

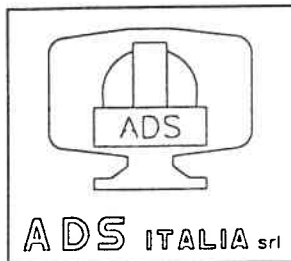
Technical Report #34

**M2/f15 and M2/f9 Hexapod Data Package**

D. Gallieni

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## MMT CONVERSION

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Steward Observatory

**PROGRAMME : MMT CONVERSION  
SECONDARY MIRRORS SUPPORT  
M2/F15 and M2/F9 HEXAPOD**

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## 1. SCOPE OF THE WORK

This document reports the informations related to the M2 Hexapod f9/f15 for the MMT upgrade.

Hexapod electromechanical parts are reported in terms of requirements fulfilment, parts and material list, assembly and workshop drawings, manufacturer's data sheets of commercial components, linear actuators testing in ambient conditions (test procedures and test results), installation and maintenance instructions and handling and transportation instructions for delivery.

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## 2. APPLICABLE DOCUMENTS

- 1.1 W.Gallieni and R. Pozzi, «MMT CONVERSION - SECONDARY MIRRORS SUPPORT - M2/F15 and M2/F9 HEXAPOD DESIGN - TECHNICAL REPORT», Doc: D00001, Issue 3, January 1997;
- 1.2 Assembly drawings: 200505, 200513, 300931 and 300930.



### 3. HEXAPOD DESCRIPTION

The f9/f15 hexapod electromechanical parts include:

- seven (7) linear actuators (six + one spare);
- fixed and mobile platforms;
- six (6) interface supports for actuator joints fixture on the platforms.

The actuator is based by a direct drive configuration with frame-less motor and encoder on the same spindle axis.

The actuator nominal length (zero nominal stroke position) is 330 mm, measured between actuator's joints ledges.

The actuator nominal stroke is  $\pm 10$  mm from the zero position.

The max angular displacements of the flex joints is  $\pm 1,0$  degree.

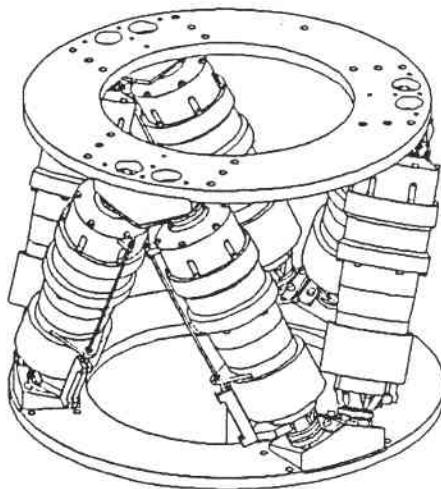
The satellite roller screw is of the re-circulating rollers type.

The motor gives 0,82 Nm continuous stall torque and 4,07 Nm peak torque.

The brake has 1,7 Nm static torque.

The incremental encoder has 3600 counts per revolution resolution, giving  $0,28 \mu\text{m}$  linear resolution on the 1 mm pitch screw.

LVDT linear position sensor gains are reported in the functional test results.



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#### 4. **LINEAR ACTUATORS**

##### 4.1. *Parts and material list*