KSR330 Series

Center of Gravity and Moment of Inertia Measurement Instrument

Description

KSR330 instruments are the most accurate instruments in the world for center of gravity and moment of inertia measurement.

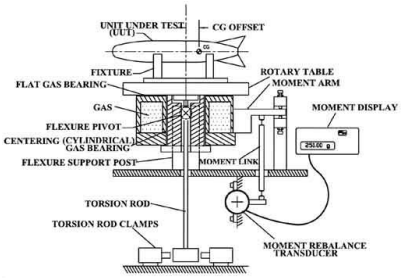
They are particularly recommended for determining mass properties of rockets, satellite and ballistic objects.

Measurement Concept

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

A 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.



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

	KSR330-6	KSR330-20	KSR330-60
Payload Capacity	0.1 kg to 9 kg	0.5 kg to 18 kg	1.4kg to 54 kg
Full Scale Moment	7 kg-cm	23 kg-cm	70 kg-cm
Maximum CG Height	9 kg @ 150 mm	18 kg @ 600 mm	54 kg @ 600 mm
Mounting Table Diameter	254 mm	254 mm	254 mm
CG measurement accuracy	0.1% + 0.006 kg-mm	0.1% + 0.01 kg-mm	0.1% + 0.03 kg-mm
MOI measurement accuracy	0.1% + 0.09 kg-cm^2	0.1% + 0.09 kg-cm^2	0.1% + 0.09 kg-cm^2
Electrical power requirements	115 V_{AC}, 60 Hz or 220 V_{AC}, 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		

All calibration hardware is included with our instruments.

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