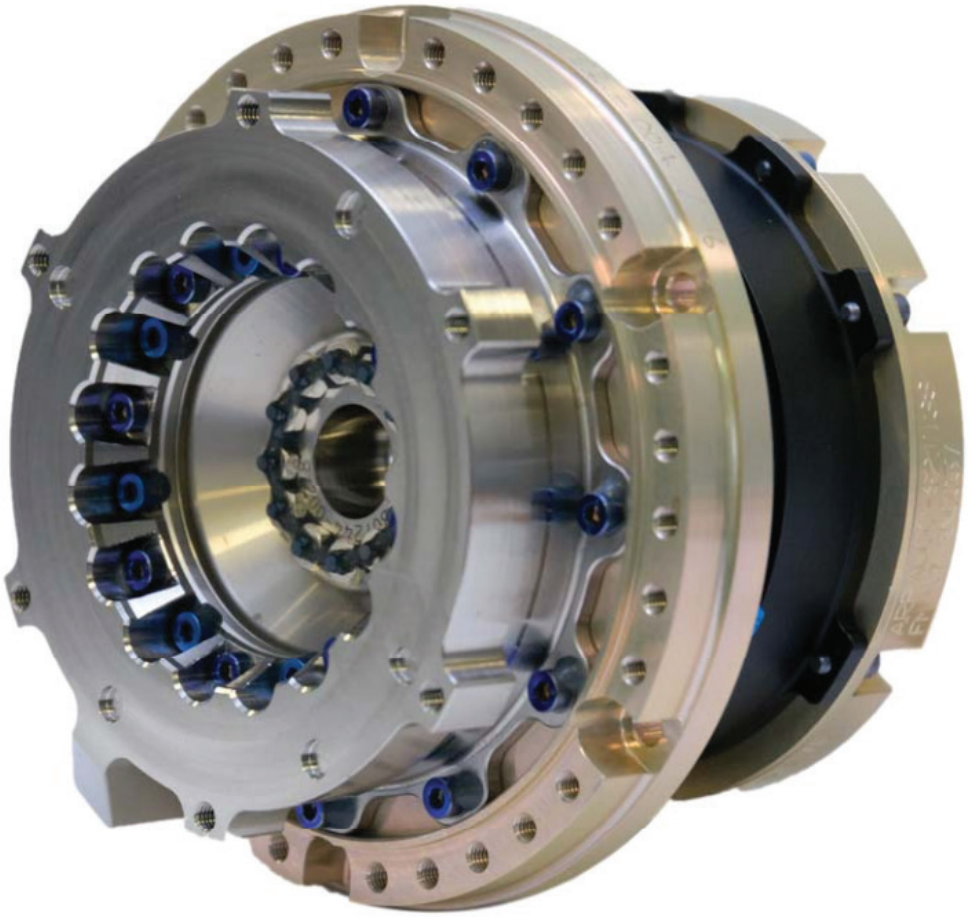
Rotary Actuators

RUAG offers a portfolio of rotary actuators covering a wide range of applications by providing high output torque, high resolution, low mass, high unpowered detent torque, and high external load capability together with long life performance.



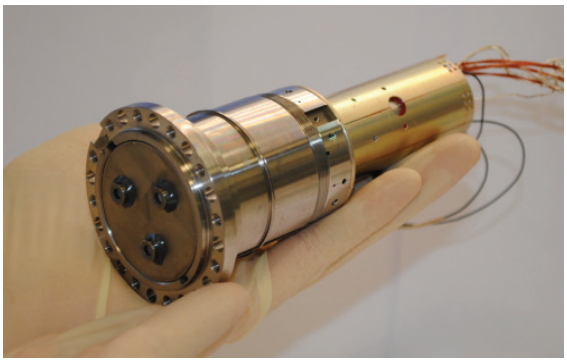
Applications

RUAG Rotary Actuators are used for:

- Antenna Deployment
- Antenna Pointing
- Solar Array Deployment
- Electric Propulsion Pointing

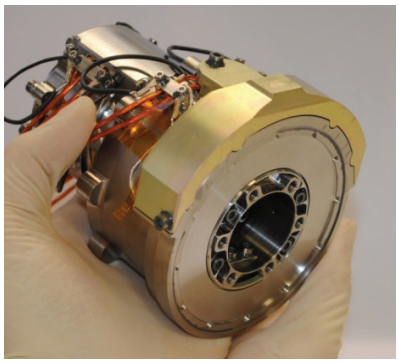
Together ahead. RUAG

SA15



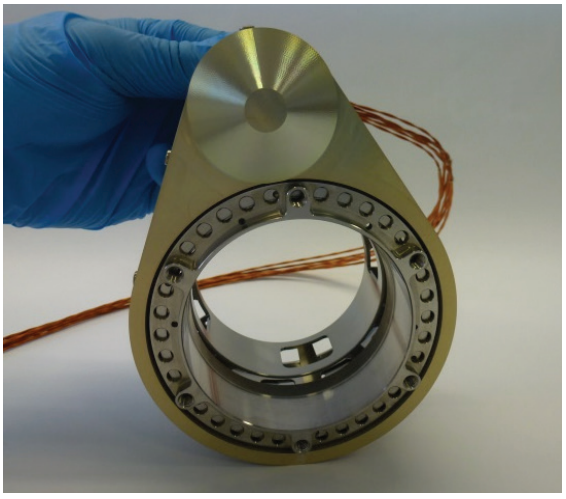
The SA 15 Small Actuator (SA) is designed for pointing applications where high unpowered detent torque and low actuator mass are required. Typical applications are Electric Propulsion Pointing Mechanisms. The SA 15 is qualified to a high quasi-static load capability of 70g and due to its modular concept it can be equipped with specific sensors and is highly configurable to customer demands.

GA15



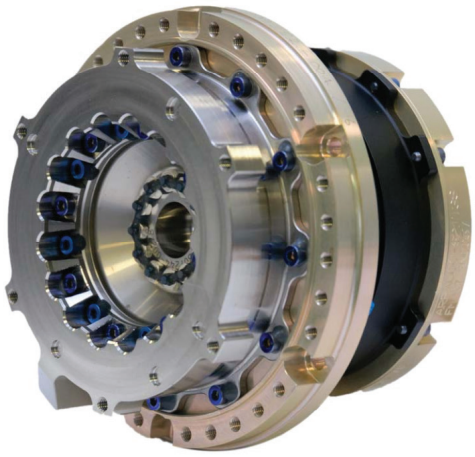
The GA 15 Geared Actuator (GA) is a low mass actuator with high output torque and high unpowered detent torque, maintaining its pointing direction in unpowered condition even under high back driving torques. Typical applications are Electric Propulsion Pointing Mechanisms. The GA 15 is equipped with redundant potentiometers in coarse / fine arrangement as angular sensors, and with Hall effect reference sensors in coarse fine arrangement to attain high reference accuracy.

HS3



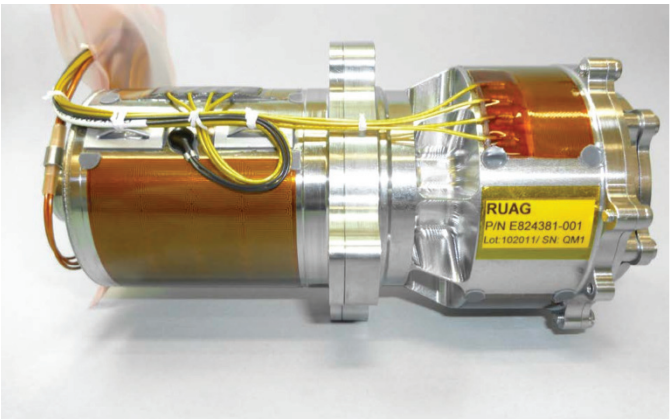
The HS 3 Hollow Shaft (HS) actuator has a through hole size of 72 mm. This actuator is developed for antenna pointing mechanisms. A micro-vibration reduced version of this actuator is available. Due to its modular concept it is highly configurable to customer demands.

SARA 21



The SARA 21 Satellite Antenna Rotary Actuator (SARA) is designed to drive any type of space borne mechanism, while also transmitting a highly accurate position signal to the onboard electronics. It is used to activate a mechanism operating in one or several rotational axes. Typical uses include antenna pointing, solar array deployment and other customized applications. The SARA 21 has significant flight heritage.

SBGM



The Sealed Brush Gear Motor (SBGM) is mainly dedicated as in orbit deployment motion control and actuation mechanism for solar array panels. But the SBGM can also be used for other applications where a robust, simple and space qualified actuator is needed. The SBGM mechanism can be operated in motor and generator (brake) mode. No complex electronic controller is needed.

CSA 10

The CSA 10 actuator is designed for assembly into thruster pointing mechanisms. It has been developed with a focus on robustness, including generous margins of safety and on achieving a small output step size.

NEMO & PG

To satisfy a wide range of customer needs in terms of electrical interface and mechanical characteristics and to allow high performance and low mass mechanism assemblies by optimized motorisation solutions RUAG offers a portfolio of geared high detent torque stepper motors. These motors have clean detent torque, meaning stable high detent torque positions at any full step position and at any half step position, and offer high load capability. Major motor parameters as output torque, step size, phase resistance, number of phases, or the unpowered detent torque are selectable to customer needs.

To provide an optimized drive solution the NEMO motors are combined with planetary gears PG and harmonic drive gears HD of a wide range of available gear ratios.

Technical Data

	SA 15	HS 3	GA 15	SBGM	SARA 21	CSA 10	
Measurable output Torque	23	6.9	61	61	> 40	> 10	[Nm] at ambient temperature
Unpowered back driving torque	8.7	0.5	20	N/A	> 7 < 12	N/A	[Nm] at ambient temperature
Step size	0.00604	0.057255	0.00446	N/A	0.00625	0.0021	[°]
Backlash	0.7	0.5	0.0031	N/A	0	< 0.1	[°]
Phase resistance	68	68 or 150	68	8...11	76 ± 10%	82	[Ω] at ambient temperature
Motor	Stepper Motor	Stepper Motor	Stepper Motor	DC Motor	Stepper Motor	Stepper Motor	
Drive mode	Wave Drive, Full Step or µStep	Wave Drive, Full Step or µStep	Wave Drive, Full Step or µStep	DC Motor	Wave Drive, Full Step or µStep	Wave Drive, Full Step or µStep	
Position Feedback Accuracy	N/A	± 0.3	± 0.02	N/A	± 0.01	± 0.6	[°]
Orbit Life	15	15	15	N/A	15	15	[years]
Qualified Life Profile	- 72 000	47 000 -	- 560 000	240 -	500 125 000	60 000 -	revs pointings
Power consumption	10	6	10	5.2	< 12	< 8	[W] at ambient temperature
Size	Ø58 L =122.1	Ø119 L =90.3 Through hole Ø 72	Ø100 L =120.5	Ø82.2 L=157.6	Ø120 L = 89	Ø132 L = 150	[mm]
Mass	0.69	0.95	1.45	1.7	2.0	2.0	[kg]

Refer to actuator specific datasheets for further information.

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