

SR60 - Torus

From *Anthony Best Dynamics*
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Torus – “a surface of revolution generated by revolving a circle in three dimensional space about an axis coplanar with and not touching the circle.”

Problem:

- Conventional steering robot motors prevent the driver from accessing steering wheel mounted controls.
- Removing the standard steering wheel on some vehicle will deactivate some sensors used in active suspension and/or ESC systems. By keeping the original steering wheel in place the Torus steering Robot solves that problem
- Conventional steering robots require the steering wheel airbag to be disabled for safe usage of the robot.

Solution:

The SR60-Torus is a new innovative **patented** design of steering robot for vehicle dynamics testing. The lightweight Torus motor is attached to the existing steering wheel using adjustable clamps that allow the Torus motor to be centred.

The large hollow centre enables access to the vehicle's standard steering wheel controls. It also enables the airbag to safely deploy through the centre of the wheel without the robot motor becoming detached from the steering wheel.

The Torus motor uses a direct drive continuous rotation brushless motor with low friction bearing. There are no gears or clutches. The vehicle can be driven manually between tests using the integrated steering rim.

The performance envelope of the motor is similar to ABD's conventional SR60 motor and is designed to exceed the specification requirements of NHTSA's roll stability and spinout tests that require a maximum of 60Nm@1200deg/s.



The motor can be reacted by a parallel linkage mechanism and pneumatic strut between floorpan and windscreen as shown in the main photograph, or directly to the windscreen.

Steering torque can be:

- inferred from motor current,
- measured using load cells in the parallel linkage mechanism when the robot is reacted against a pneumatic strut between floor and windscreen
- measured using load cells located in the steering wheel attachment clamps.

The Torus motor is compatible with ABD's Omni and Mono in-vehicle controllers and can be used in conjunction with ABD's brake, accelerator, clutch, and gearchange robots.

Motor performance

SR60-Torus		Conventional SR60	
Maximum torque:	70Nm	Maximum torque:	70Nm at up to 580°/s
Torque knee point:	60Nm at 1500°/s	Max. continuous torque:	60Nm at up to 1000°/s
Max. speed:	2500°/s at up to 30Nm	Max. speed:	2500°/s at up to 24Nm
Motor mass:	9kg	Motor mass:	12.5kg

For more detailed information on this and other related products contact:

Dr Steve Needs
 Director, Suspension test systems
 ANTHONY BEST DYNAMICS
 Holt Road, Bradford on Avon
 Wiltshire, BA15 1AJ, England
 Tel: +44 (0) 1225 860200
 Fax: +44 (0) 1225 860201
 Email: sales@abd.uk.com

ABD has representatives throughout the world.
 For details please refer to our web site:
www.abd.uk.com

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