RAPTOR SCIENTIFIC

KSR 330 Series

Global Provider of Test & Measurement Solutions

Center of Gravity and Moment of Inertia Instruments

KSR Instruments are the most accuate instruments in the world for center of gravity and moment of inertia measurement. They are particularly recommended for determining mass properties of rockets, satellite and ballistic objects.

Measurement Concept

A T-shaped bearing supports a rotary table and acts as a pivot axis for measuring unbalance moments due to the displacement of the test part CG relative to the central axis of the bearing.

Moment of inertia is determined by clamping the lower end of the torsion rod attached to the gas bearing, thus converting the instrument to an inverted torsion pendulum.

- **Best Accuracy Available** – CG measurement to 25 microns and MOI measurement to 0.1%.
- **Largest Payload Range Available** – the same instrument can measure payloads weighing only 4% of the machine capacity.
- **Fully Automated Operation** – select CG or MOI on the computer screen and the entire measurement sequence runs automatically
- **Use of gas bearing** – fully compatible with cleanrooms, no contamination risk, no high pressure, no danger of explosion
- **Enormous stiffness to overturning moment** – remains stable when tall objects with high CG are measured.
- **Fully programmable for metric and imperial units**
- **User defined coordinate system** – CG and MOI are reported directly in the payload coordinate system
- **Calibration hardware traceable to NIST** is provided with all our instruments.
- **Unbalance moment is measured directly.** CG changes can be observed immediately
- **Optional weight platform and CMM device** allow direct acquisition of test part weight and coordinate system into the KSR system

	KSR330-6	KSR330-20	KSR330-60
Payload Capacity	0.25 - 20 lb, 0.1 kg to 9 kg	1 - 40 lb, 0.5 kg to 18 kg	3 - 120 lb, 1.4 kg to 54 kg
Full Scale Moment	6 lb-in, 7 kg-cm	20 lb-in, 23 kg-cm	60 lb-in, 70 kg-cm
Maximum CG Height	20 lb @ 6 in, 9 kg @ 150 mm	40 lb @ 24 in, 18 kg @ 600 mm	120 lb @ 24 in, 54 kg @ 600 mm
Mounting Table Diameter	10 in, 254 mm	10 in, 254 mm	10 in, 254 mm
CG Measurement Accuracy	0.1% + 0.0005 lb-in, 0.006 kg-mm	0.1% + 0.001 lb-in, 0.01 kg-mm	0.1% + 0.003 lb-in, 0.03 kg-mm
MOI Measurement Accuracy	0.1% + 0.03 lb-in², 0.09 kg-cm²	0.1% + 0.03 lb-in², 0.09 kg-cm²	0.1% + 0.03 lb-in², 0.09 kg-cm²
Electrical Power Requirements	115 Vac, 60 Hz or 220 Vac, 50 Hz, single phase		
Pneumatic Requirements	Clean source of dry air or nitrogen, 100 psi, 2 ft³ per minute, 7 bars, 60 litres per minute		
Facility Requirements	Concrete floor, 15 cm thick		

All calibration hardware is included with our instruments.

RAPTOR SCIENTIFIC
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