AB DYNAMICS™ **Product Specification**

Turning the art of steering development into a science

Steering System Test Machine (SSTM)

The SSTM is an advanced steering system test machine that enables characterisation, mechanical hardware-in-the-loop (mHiL) and driver-in-the-loop (DiL) activities to be completed on hydraulic, EPAS and drive-by-wire steering systems.

The test bench uniquely provides dual sided control of tie rod forces with a bandwidth greater 40Hz and has advanced simulation capabilities when coupled with an external vehicle model. The SSTM enables you to:

- Characterise and benchmark full steering systems
- Subjectively optimise steering feel through driver-in the-loop testing
- Create, assess and improve the correlation of simulated vehicle steering models to physical steering hardware
- Analyse prototype systems early in the design phase including checking specification and identifying immediate problems without the use of test vehicles

- **Compensated dual sided tie rod force control for accurate command following**
- **>40Hz tie rod force control bandwidth**
- **Electromechanical actuators provide a clean work environment and minimal maintenance**
- **High natural frequency tables and actuators in excess of testing frequencies**
- **mHIL capability enables the physical steering system to bypass the steering model during real-time simulations**
- **Fast changeover between steering robot and OEM wheel for DiL testing**
- **Seamless integration of aVDS Static Plus Simulator**
- **Accommodates a wide range of steer system geometries**
- **Drive-by-wire compatible**
- **Accurate representation of steer system geometry including inner and outer ball joints**

Featuring position control and force/torque control of all axes, the SSTM is used to characterise and develop steering system performance using quasi-static and dynamic tests. Integration with an external vehicle model allows performance to be quantified both objectively through mHiL testing and subjectively through DiL testing. This provides steering engineers with a method of assessing steering feel without the need for prototype vehicles.

With the integration of the aVDS Static Simulator and immersive rFpro graphics, the SSTM becomes a highly advanced static simulator for ADAS vehicle development activities.

Specifications

Applied loads: rack actuator	Peak actuator torque (1 motor per actuator)	750Nm (6kN for 0.125m lever arm)
	Peak actuator torque (2 motors per actuator)	1500Nm (12kN for 0.125m lever arm)*
	Maximum duration for peak torque	15s (whether 1 or 2 motors per actuator)
	Maximum continuous torque (1 motor per actuator)	250Nm (2.0kN for a 0.125m lever arm)
	Maximum continuous torque (2 motors per actuator)	400Nm (3.2kN for a 0.125m lever arm)
Applied loads: force control	Force control bandwidth (-3dB)	>40Hz
	Actuator asymmetry: magnitude	±3%
	Actuator asymmetry: phase	<±2°
	Phase lag	<5ms
Displacement control	Bandwidth	>3Hz
Steering Robot (SR35)	Maximum continuous steer torque	15Nm (Max Peak 50Nm)
Steering Robot (SR60)	Maximum continuous steer torque	30Nm (Max Peak 60Nm)
Constant velocities	Peak rack actuator velocity (no load)	5rad/s
	Peak steer robot velocity (no load)	40rad/s
Recommended room	Dimensions	6m x 7m x 4m
Machine dimensions	Size	2.8m x 2.3m x 1.8m
	Weight	3.5 tonnes
	Table surface height	800mm (excluding grout thickness)
	Maximum vertical ground loading	-0.03N/mm2
Electrical requirements	Power	3 phase - 27kVA

* For shorter duration contact us at info@adynamics.com

About AB Dynamics

AB Dynamics is a leading global provider of automotive test and verification solutions that facilitate the development of vehicles that are safer, more efficient and sustainable. As part of the AB Dynamics Group of companies we enable customers to develop and test in virtual environments, validate on the track and then evaluate vehicles on public roads.

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