

Raptor Scientific makes six types of moment of inertia instruments covering a range of accuracies and price points. The GB Series is designed for the measurement of heavy test parts, and are often used for critical tests on space and military applications.

Five standard sizes are available for test parts weighing up to 12,000 lb. In addition to its use as a design tool, this instrument is fast enough for use in production quality analysis.

Operational interfacing and software to display instructions allow the operator to acquire data from the instrument, and calculate and print a report of results.

These instruments operate on the principle of the inverted torsion pendulum. The test object is supported by a gas bearing, which presents the advantage of minimizing friction and damping of the system. A torsion rod attached to the bearing provides a constant torsional stiffness. A sensing device produces timing pulses that start and stop a digital period counter to determine the period of the oscillating system.



# GB Series Moment of Inertia

Global Provider of Test & Measurement Solutions



## Moment of Inertia Measurement Instruments

### Selecting Instrument Size

There are three factors to consider in the choice of instrument size:

- 1. Maximum Weight of Test Part and Fixture:** There is no limit on the maximum moment of inertia. A practical ratio is to keep the mass of the fixture in the range of 30 to 70% of payload mass
- 2. Tare Moment of Inertia,** which is the inertia of the mobile assembly of the instrument itself. It affects the smallest moment of inertia that can be measured with rated accuracy.
- 3. Maximum Center of Gravity Height of the Test Object:** Because the instrument is not infinitely stiff, a very tall object would make the instrument lean. In that case, a larger instrument than is strictly necessary for payload weight would be required to measure the payload.

### General Specifications

Model	GB150AX	GB550AX	GB3300AX	GB8800AX	GB13000
Payload Weight Capacity (including test part & fixture)	150 lb	550 lb	3,300 lb	8,800 lb	13,000lb
Maximum CG height (payload weight at CG height)	40 lb @ 24"	440 lb @ 24"	2,200lb @ 48"	8,800lb @ 78"	13,000lb @ 88"
Overturning Moment	600 lb - in	800 lb - in	8,000 lb - in	44,000 lb - in	70,000 lb - in
Tare Moment of Inertia	130 lb - in2	220 lb - in2	1,600 lb - in	38,300 lb - in2	64,000 lb - in2
MOI Accuracy (% of reading +lb-in2)	0.1% + 0.03	0.1% + 0.03	0.1% + 0.15	0.1% + 2.5	0.5% + 6