

## ELECTROMECHANICAL ACTUATORS



Moog has flight-proven experience with several types of actuation, including Electromechanical (EM), Electrohydraulic (EH) and Electrohydrostatic (EHA). By building upon heritage experience, Moog delivers high quality, reliable solutions to meet our customers' needs.

Moog's family of flight-proven, heritage electromechanical (EM) actuators have provided thrust vector control (TVC) for several applications, such as:

### KEY FEATURES

- Antares
- Delta IV
- Centaur
- Vega



# ELECTROMECHANICAL ACTUATORS

## LINEAR ACTUATORS – PERFORMANCE CHARACTERISTICS



Characteristics

Application	TVC Stage 1	TVC Stage 1	TVC Upper Stage	TVC Stage 1	TVC Upper Stage Redundant	Flight Control Surfaces	TVC Upper Stage
Horsepower (hp)	26.5	20.5	3.4	2.1	0.4	0.94	0.23
Stall Load (lbf)	40,600	21,727	11,800	4,634	3,190	3,000	745
Power Point	5.83 in/sec @ 30,000 lbf	6.78 in/sec @ 20,000 lbf	2.49 in/sec @ 8,892 lbf	20 in/sec @ 4,634 lbf	2.18 in/sec @ 1,100 lbf	3.10 in/sec @ 2,000 lbf	3.0 in/sec @ 500 lbf
Actuator Weight (lbs)	125	57	32	13	18	8	8
Stroke (+/-, Centered) (in)	2.01	1.16	0.85	1.96	0.85	1.35	1.14
Null Length, Centered (in)	20.16	15.24	13.65	15.54	23.25	8.96	9.88
Voltage DC	280	280	140	270	28	150	55

## ROTARY ACTUATORS – PERFORMANCE CHARACTERISTICS



Characteristics

Application	Fin Control	Propellant Valve	Redundant Propellant Valve	Redundant Engine Control Valve	Redundant Engine Control Valve	Triplex Rudder Surface	Triplex Body Flap Surface
Horsepower (hp)	1.6	0.2	0.18	0.002	0.05	2.5	7.5
Stall Torque (in/lbf)	3,000	300	350	–	–	235	255,000
Power Point	2,000 in/lbf @ 300 deg/sec	250 in/lbf @ 300 deg/sec	188 in/lbf @ 360 deg/sec	220 in/lbf @ 3.5 deg/sec	60 in/lbf @ 340 deg/sec	168 in/lbf @ 5,643 deg/sec	127,500 in/lbf @ 22 deg/sec
Actuator Weight (lbs)	12.3	5.1	7.7	17.6	16	35	235
Stroke (+/-, Degree)	50	70	60	3	100	10 revs	22.5 revs
Voltage DC	150	150	28	28	28	270	270



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