

NATIONAL RADIO ASTRONOMY OBSERVATORY  
Charlottesville, Virginia

August 30, 1989

MEMORANDUM:

TO: Active Surface Group

FROM: J. Payne

SUBJECT: Actuators

We now have a starting point for the surface controlling actuators. The surface will be arranged in rafts of panels; the largest raft contains 12 panels, the smallest 4 panels. When wind loading (60 mph) is considered, each actuator should meet the following rough specifications. These can be refined as we go along.

Number of actuators	1,152
Range of movement	$\pm 1$ cm
Force required	2,000 lbs.
Time for full travel	10 seconds

I've attached a data sheet from a suitable manufacturer. The estimated price for 1,000 actuators would be about \$1,000 each.

My feelings are that each actuator should form part of a closed-loop servo system consisting of a position transducer, an amplifier, and the actuator. Position input commands could be analog or, more likely, digital with each actuator having a unique address. The commands could then be distributed on a fiber optic network (or maybe even over the power lines to the actuators). The actuator/readout package should have built-in travel limits.

So that we don't duplicate efforts, please note that I have written to the manufacturers on the attached list.

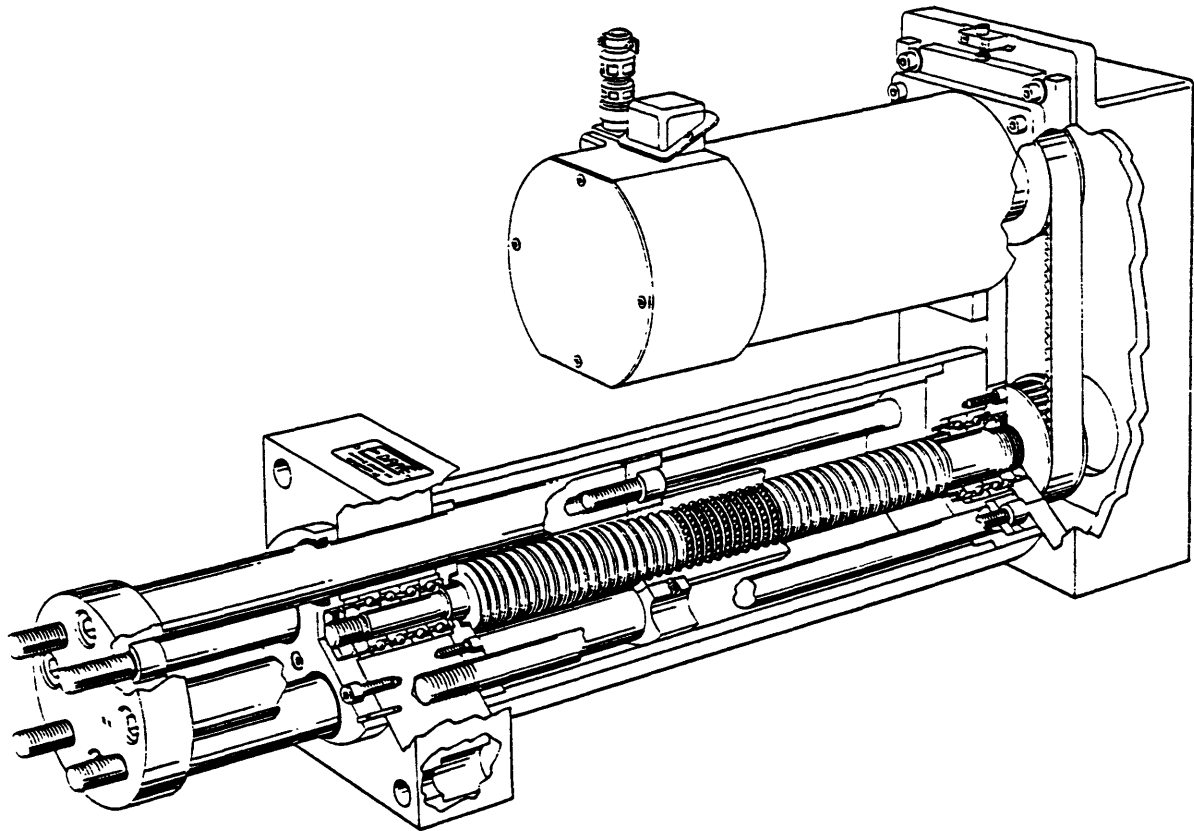
Would everyone please think about the actuator problem so that we can discuss it at our next meeting (Thursday, September 7, 10:00 a.m.).

Distribution: F. Crews  
L. King  
R. Lacasse  
R. Maddalena

cc: M. Balister  
D. Schiebel  
A. R. Thompson  
G. Seielstad



## BALL SCREW LINEAR ACTUATORS



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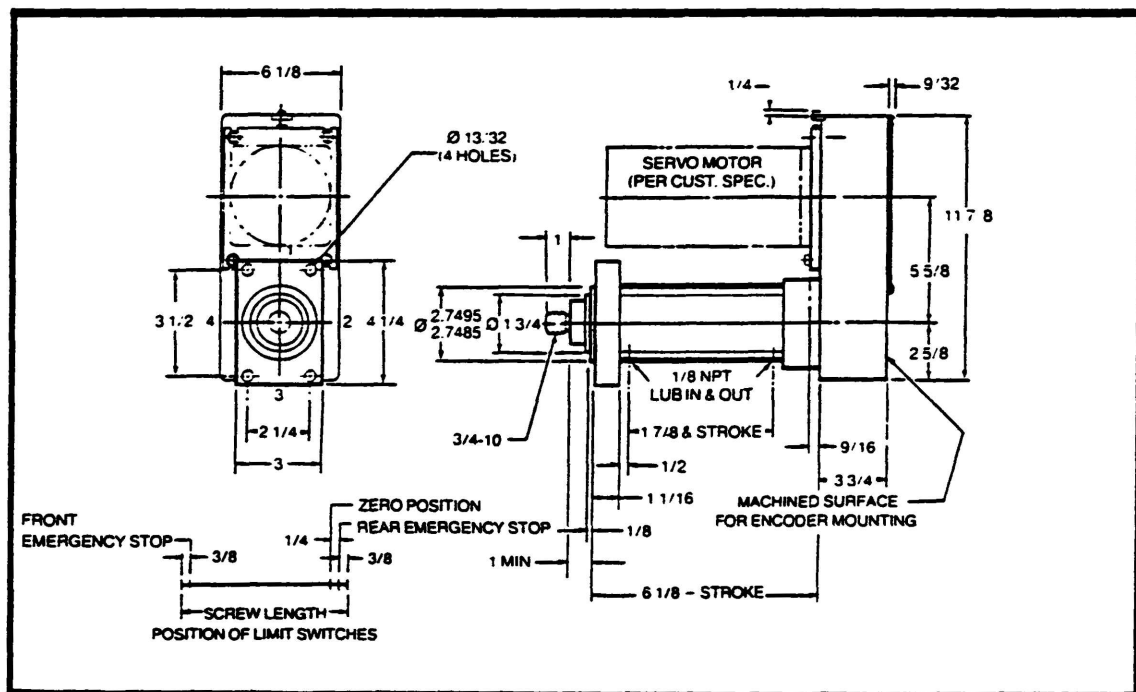
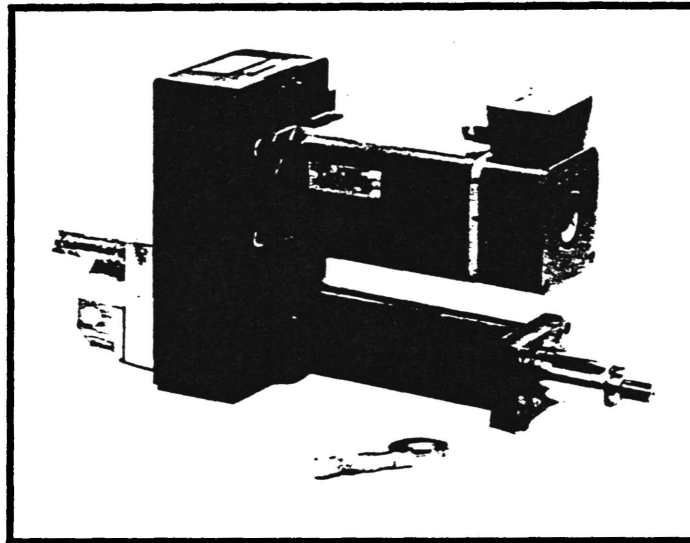
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- Medium spring constant (see chart)
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- Pulleys and gearbelt included



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- Female thread connection available on the piston
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- Special flange configurations (available with standard hydraulic cylinder flanges for "bolt for bolt" interchangeability)
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