ROTARY ACTUATOR TEST STAND

RA Series | *Semi-Automatic Functional Test System for Rotary Actuators, Motor Converters & Starters*

OVERVIEW

The Sciemetric Test Stand RA Series Rotary Actuator Test Stand is a turnkey, semi-automatic test system built for aviation MRO facilities that overhaul and repair electrical rotary actuators, motor converters, and starters across a wide range of OEM part families. The system mechanically drives the unit under test through a precision driveline while acquiring torque, speed, current, and position data in real time — automatically evaluating trace signatures against CMM acceptance criteria to render a pass/fail result.

Each stand is built around a common architecture — taper-clamping drive hub, interchangeable part-specific adapter tooling, and a Sciemetric sigPOD data acquisition core — so MRO shops can qualify new part families over time without replacing capital equipment.

Standard Configurations:

STS-RA-1-xx	Single Drive, select up to 30 or 75 HP version
STS-RA-1-xxx	Single Drive, select up to 100 or 150 HP version
STS-RA-2-xx-xxx	Dual Drive, select combination 30 or 75 HP and 100 or 150 HP

Custom single and dual drive configuration available – Contact Sciemetric to scope a system for your application.

KEY FEATURES

- Sciemetric sigPOD 2204 data acquisition with 1608 expansion module — captures torque, current, speed, and encoder position for full trace-signature analysis
- Taper clamping hub with part-specific adapter drive tooling for fast changeover between actuator families
- Single and Dual In-line torque transducer configurations with LEM current sensors for load and power monitoring
- Siemens SIMOTICS S-1FK2 servo drives and motors for precise, repeatable CW/CCW speed and torque control
- Siemens S7-1500 PLC platform with 17″ industrial HMI for guided operator workflow and automated pass/fail judgment
- Euchner safety gate interlock, driveline scatter guard, and PILZ safety relay — engineered to industry-standard machine safety practice
- Modular driveline (flex-disc misalignment couplings, spindle/bearing block, interchangeable gearbox) supports multiple speed/torque ranges on one platform
- Vertical riser with gradient position tagging for repeatable part alignment across varying actuator geometries

TYPICAL APPLICATIONS

The STS-RA-2-30-100 platform has been configured to test rotary actuators, motor converters, and starter assemblies including:

COMPONENT TYPE	EXAMPLE OEM / PLATFORM	REFERENCE ATA
Horizontal Stabilizer / Rotary Actuators	Goodrich (Boeing)	22-11-01
Trailing Edge Flap Alternate Actuator	Eaton (Boeing), Teleflex (Boeing)	27-40-10, 27-52-06
Windshield Wiper Motor Converter	UTAS / Collins (Boeing)	30-40-14
Motor Converter	Safran (Boeing, Airbus)	30-45-51
Cargo Door Latch Actuator	Eaton (Boeing)	52-34-03
Starters	Honeywell / Hamilton Sundstrand (Multiple)	49-20-xx, 49-40-01, 49-41-xx

Additional part families can be qualified on the standard platform through part-specific adapter tooling — contact Sciemetric to review your component list.

TEST CAPABILITIES

- Direction / rotation verification (CW, CCW, off-state lockout)
- Low-speed and high-speed operation testing with phase current monitoring
- Output speed & torque verification at specified load points
- Stall torque testing, CW and CCW, low and high speed
- Clutch slip / mechanical overload clutch testing
- Decoupling time and breakaway torque testing
- Back driving drag torque testing
- Automated pass/fail judgment via sigPOD trace-signature analysis against CMM limits

SYSTEM SPECIFICATIONS (STS-RA-2-30-100 Configuration)

Overall Footprint	Approx. 94″ L x 75″ W x 86″ H (configuration dependent on number of drives)
Power Requirements	575/480V-50/60Hz-3PH, (200A@480V)
Testing Output	AC Voltage: 115V-400Hz-3 PH for UUT DC Voltage: up to 30V with up to 800A power supply
Drive System	Siemens SIMOTICS S-1FK2 servo motor and drive (single and dual drive configurations)
Control Platform	Siemens SIMATIC S7-1500 PLC with 17″ industrial HMI
Data Acquisition	Sciemetric sigPOD 2204 with 1608 expansion module
Torque Measurement	Dual In-line torque transducer configuration: 1,000 N·m (8,850 in-lbs) and 50 N·m (443 in-lbs)
Current Sensing	LEM current sensors
Safety System	Euchner gate interlock, PILZ safety relay, driveline scatter guard, hinged access guard with key-locked gate switch
Control Enclosures	Lower cabinet 30″W x 20″D x 73″H; Upper cabinet 30″W x 10″D x 25″H
Part Interface	Taper clamping hub with interchangeable, part-specific adapter drive tooling and mounting plates
Compliance	UL/CSA-approved controls; commissioned per applicable regional electrical inspection requirements
Warranty	1-year standard warranty on parts and workmanship

Configurations, dimensions, and included components are adapted to each customer's part families and facility requirements – Contact Sciemetric to scope a system for your application.