

# Rotary Servo Actuator

## TYPICAL APPLICATIONS

- Unmanned air vehicles - tactical, medium long endurance and MALE / HALE vehicles
  - *Control surfaces requiring servo actuation*
- Target drones - surface control, speed brakes
- Utility actuation - throttle control, doors, spoilers
- Helicopter - manned or unmanned
  - *Swash plate or flap control*

## FEATURES

- Non-jamming mechanical stops
- 4 stage spur gear train assembly
- Corrosion protected finish output shaft, 1/2 inch SAE spline, consult factory for custom shafts
- Brushless 4 pole PMDC motor
- High torque capacity in small volume
- Single film position transducer
- Digital telemetry feedback
- Electronic stops limit input command
- Signal interface is digital RS-485 electrical protocol
- Consult factory for other signal interfaces
- Thermal management option available for high altitude application
- Water immersion to 4 meters

## BENEFITS

- Robust structural design
- Mechanical stops
- Low weight to power performance
- Customization available
- Inventory available

## Model 863



The Model 863 rotary servo actuators utilize brushless DC motors as the prime mover within our design. The available motor technology include use of neodymium magnets. The Model 863 servo is used for surface positioning, throttle control and other utility functions on several UAV and aerospace programs. These actuators are designed to operate under extreme environmental conditions and have been chosen to support new development programs, as well as program requirements.

Our Model 863 is one of our most versatile actuator designs primarily due to the ease of integration with several interface technologies. This baseline unit is very well suited for a variety of applications and is not limited to UAV and target programs.

For more information about how this model can be tailored to your specific application, please contact our Business Development and Application Engineering departments.

# MOOG

# Rotary Servo Actuators

## SPECIFICATIONS

### Performance and Environmental Characteristics

Input Voltage / Power	
Operating Range	22 - 32 VDC
Typical Voltage	28 VDC
No Load Current	60 mA
Actuator Interface	
4 wire RS-485, 115.2 kbaud, 8 bits, no parity, 1 stop bit	
Up to 16 addresses thru connector pin strapping	
Position Telemetry	
Digital	12 bit resolution
Performance Data	
Stall Torque	320 lbin
Continuous Holding Torque	150 lbin
No Load Speed	180° / sec
Unpowered Backdrive Torque	Less than 60 ozin
Power Point	210 lbin @ 120° / sec
Mechanical Travel(s)	±51.5, ±1.5°
Mechanical Backlash	Less than 22 arcmin with 7 lbin reversing torque
Electrical Travel(s)	±45, ±0.25°
Stall Current	3.1 amps
Frequency Response	Greater than 10 Hz
Electromechanical Stiffness	150 lbin / °
Command Response Latency	13 msec
Loss of Communication	Return to null position
Weight	1.80 lbs

Environmental	
Designed To MIL-STD-810F	
Operating Temp	-40°C to +70°C
Storage Temp	-54°C to +85°C
Altitude / Temp	0 ft to 65,000 ft MSL / -40°C to 60°C
Vibration	20 - 2000 Hz, 11.5 g's rms, random
Operational Shock	20 G's
Water Immersion	4 meters for 3 hours
Electromagnetic Compliance	
Designed To MIL-STD-461E	
CS101	Power leads 30 Hz to 150 KHz, curve 2
CS114	Bulk cable injection, 10 KHz to 2000 Mhz, curve 5
CS115	Bulk cable injection, impulse excitation
CE102	Power leads, 10 KHz to 10 Mhz
RE102	2 Mhz to 40 Ghz
RS103	Electrical field, 2 Mhz to 18 Ghz, 200 V / m

### Design and Construction

IPC-6012, Class 3  
 J-STD-001B, Class 3  
 IPC-A-610, Class 3

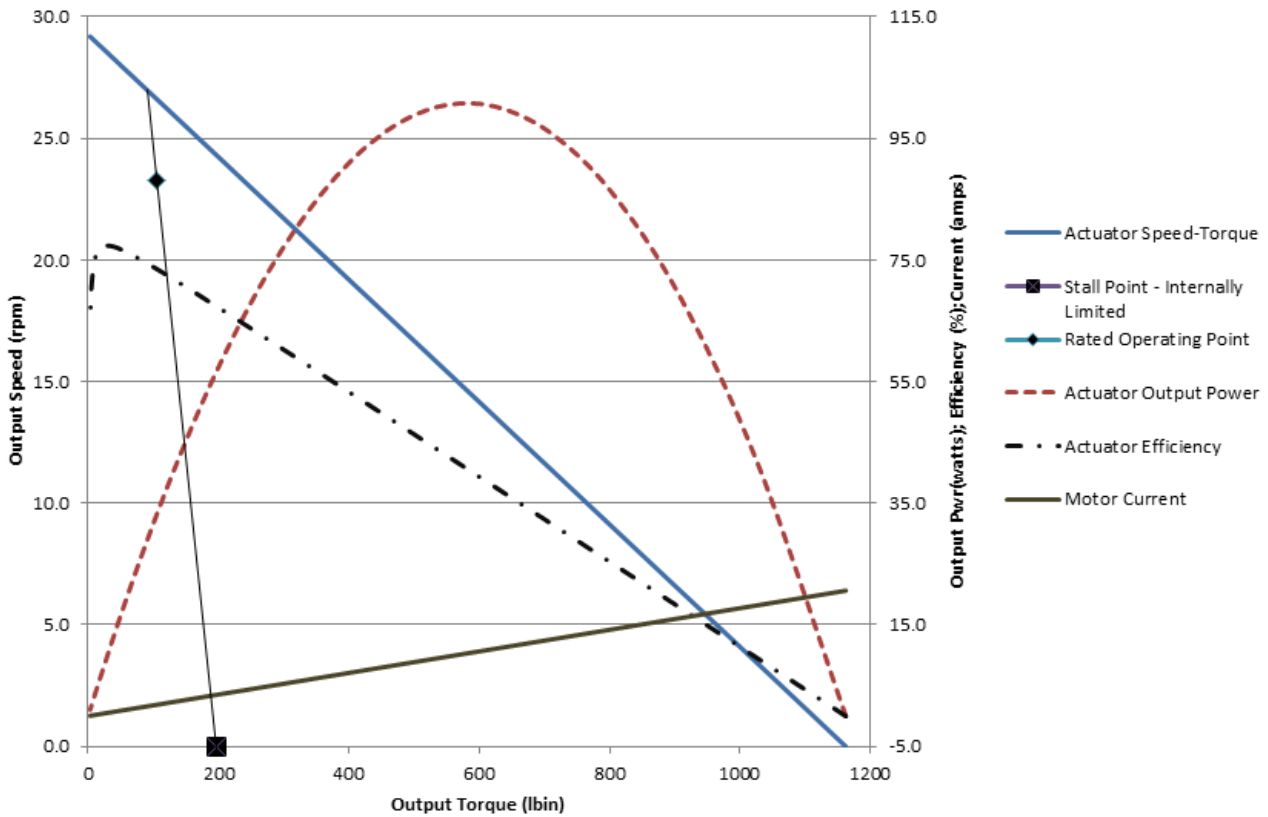
### Connector Pin Assignment RS485 Version

86300000-05

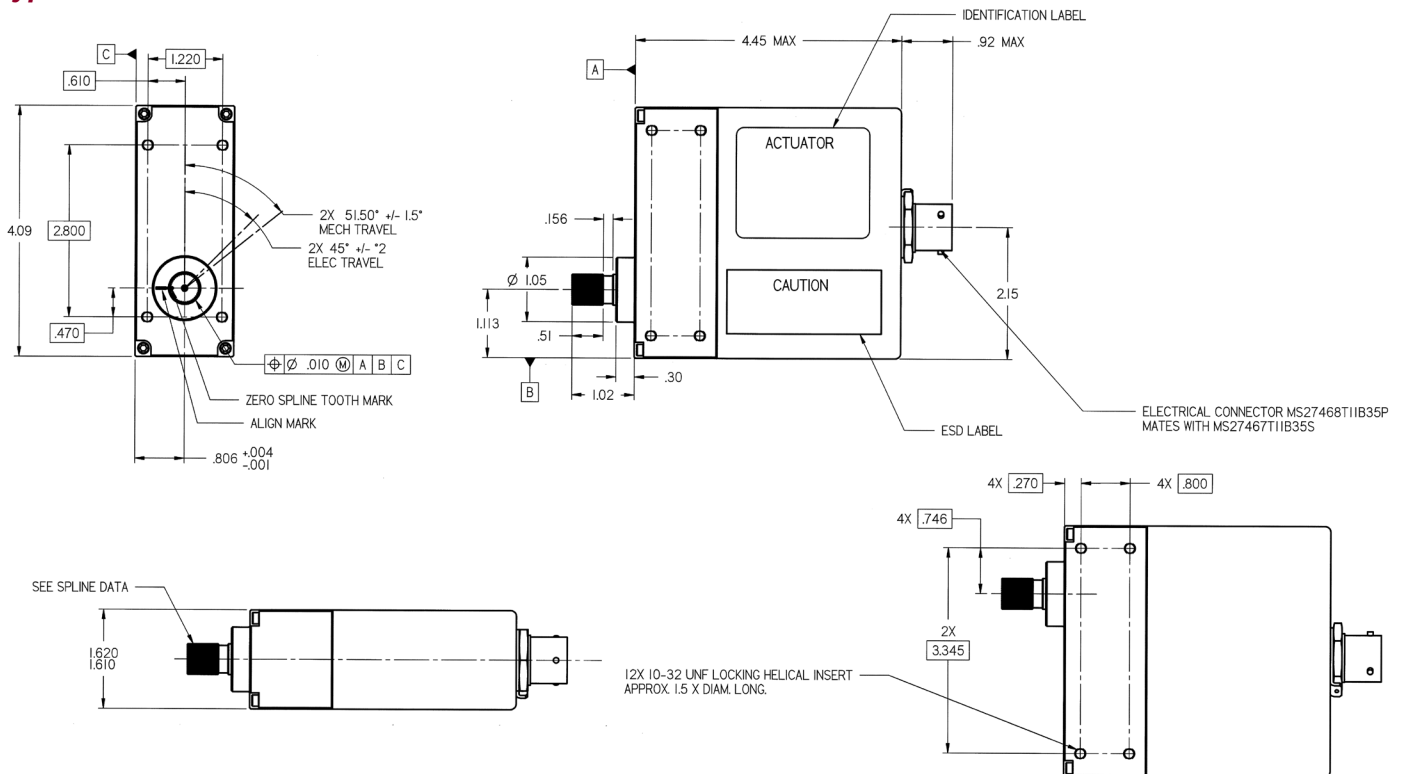
- 1 RS-485 Transmit A
- 2 RS-485 Transmit B
- 3 RS-485 Receive A
- 4 RS-485 Receive B
- 5 Chassis Ground
- 6 +28 VDC Input Power
- 7 +28 VDC Power Return
- 8 RS485 Return
- 9 Unit ID Return
- 10 Unit ID "A"
- 11 Unit ID "B"
- 12 Unit ID "C"
- 13 Unit ID "D"

# Rotary Servo Actuators

## Performance Curves (@ 24 VDC and @ 25°C)



## Typical Outline



Specifications and information are subject to change without prior notice.  
 © 2011 Moog Inc. MS3067, rev. 2 06/18

Dimensions are in inches

**Springfield Operations**  
750 West Sproul Road  
Springfield, PA 19064-4084  
United States

Tel: +1-610-328-4000  
Fax: +1-610-605-6216

**MOOG**

[www.moog.com](http://www.moog.com)

Email: [mcg@moog.com](mailto:mcg@moog.com)