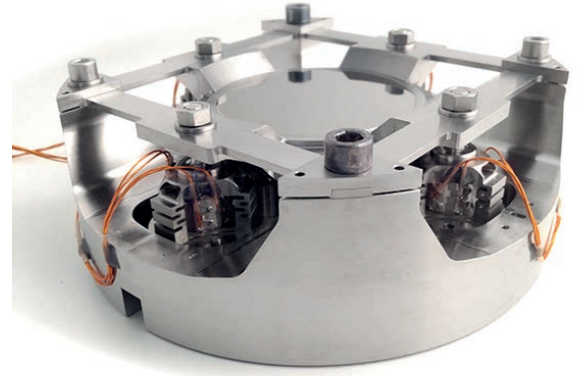


DESCRIPTION

For the ESA EChO mission, the use of a fine steering tip and tilt mechanism ensures the stability of the line of sight for a telescope operating in cryogenic conditions. The main efforts were focused on the management of thermo-mechanical behaviour and performances of the actuator over a wide temperature range. Its capabilities to sustain stresses due to thermal cycles between room and cryogenic temperatures have been demonstrated through the development and test of an Engineering Model.



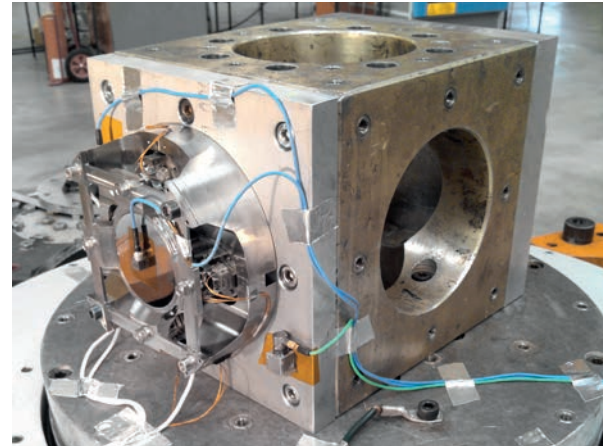
DTT10H cryogenic mechanism

APPLICATION

Space, pointing.

ENVIRONMENTAL CONDITIONS

- Cryogenic stability 30 K
- Non-magnetic mechanism
- Successful life time @30 K: 2.2 M cycles
- Successful vibration tests:
 - Shocks: 700 G
 - Random: 18 Grms



Shocks and vibrations test bench

PARAMETER	UNIT	CRYOGENIC DTT10H FOR ESA CFSM PROJECT
Stroke @300 K +/-	mRad	0.1
Stroke @30 K +/-	mRad	0.03
Dimensions	mm	∅ 145×55
Total mass	g	1650
Mirror mass	g	72
Mirror dimensions	mm	∅ 60×6
Loaded resonance frequency	Hz	3300
Resolution	nrad	0.13
Power consumption	mWatt	2
Piston drift along qualification	µm	<50