RAPTOR SCIENTIFIC

KSR 1320-300 Series

Global Provider of Test & Measurement Solutions

Center of Gravity and Moment of Inertia Instruments

KSR 1320 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 spherical 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.

Key Features

- **High Accuracy** – CG measurement to 2.5 microns and MOI measurement to 0.1%.
- **Large Payload Range** – 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.

Maximum Payload Weight	600 kg, 1,320 lb
Recommended Payload Weight Range	22 - 350 kg, 50 - 800 lb
Full Scale Moment	350 kg-cm, 300 lb-in
Maximum CG Height	225 kg @ 915 mm, 500 lb @ 36 in
Mounting Table Diameter	292 mm, 11.5 in
CG Measurement Accuracy	0.1% + 0.23 kg-mm, 0.1% + 0.02 lb-in
MOI Measurement Accuracy	0.1% + 0.6 kg-cm², 01% + 0.2 lb-in²
Electrical Power Requirements	115 Vac, 60 Hz, single phase (other power available)
Pneumatic Requirements	Clean source of dry air or nitrogen, 7 bars, 60 liter/min
Facility Requirements	Concrete floor, 6 in thick, 15 cm thick

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