

# KSR1320-90

## Center of Gravity and Moment of Inertia Measurement Instruments



### Description

KSR1320 instruments are the most accurate 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.

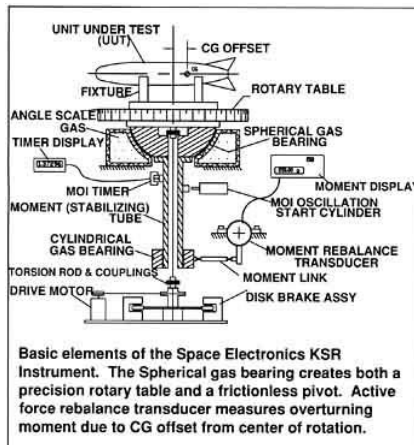
### Measurement Concept

The greatly simplified drawing below illustrates the basic theory of operation.

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.

### General Specifications

Maximum Payload Weight .....	1,320 lb
Recommended Payload Weight Range .....	11 - 440 lb
Full Scale Moment .....	90 lb-in
Maximum CG Height.....	400 lb @ 24 in
Mounting Table Diameter .....	11.5 in
CG measurement accuracy .....	0.1% + 0.01 lb-in
MOI measurement accuracy .....	0.1% + 0.2 lb-in <sup>2</sup>
Electrical power requirements .....	115 VAC, 60 Hz, single phase
Pneumatic requirements .....	Clean source of dry air or nitrogen, 100 psi, 2 CFM
Facility requirements .....	Concrete floor, 6 in thick