

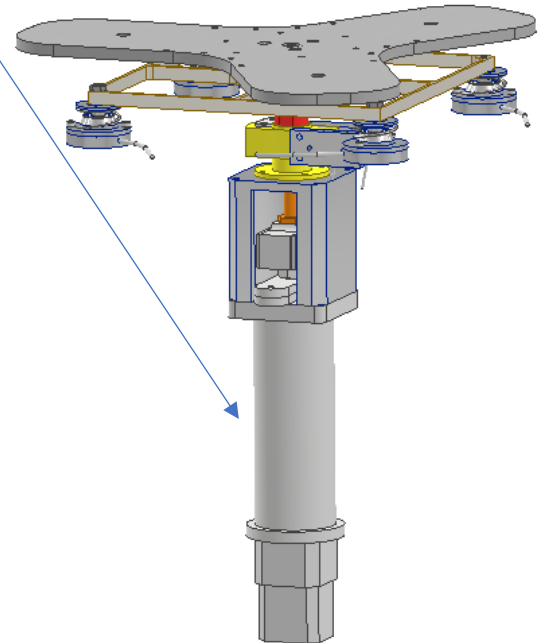
Attachment A

Actuator Mechanism Procurement

Static Support Design: Actuators with Release

- Static Support Actuator Design includes
 - A springy static support
 - A release mechanism
 - A loadcell
 - An actuator mechanism
 - Needs to fit in 5" dia, open bottom hole (10" deep)
- We are only interested in procuring the actuator mechanism in this RFB
- Duty cycle 5 minutes on, 1 hour off
- Electrical
 - 28V baseline, 24V to 34V variance
 - Amperage TBD
 - No need for redundant motor wiring

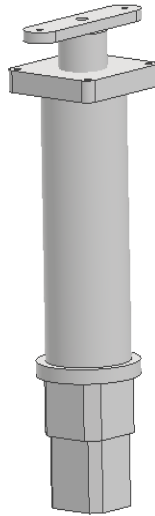
UA's Static Support concept design shown for illustration of one application. The other application is for hardpoint design, not shown.



Actuator Mechanism

- The basic mechanism being ordered consists of
 - A stepper motor
 - A gear reduction
 - A lead screw
- The desired operation is
 - Turn motor on,
 - Go a few whole steps (even though they can be micro stepping),
 - Turn motor off and hold position
- Step size is not critical: a spring and load cell provides feedback

- Reliability is not critical: can tolerate some failures (10% can fail)
- Commercial parts that have successfully passed/ capable of passing, or based on existing heritage in space applications, are desirable
- Actuator mechanisms will be used for both the UA's Static Support and Hardpoint designs



Actuator Mechanism Requirements

Load: Dynamic/ Operational	1125N (253lbs) push and pull
Load: Static/ Holding	1500N (274lbs) push and pull, on device
Load: Bench Testing	1000N push
NEMA Size	17
Vacuum Rated	yes
Actuator Total Travel / Stroke	25 mm
Interface	non-rotating top
Voltage	28V baseline, 24V to 32V DC variable
Step mode	200 full, 1.8 full step angle
Resolution	0.001 mm/step desired, .003 maximum
Gear Ratio	provide micron to 2 micron full steps
Backlash	permitted but not desired: no need for anti-backlash mechanism
Backdrive	not desired: actuators may be off for days at a time

Feedback/ Encoder	none
Lead Screw Type	acme: no need for ball
Operational Temperature	15° to 25°C
Survival Temperature	45°C to -40°C
Duty Cycle	5 minutes on, 1 hour off
Redundant Motor Wiring	not required

Additional Information

- 1st order is for 6 Prototype units: 2 can be air rated, 4 must be vacuum rated
 - Term for the Prototype for 2 air rated units to commence upon release of the Purchase Order and conclude 2 months thereafter, remaining 4 vacuum rated units will conclude 4 months thereafter
- 2nd order is for ~200 Production units*
 - Term for the follow-on Production units will commence upon release of the Purchase Order and conclude 14 months thereafter
- Project has ambitious cost and schedule parameters
- Project is not government/not military, but production units will be subject to ITAR controls

** 2nd order will be a follow-on to the prototype order. The exact quantity and requirements for production units is TBD.*

For this RFB purpose, use same performance requirements as prototype and Qty of 200. Changes in performance or quantity will be communicated in advance of follow-on PO for adjustment as needed.

Deliverables

- Quantity of units as defined on PO
- With 100% of prototype units:
 - Certificate of Conformance (CoC)
 - Non-conformance report (NCR)
 - Quality Control Reports
 - Inspection reports
 - Verification reporting
 - Analysis reports
 - Performance characteristics/ data package: technical, mechanical, constructional as applicable
- Interface Control Drawing (ICD)
- Production unit Quality Control
 - TBD with negotiation based on the results of the prototype