

KSR20000

Center of Gravity and Moment of Inertia Measurement Instrument



Description

KSR20000 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 large space flight vehicles and satellites.

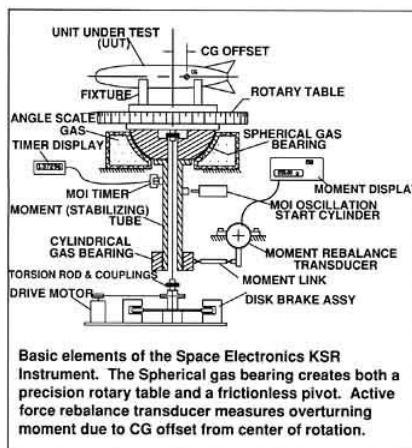
Measurement Concept

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 25 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

Payload Capacity	20,000 lb
Recommended Payload Range	1,000 - 20,000 lb
Full Scale Moment	36,000 lb-in
Maximum CG Height.....	13,000 lb @ 135 in
Mounting Table Diameter	60 in
CG measurement accuracy	0.1% + 8 lb-in
MOI measurement accuracy	0.1% + 70 lb-in ²
Electrical power requirements	115 VAC, 60 Hz or 220 VAC, 50 Hz, single phase
Pneumatic requirements	Clean source of dry air or nitrogen, 7 bars, 60 litres per minute
Facility requirements	Concrete floor, 15 cm thick