

XKR Series

Moment of Inertia Measurement Instruments



Description

We make six types of moment of inertia instruments covering a range of prices and accuracies. The XKR Series have been designed for use where very high accuracy is required on small and very small parts.

Nine standard models are available for test parts weighing only a few grams up to 18 kg. In addition to its use as a design tool, this instrument is fast enough for use in line for production quality analysis.

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

Technical Advantages

These instruments employ a patented technique which we call the torsion flexure, illustrated on the simplified drawing on the right.

Since the weight of the test part is supported by a torsion rod, negligible damping occurs in the restraint system.

Friction is further reduced by the use of an air bearing that guides the moving assembly.

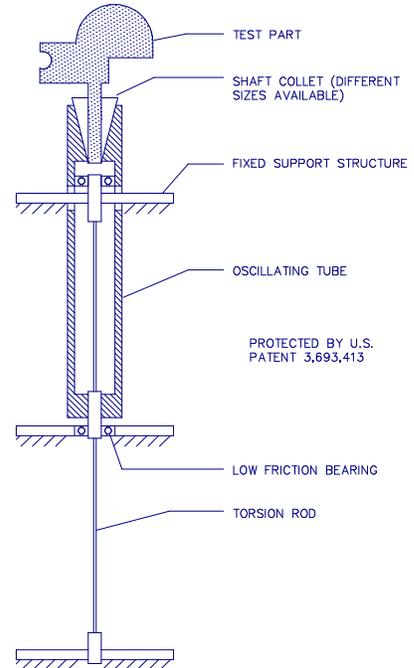
This design results in an inverted torsion pendulum with very low friction and low tare inertia.

The instrument interface is a tapered shaft that accepts a range of parts and test fixtures.

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



maximum moment of inertia.

2. Tare Moment of Inertia, which affects the smallest moment of inertia that can be measured with rated accuracy.

3. Maximum Center of Gravity Height of the Test Object.

Technical Specifications

	XKR02	XKR1	XKR5	XKR40
Payload Weight Capacity (including test part and fixture)	90 g	450 g	2.26 kg	18 kg
Maximum CG height (payload weight at CG height)	90 g @ 5 cm	450 g @ 7.6 cm	2.26 kg @ 10.1 cm	18 kg @ 20.3 cm
Overturning Moment	1.1 kg-cm	4.6 kg-cm	9.2 kg-cm	28 kg-cm
Tare Moment of Inertia	4.7 g-cm ²	22.2 g-cm ²	67.3 g-cm ²	0.52 kg-cm ²
MOI Accuracy (% of reading)	2 versions: 0.1% or 1%	2 versions: 0.1% or 1%	2 versions: 0.01% or 0.1%	3 versions: 0.01%, 0.03% or 0.1%

Note: Calibration hardware is included with all instruments.