



Keeping the World Flowing for Future Generations

Rotork's SI range of self-contained electro-hydraulic actuators combine the simplicity of electrical operation with the precision of hydraulic control and the reliability of mechanical spring-return or accumulator fail-safe action.

With Rotork's continuous development and improvement policies of meeting new applications and varying customer needs, Rotork has introduced the next generation of SI actuators. The SI range of self-contained electro-hydraulic valve actuators includes a full range of quarter-turn and linear units. The SI quarter-turn actuators are available from 65 to 600,000 Nm (48 to 442,500 lbf.ft). The SI linear actuators are available from 1.5 to 3,850 kN (340 to 865,500 lbf).

With over 30 years' experience of manufacturing electro-hydraulic actuators, Rotork's SI range has been specifically designed to meet today's control and safety needs for both two-position and positioning control applications. The actuators are offered with a wide range of operating speeds, Emergency Shutdown (ESD) inputs, Partial Stroke Testing (PST), analogue, HART® and fieldbus communication capabilities to comply with all control configurations.

The SI range has been designed primarily for fail-safe applications where functional safety is paramount. They can be supplied as either fail-close or open on loss of ESD signal and, when selected, on loss of power supply. The actuators are suitable for use in Safety Instrumented Systems (SIS), certified to IEC 61508:2010.

The SI can be supplied to stayput on loss of power supply. Independent limit switches and position feedback are provided along with selectable status and alarm indication, with volt free relay outputs offered as standard.

- › Fail-safe closed or open on loss of ESD signal and / or loss of power supply
- › Stayput on loss of power supply (option)
- › Only requires an electrical power supply for operation (1-phase, 3-phase or 24 VDC)
- › Hazardous area certified Ex d IIB/IIC T4
- › Watertight up to IP66/68 (control module), IP66/67 (complete assembly)
- › Data logger – capable of storing up to 3,000 events



Skilmatic SI Range

Spring-return and double-acting self-contained electro-hydraulic actuators

- › Operating temperatures: -50 to +70 °C
- › Non-intrusive setting – no cover removal required using secure *Bluetooth*® wireless connection
- › Advanced dual-stacked display presents valve and process data for asset management and data analysis
- › Partial Stroke Test (PST) based on time and position with pressure (torque) logged
- › PST initiated via the Rotork *Bluetooth*® Setting Tool *Pro*, hardwired or remotely through network cards
- › PST results displayed on the screen with the last 25 recorded in the data logger
- › Configurable status and alarms with optional outputs
- › 4-20 mA positioning control resolution to <0.25%
- › Increased functionality over networks including *Pakscan*™, *Profibus*®, *Foundation Fieldbus*®, *Modbus*®, *DeviceNet*® and *HART*®

SI Quarter-Turn Actuators

The standard range of Skilmatic SI quarter-turn actuators offer a unique and reliable solution for electric fail-safe actuation on all quarter-turn valve and damper applications.

The SI2 (low pressure) and SI3 (high pressure) are compact and robust spring-return actuators designed for all types of ball, butterfly, plug valves and dampers. They consist of a self-contained electro-hydraulic control module with a spring-return scotch yoke drive. The actuators are available as either fail-safe clockwise or anti-clockwise. They can also be configured to stayput on loss of power supply.

The actuators are specifically designed for safety critical applications and accept various inputs signals as standard, including ESD and PST. Optional fieldbus communication can be provided for control and remote monitoring; this can also be used in conjunction with a hardwired ESD input to maintain the safety integrity of the system when used on ESD applications.

SI actuators are certified to IEC 61508:2010 for SIS with a Systematic Capability SC-3 and suitable for use in SIL 2 & SIL 3 system.

The actuators can also accept an analogue input signal to accurately position a control valve with a resolution < 0.25% providing also a 4-20 mA output of valve position.

The standard range consists of two product sizes.

SI2



Torque 65 to 4,000 Nm
(48 to 2,950 lbf.in)

SI3



Torque 2,000 to 36,000 Nm
(1,475 to 26,550 lbf.ft)



Model	Torque Nm (lbf.ft)		Operating Time (sec)			
			Hydraulic Direction		Spring Direction	
	From	To	From	To	From	To
SI2	65 (48)	4,000 (2,950)	5	120	1.5	300
SI3	2,000 (1,475)	36,000 (26,550)	15	400	0.5	700

See product specification data sheet for full details.

SI Quarter-Turn Actuators

SI4 Spring-Return with Optional Accumulator



SI4 Double-Acting with Optional Accumulator



The Skilmatic SI4 quarter-turn actuators offer the flexibility of customisation to suit specific applications and process conditions. The high pressure actuators are self-contained and can operate either a spring-return or double-acting scotch yoke drive. This eliminates the high installation and maintenance costs associated with conventional electro-hydraulic systems which utilise central hydraulic power units.

Accumulators can be offered on the SI4 range to provide multiple back-up strokes on loss of power supply, along with increasing the hydraulic stroke speed on spring-return actuators and providing an alternative to spring-return on double-acting actuators.

SI4 spring-return actuators are certified to IEC 61508:2010 for SIS with a Systematic Capability SC-3 and suitable for use in SIL 2 & SIL 3 systems.

Model	Torque Nm (lbf.ft)		Operating Time (sec)			
			Hydraulic Direction		Spring Direction	
	From	To	From	To	From	To
SI4 (SR)	2,000 (1,475)	200,000 (147,500)	5	400	0.5	700
SI4 (DA)	2,000 (1,475)	600,000 (442,500)	5	400	N/A	N/A

See product specification data sheet for full details.

SI Linear Actuators

The Skilmatic SI linear actuator range provides a reliable solution for electric fail-safe and modulating control when a direct linear movement is required.

The range consists of the SI2 and SI3 for standard spring-return to extend or retract and the SI4 for customised applications for both spring-return and double-acting execution. Accumulators can also be offered with the SI4 to provide an alternative to spring-return or increase the hydraulic stroke speed. Accumulators can also be used to provide multiple strokes on loss of power supply.

Specifically designed for safety critical applications, these actuators accept various inputs signals as standard, including ESD and PST.

Optional fieldbus communication can be provided for remote monitoring and control and can be used in conjunction with a hardwired ESD input to maintain the safety integrity of the system when used on ESD applications.

The actuators can also accept an analogue input signal to accurately position a control valve with a resolution of < 0.25% providing also a 4-20 mA output of valve position.

SI Linear spring-return actuators are certified to IEC 61508:2010 for SIS with a Systematic Capability SC-3 and are suitable for use in SIL 2 & SIL 3 systems.



Model	Thrust kN (lbf)		Operating Speed mm/sec (in/sec)		Operating Stroke mm (in)	
	From	To	From	To	From	To
SI2	1.5 (340)	30 (6,750)	40 (1.57)	0.5 (0.02)	65 (2.56)	105 (4.13)
SI3	10 (2,250)	235 (52,830)	80 (3.15)	1.0 (0.04)	65 (2.56)	320 (12.6)
SI4 (SR)	25 (5,600)	400 (90,000)	80 (3.15)	1.0 (0.04)	Customer Specified	
SI4 (DA)	10 (2,250)	3,850 (865,550)	300 (11.81)	0.5 (0.02)		

See product specification data sheet for full details.

For higher thrust output details, please contact Rotork directly.

A full listing of the Rotork sales and service network is available on our website.

www.rotork.com

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