Options for GM904 Series

Gimbal Balancing Machines

Gimbal Balance Machines

Gimbal Balance Machines are highly sensitive measuring instruments used to achieve static balance of gimbaled devices such as missile guidance systems and airborne sensors and cameras.

Gimbal balance machines simultaneously measure the CG location for each pivoting assembly of the gimbal.

Drive / Read Software

In order to achieve simultaneous measurement, the gimbal is rotated about its own axes to 4 positions and the change of CG position is detected.

On the basic instrument, rotation of the gimbal is done manually by the operator.

Raptor Scientific offers drive/read interfacing with the gimbal to rotate it to the four measurement positions automatically.

Signals are passed to and from the gimbal via optional flex strips.

Drive/read software is written by Raptor Scientific for each individual gimbal. It can be open loop or closed loop depending on drive and read commands from the gimbal.

On a basic instrument, the operator needs to open the instrument shroud, rotate the gimbal by hand, close the shroud, and press the "continue with measurement" button on the computer screen.

Drive/read interfacing automates this sequence. The gimbal is simply mounted onto the machine and the dome is closed. The controller rotates the gimbal, takes readings, and outputs unbalance results.

In order to develop drive/read software for your gimbal, Raptor Scientific needs detailed control information. Please complete our gimbal information questionnaire in order to get pricing details for your gimbal.

Weight Correction Software

A basic gimbal balance machine outputs the unbalance of a gimbal relative to its own axes.

After the gimbal's unbalance is measured, it is compared to a set tolerance. Unbalances outside the tolerance must be corrected. The operator must define how much weight to add, move or remove from specific balancing locations.

Raptor Scientific provides custom software to examine all combinations of allowed weights and locations and present the best balance solution.

Weight correction software should only be written for a production gimbal with defined ballast locations and defined ranges of weights for each correction location.

Weight correction software typically eliminates the trial-and-error process of balancing. The computer outputs the best balancing correction that will typically reduce the initial unbalance by at least 95%. Balancing a gimbal becomes a one or two-step process, compared to 5 measurements or more with a manual method.

In order to develop weight correction software for your gimbal, Raptor Scientific needs detailed information about ballast locations and weight increments available. Please fill in our gimbal information questionnaire in order to get pricing details for your gimbal.

Custom Fixtures

Gimbals must be mounted on top of the gimbal balancing machine in a certain position. Additional stiffness and weight requirements can be of concern.

Raptor Scientific has decades of experience building gimbal balancing fixtures. Please provide drawings of the outside of your gimbal with attachment points in order to get pricing on a suitable fixture.

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