

## Model 2443HV-HR-1 Three-Axis Hydraulic Flight Motion Simulator (FMS)

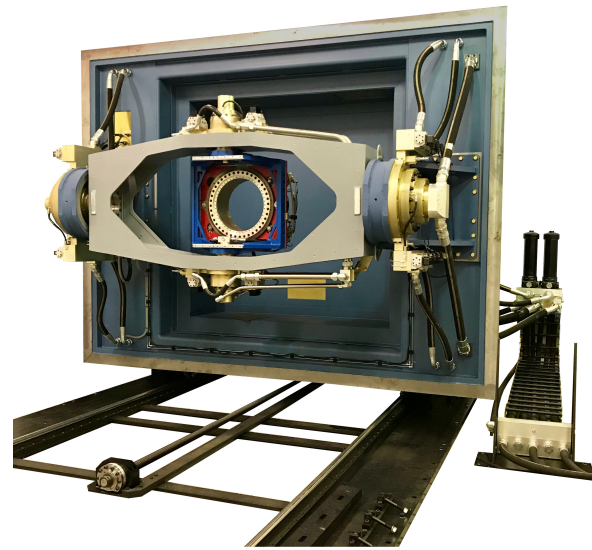
### STANDARD FEATURES

- Position Accuracy:  $\pm 10$  arc sec
- Middle and Outer Axis Rates: 600 deg/sec
- Rate Accuracy:  $\pm 0.1\%$
- Inner axis rate: 1000 deg/sec
- Rack-mounted AERO 4000 Digital Controller
  - Front panel display of status and data
  - Local and remote operation
  - Trapezoidal velocity profiles (in rate mode) with programmable velocity and acceleration
  - Sinusoidal motion generator, with programmable amplitude and frequency
  - Profile mode for position, velocity, and flight (PVA) commands
  - Programmable analog inputs and outputs

### DESCRIPTION

The 2443HV-HR-1 is one of Ideal Aerosmith's standard Three-Axis Flight Motion Simulator models designed for Hardware-In-The-Loop (HWIL) Seeker Guidance Testing. This system is configured for interfacing to an RF chamber. Extremely efficient hydraulic actuators allow high system utilization, such as Monte Carlo-type test scenarios, on a time-continuous basis. This three-axis FMS system is controlled with Ideal's flexible AERO 4000 Controller which provides real-time motion control via several industry-standard high-speed interfaces.

The 2443HV-HR-1 features a geared hydraulic drive on the innermost axis, high-performance direct drive hydraulic vane actuators on the Middle and Outer axes and precision optical encoders on all axes. The AERO 4000 digital signal processor-based (DSP) controller provides accurate and reliable motion control. The user can operate the FMS from the AERO 4000 Graphic User Interface for local control, or remotely via a computer interface. It affords easy operation, and can accommodate the Ideal Aerosmith Table Language (ATL) for remote operation. The AERO 4000 controller comes standard with IEEE-488, RS-232, and Ethernet communication interfaces.



### SPECIAL FEATURES

- Horizontal outer axis reduces the height from the axis intersection to floor providing easy access to the payload.
- Recessed base to accommodate longer payloads
- Servo valves and manifolds provide 600 deg/sec rates on middle and outer axes
- RF shielding enclosure integrated into the base structure design with accommodations for interfacing table base to RF chamber and customer wiring penetrations
- Table base configured with an actuated linear positioning system and multiple mounting/anchoring positions to simplify test article loading and system calibration
- Middle axis gimbal that accommodates interchangeable inner axis drive designs to satisfy future testing requirements

### OPTIONS

- Various slip ring packages or wire wrap configurations
- Electric drive assembly on inner axis to satisfy high-speed test requirements
- SCRAMNet or VMIC reflective-memory interfaces
- GPS and/or 10MHz timing synchronization module

***For more detailed information, contact Ideal to request a Specification Document.***

<b>Performance Specifications</b>			
	<b>Inner</b>	<b>Middle</b>	<b>Outer</b>
<b>Rotational Freedom (deg)</b>	$\pm 170$	$\pm 57.5$	$\pm 57.5$
<b>Positioning</b>			
• Accuracy, arc sec (deg)	$\pm 30 (\pm 0.01)$	$\pm 10 (\pm 0.003)$	$\pm 10 (\pm 0.003)$
• Repeatability, arc sec (deg)	$\pm 10 (\pm 0.003)$	$\pm 5 (\pm 0.0014)$	$\pm 5 (\pm 0.0014)$
• Resolution, (deg)	0.0001	0.0001	0.0001
<b>Rate</b>			
• Maximum, deg/sec	$\pm 1000$	$\pm 600$	$\pm 600$
• Minimum, deg/sec	$\pm 0.001$	$\pm 0.001$	$\pm 0.001$
• Display Resolution, deg/sec	$\pm 0.0001$	$\pm 0.0001$	$\pm 0.0001$
<b>Acceleration, max., deg/sec<sup>2</sup></b> (sinusoidal move)	22,000	12,000	12,000
<b>Bandwidth, -3dB,</b> (with nominal payload)	24	18	18

\*Values listed are maximum values and are dependent upon system configuration. Performance parameters may vary between various configurations of the Model 2443H.

<b>System Physical Configuration</b>	
<b>Inner (roll) axis</b>	The nominal test load may be secured to a precision mounting diameter and corresponding hole pattern. Custom tabletop and interface patterns available upon request.
<b>Number of User Lines</b>	Optional slip ring package is 48 lines at 5 amps per line. Custom packages are available. System shown has limited travel configuration without slip rings.
<b>Test Load</b>	
• Nominal	125 lbs (56.8kg), 10" (254mm) diameter, 64" (1626mm) long from intersection of axes to rear of payload (includes fixtures and cabling)
• Maximum	250 lbs (113.6kg), 16.5" (419mm) diameter, 64" (1626mm) long from intersection of axes to rear of payload (includes fixtures and cabling)
<b>AERO 4000 Digital Controller</b>	Request an AERO 4000 Controller data sheet for more information.
• Type & Configuration	AERO 4000 Test Table Controller configured in a 19-inch Cabinet.
• Communication Interfaces	IEEE-488, RS-232 and Ethernet ports available to user. SCRAMNet or VMIC reflective-memory interfaces available as options.

For additional information or special requirements, contact Ideal Aeromsmith. Specifications subject to change without notice. Please call for pricing.

Rev A

**Note:** Dimensions in inches

