

MW904

Tri-Axis Moment Weight Scale



Description

The model MW904 Tri-Axis Moment Weight Scale provides the highest accuracy for multi-axis measurement of blades.

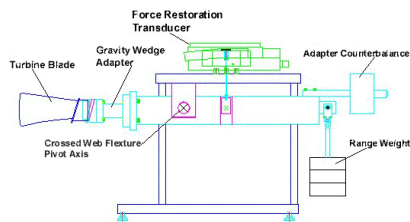
The design of the MW904 scale focuses on measurement speed while maintaining accuracy and repeatability. Radial, tangential and axial moment weights are accurately determined in a matter of seconds.

Basic Concept

Most manufacturers use knife-edge pivots and strain gauge load cells. Knife-edges are prone to wear and geometry changes when bumped or vibrated. Strain gauges have limited dynamic range requiring system using them to use more blade counter weights to measure the

same moment range with usable sensitivity.

In contrast, the Raptor Scientific instrument uses crossed-web flexure pivots and force restoration technology. This innovative approach results in instruments which are several times more accurate than other methods. These scales are more resistant to damage in production environment and less subject to operator variances.



Raptor Scientific Technology

The MW904 holds the blade with its center of gravity close to the scale's two pivot axes. The moment weight scale actually measures the location of the center of gravity of the blade relative to the known reference planes on the blade root. The integrated computer system then translates these center of gravity measurements to the engine axes system to determine the moment weights.

Radius Compensation

A weight scale allows the measured moment weight values to be translated from the MW904 instrument pivots to the engine system. System software automatically converts the instrument-referenced moments to moment weights referenced to the engine system.

Adapters

Raptor Scientific manufactures highly repeatable adapters that improve performance of any moment weight scale. Our patented technology allows the operator to make full use of the scale accuracy. Our adapters are more consistent and easier to use than any other style of adapters.

Blade Distribution Software

Once all the blades in a set are measured, our blade distribution software will determine a mounting pattern that minimizes the overall rotor unbalance as well as distorting forces on the rotor. The unbalance of the hub can be entered and the blades will be distributed to correct for the hub unbalance as well.

General Technical Specifications – MW904

Maximum Weight (including tooling)	50 lb
Range of Blade Moment That Can Be Measured	Unlimited
Accuracy of Internal Unbalance Measurement	0.07 oz-in
Weighing Accuracy	0.018 oz
Measuring Range	140 oz-in
Typical Radial / Axial Moment Measuring Error (including tooling error)	0.5 oz-in
Typical Tangential Moment Measuring Error (including tooling error)	1.5 oz-in

Note: Calibration hardware is provided with all our instruments, traceable to NIST.