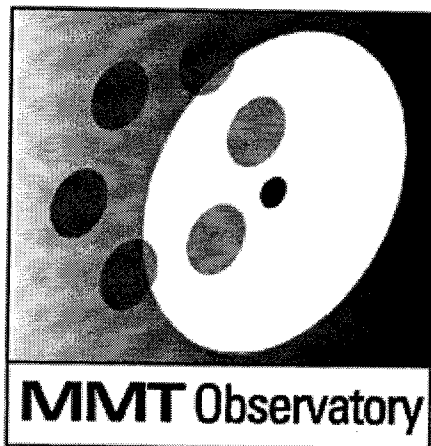


MMTO Conversion Technical Memorandum #98-2



Smithsonian Institution &
The University of Arizona®

The f/9 Hexapod Actuator Acceptance Testing

ADS Italia

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ACTUATORS ACCEPTANCE TESTING IN AMBIENT CONDITION

The linear actuators were subjected to an accuracy performances testing program in ambient conditions.

The following paragraph describes the test equipment used to conduct the tests and the tests results.

2.1 Test Equipment

The test equipment used for performance testing in ambient conditions is composed of:

- mechanical test bench able to support the linear actuator and the measuring system
- VME computer with acquisition and command units
- electronics box (signal conditioners, motor driver etc)
- PC integrating optical measuring system controller, AD converter, serial connection (RS-232) to control the remote VME computer.

The mechanical test bench is composed by the following elements (see figures in the next page):

- An aluminium frame to support the test bench;
- A stainless steel frame supporting the linear actuator and with the corresponding load application system. The fixed part of the actuator is connected to an end column of the support structure through bolts while the movable part of the actuator is connected through bolts to a flange mounted to a preloaded sliding carrier running on a high precision linear guide.
- A high precision measuring system to be used as reference for the actuator position measurements, consisting on a Heindehain optical linear incremental scale type MT101K (100 mm stroke, 0.1 μ m resolution) and the Heidenhain interpolation & digitizing electronics PC plug-in board).

The test bench is designed to conduct the following tests on the actuators:

- i) Lvdv noise test
- ii) Positioning accuracy
- iii) Brake's effects
- iv) Axial stiffness,

The tests can be performed using different load conditions (tension or compression, and load level from 20N to 300N)

The VME computer, based on a Motorola processor, is provided by the University Of Arizona and it contains all the electronics needed to acquire analog and digital signals sent by the actuator and send back the desired position