysis, iteration and reporting
- ✓ Availability to perform Envelope Calculation to determine the space claim
- ✓ Engineering support on FEM calculations for strength and modal analysis
- ✓ Extensive experience with designing and manufacturing customized upper platforms

TEST APPLICATIONS

- ✓ Development of control and stabilization systems
- ✓ System integration (e.g., weapon, periscope)
- ✓ Demonstration of turret performance to customers
- ✓ End-of-line production testing

SPECIFICATIONS

The Moog Turret Tester is based on a commercial motion system, using electric actuators, servo drives and enhanced real time motion software. The Moog Replication Software Module ensures that the motion profile is accurately

reproduced using an automatic 6-DOF multi frequency iterative process. Moog can extensively customize motion systems and top platforms to meet your performance and interface requirements.

Model	MB-E-6DOF/26/1800KG TT	MB-EP-6DOF/26/3000KG TT	MB-EP-6DOF/60/14000KG TT	MB-EP-6DOF/20/28000KG TT
Maximum single DOF excursion at neutral position				
Surge	- 0.48 m / + 0.60 m	- 0.48 m / + 0.60 m	- 1.17 m / + 1.42 m	± 0.34 m
Sway	± 0.50 m	± 0.50 m	± 1.17 m	± 0.32 m
Heave	± 0.41 m	± 0.41 m	± 0.96 m	± 0.36 m
Roll	± 23.8 °	± 23.8 °	± 25.0 °	± 10.5 °
Pitch	- 23.7 ° / + 26.0 °	- 23.7 ° / + 26.0 °	- 25.0 ° / + 27.0 °	± 10.5 °
Yaw	± 25.4 °	± 25.4 °	± 29.0 °	± 9.5 °
MaxMaximum velocity at full payload				
Surge	± 0.80 m/s	± 0.80 m/s	± 1.00 m/s	± 0.95 m/s
Sway	± 0.80 m/s	± 0.80 m/s	± 1.00 m/s	± 0.90 m/s
Heave	± 0.60 m/s	± 0.60 m/s	± 0.80 m/s	± 1.00 m/s
Roll	± 35 °/s	± 35 °/s	± 22 °/s	± 30 °/s
Pitch	± 35 °/s	± 35 °/s	± 21 °/s	± 29 °/s
Yaw	± 40 °/s	± 40 °/s	± 25 °/s	± 26 °/s
Maximum acceleration at full payload				
Surge	± 7.0 m/s ²	± 6.3 m/s ²	± 6.5 m/s ²	± 8.0 m/s ²
Sway	± 7.0 m/s ²	± 6.3 m/s ²	± 6.5 m/s ²	± 8.0 m/s ²
Heave	± 10 m/s ²	± 9.0 m/s ²	± 9.0 m/s ²	± 11 m/s ²
Roll	± 250 °/s ²	± 200 °/s ²	± 150 °/s ²	± 300 °/s ²
Pitch	± 250 °/s ²	± 200 °/s ²	± 150 °/s ²	± 300 °/s ²
Yaw	± 500 °/s ²	± 400 °/s ²	± 240 °/s ²	± 400 °/s ²
Gross Moving Load (GML) up to	1,800 kg (3,900 lb)	3,000 kg (6,600 lb)	14,000 kg (30,800 lb)	28,000 kg (61,700 lb)
Indicative net payload	1,500 kg (3,300 lb)	2,700kg (5,900 lb)	11,600 kg (25,500 lb)	24,000 kg (52,900 lb)
GML moment of Inertia about X-axis	2,000 kg.m ²	5,000 kg.m ²	50,000 kg.m ²	70,000 kg.m ²
GML moment of Inertia about Y-axis	2,000 kg.m ²	5,000 kg.m ²	50,000 kg.m ²	70,000 kg.m ²
GML moment of Inertia about Z-axis	2,000 kg.m ²	5,000 kg.m ²	50,000 kg.m ²	70,000 kg.m ²
GML CoG above moving platform centroid	≤ 1.0 m	≤ 1.0 m	≤ 1.0 m	≤ 1.0 m
Indicative frequency performance	25 Hz	25 Hz	15 Hz	25 Hz
Power requirements	400VAC/3ph-50/60Hz	400VAC/3ph-50/60Hz	400 - 460 VAC/3ph-50/60Hz	400 - 600 VAC/3ph-50/60Hz
Average power consumption	10 kVA	10 kVA	10 kVA	40 kVA
Peak power consumption	22 kVA	22 kVA	35 kVA	500 kVA

Specifications can be provided in imperial units upon request.

LEARN MORE ABOUT THE TURRET TEST SYSTEMS

Visit the product page for in-depth information and access to downloadable resources.
<https://www.moog.com/products/test-systems/turret-test-systems.html>

www.moogtest.com



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