Fluid Power Actuators and Control Systems

Rotork Fluid Systems

Rotork Fluid Systems has manufacturing facilities in Italy, Germany, Sweden, the UK and the USA, providing the capacity to produce a high volume of products, ensuring that you deliver your projects on time.

Rotork Fluid Systems delivers the following product ranges:

- Pneumatic rotary and linear valve actuators
- Hydraulic rotary and linear valve actuators
- Electro-hydraulic valve actuators
- Subsea valve actuators
- Vane-type pneumatic valve actuators
- Smart valve monitoring systems (SVM)
- Control systems

Centres of Excellence

Rotork Fluid Systems maintains a network of Centres of Excellence strategically located around the world. These centres hold stock, provide application engineering and packaging of control components as well as providing sales, service, installation and commissioning support.

Design and Testing

Rotork Fluid Systems has dedicated research and development facilities around the world combined with test facilities that include bespoke specialist testing systems, ensuring reliable operation and lifetime functionality of our products.

Our test systems incorporate the following features:

- Static continuous and dynamic analysis on a full range of torques throughout the complete stroke of the actuator
- Cyclic and repetitive tests, with variable parameters such as load, cycle times and temperature
- Automatic or manual setting and recording of pressure, position and temperature parameters
- Hydraulic filtration and flushing capabilities
- Torque testing up to 600,000 Nm (5,000,000 lbf.in)
- Thrust testing up to 10,000 kgf (22,046 lbf)
- Pneumatic pressures up to 120 bar (1,740 psi)
- Hydraulic pressures up to 360 bar (5,220 psi)
**Fluid Power Actuators**

### GT/RCR ranges

**Rack and pinion actuators**
- Double-acting and spring-return pneumatic actuators
- Extruded aluminium body with cast aluminium end caps
- Corrosion resistant cylinders and nickel-plated pinion
- Mechanical interfaces to ISO 5211, EN 15714-3-4, NAMUR VDI / VDE 3845
- Torque output to 2.4 to 15,300 Nm (135,400 lbf.in)
- Supply pressures 2 to 10 bar
- Actuators certified to ATEX 94/9/EC
- Certified suitable for use at SIL3 as a single device (IEC 61508)

*See PUB014-004 for further details.*

### CP range

**Scotch yoke actuators**
- Pneumatic actuators in double-acting and spring-return configurations
- Corrosion resistant cylinders
- Actuators certified to ATEX 94/9/EC
- Actuators certified in accordance with PED 97/23/EC
- Torque output to 4,500 Nm (38,000 lbf.in)
- Certified suitable for use at SIL3 as a single device in accordance with IEC 61508

*See PUB013-001 for further details.*

### RC200 RCI200 ranges

**Compact scotch yoke actuators**
- Extremely compact scotch yoke pneumatic actuator
- Double-acting and spring-return configurations
- Contained spring module for safety and convenience
- Torque output to 4,400 Nm (38,000 lbf.in)
- Valve mounting dimensions per ISO 5211/DIN 3337
- Certified suitable for use at SIL3 as a single device (IEC 61508)
- Actuators certified in accordance with PED 97/23/EC
- Actuators certified to ATEX 94/9/EC

*See PUB014-001 (RC200) and PUB014-002 (RCI200) for further details.*

### GP/ GH ranges

**Heavy-duty scotch yoke actuators**
- Pneumatic and hydraulic actuators in double-acting and spring-return configurations
- Corrosion resistant cylinders
- Actuators certified to ATEX 94/9/EC
- Actuators certified in accordance with PED 97/23/EC
- Torque output to 600,000 Nm (5,000,000 lbf.in)
- Certified suitable for use at SIL3 as a single device (IEC 61508)

*See PUB011-001 (GP/GH) for further details.*
Fluid Power Actuators

CQ range

Compact quarter-turn self-contained actuators

The CQ self-contained actuator is a fully concentric design based on a helical mechanism, transforming the linear motion of the piston into a quarter-turn rotation of the valve stem.

- Weatherproof housing suitable for harsh environments
- Applications: SIL3, functional integrity, safety, limited space
- Pneumatic and hydraulic, single- and double-acting
- Torques up to 150,000 Nm (higher upon request)
- Stroke adjustment 90° ±5°
- Std. temp. range -30 to 100 °C (-22 to 212 ºF)
- Low temp. range available down to -60 °C
- Certified to IP66M/IP68, PED, ATEX, IECEx, EAC

See PUB119-001 for further details.

LP/LH ranges

Linear actuators

- Pneumatic and hydraulic actuators in double-acting and spring-return configurations
- Electroless nickel-plated cylinders, chromium-plated piston rods
- Hammer blow and standard valve stem coupling designs available
- Thrust up to 5,000,000 N (1,124,000 lbf)

See PUB020-001 for further details.

RH range

Heavy-duty rack and pinion actuators

- Double-acting and spring-return configurations
- Heavy-duty hydraulic actuators with cast iron bodies and torque output to 3,400 Nm (30,000 lbf.in)
- Electroless nickel-plated cylinders for corrosion resistance
- Valve mounting dimensions per ISO 5211 DIN 3337
- Actuators certified to in accordance with PED 97/23/EC
- Certified suitable for use in SIL3 as a single device in accordance with IEC 61508

See PUB019-004 for further details.

RHQ range

Extreme-duty rack and pinion actuators

- Hydraulic, double-acting actuators
- Balanced, compact design
- Totally enclosed weatherproof housing to IP68
- Electroless nickel-plated cylinders with redundant piston seals
- Precision machined rack and pinion mechanism with zero backlash
- Female input shaft allows direct mounting to valve topworks
- Torque output to 5,650,000 Nm (50,000,000 lbf.in)
- Supply pressures to 207 bar (3,000 psi)

See PUB019-009 for further details.
**Fluid Power Actuators**

**GO range**

**Gas over oil actuators**
- Low- or high-pressure control logic options
- Hydraulic manual override standard
- Speed control in both directions standard
- PED or ASME approved gas / oil and power gas storage tanks
- Actuators certified to ATEX 94/9/EC
- Actuators certified in accordance with PED 97/23/EC
- Torque output to 600,000 Nm (5,000,000 lbf.in)

See PUB017-001 for further details.

**HPG range**

**Direct high-pressure gas actuators**
- Hydraulic manual override standard
- Speed control in both directions standard
- Actuators certified to ATEX 94/9/EC
- Actuators certified in accordance with PED 97/23/EC
- Torque output to 600,000 Nm (5,000,000 lbf.in)

See PUB016-001 for further details.

**ELB**

**Pipeline pressure monitoring system**
Rotork’s ELB, the electronic linebreak detection system is designed to continuously monitor pipeline pressure and provide automatic valve actuator movement to an emergency position.
- Comprehensive data logging with real-time clock
- Configuration and data retrieval via Rotork Bluetooth® Setting Tool or PC (using Rotork’s Insight2 software)
- Configurable fail position to close, open, stay put
- Optional manual reset requirement
- Local controls for open, close, local / remote / stop
- Remote control via either hard-wired connections or Modbus® serial communication protocol

See PUB127-001 for further details.
Fluid Power Actuators

K-TORK range

Vane actuators
- Pneumatic actuators in double-acting and spring-return configurations
- Compact no-sideload, constant-torque design with output to 18,300 Nm (155,000 lbf.in)
- Certified to IP66M/IP67M and meets NEMA 4/4X
- CE marked and certified in accordance with ATEX 94/9/EC
- Complies with ANSI/AWWA C540-02 and C541-08
- Conforms to VDI/VDE 3485 control accessory mounting standards
- Modulating accuracy of 0.25% or better
- Capable of millions of operations at fast cycle times
See PUB097-001 for further details.

Damper drives
- Direct 'drop-in place' design matches existing damper drive take-out dimensions
- Rotary and linear versions available
- Torque output up to 28,201 Nm (250,000 lbf.in)
- High-speed operation as quick as 3-5 seconds full scale
- High temperature options up to 149 ºC (300 ºF)
- Highly accurate and responsive
- Designed for safety and serviceability in harsh environments
- Infinite duty cycle
- Control options: Profibus, HART and Foundation Fieldbus bus control. Pneumatic, analogue and digital positioners
See PUB000-062 for further details.

Self-contained Hydraulics

Self-contained fail-safe actuators
- Manually energised, spring-return fail-safe operation
- Cost-effective solution for infrequently operated valves and dampers
- Watertight or explosionproof construction
- Highly configurable with a multitude of options
See PUB134-001 for further details.

Twin Power range

Mechanical fluid power stepping actuators
- Pneumatic or hydraulic versions available
- Torque output to 800 Nm (7,080 lbf.in)
- Modular system for flexibility
- Robust design can be supplied suitably trimmed for various severe or hazardous environments
See PUB025-002 for further details.
The Skilmatic SI³ range of intelligent self-contained electro-hydraulic actuators designed to meet today’s control and safety needs for both two position and positioning control applications. Featuring a large display for position, pressure, diagnostics and status indication and utilising Bluetooth® for configuration, setting and downloading actuator data.

- Electrical powered, 1-phase, 3-phase or 24 VDC
- Fail-safe to close, open or lock in last position
- Spring-return or double-acting
- Linear thrusts: 1.7 to 5,500 kN (382 to 1,236,000 lbf)
  ¼ turn torques: 65 to 500,000 Nm (575 to 4,425,000 lbf.in)
- Adjustable operating speeds with stepping facility and optional internal flow control valves
- Configurable Partial Stroke Testing (PST)

See PUB025-003 for further details.

**SKILMATIC SB RANGE**

Electro-hydraulic actuators

The Skilmatic SB range of intelligent self-contained electro-hydraulic actuators designed to meet today’s control and safety needs for both two position and positioning control applications. Featuring a large display for position, pressure, diagnostics and status indication and utilising Bluetooth® for configuration, setting and downloading actuator data.

- Self-contained electrically operated with internal low-pressure electro-hydraulic control module
- Spring-return for fail safe open or close
- Dual redundant hydraulic oscillating pumps
- Single or dual fail safe solenoids
- 1-phase 115 or 230 VAC power supply
- Two-position control with torque / pump protection
- Watertight and explosionproof
- Double-sealed control module with separate terminal and cable gland compartments
- Adjustable electro-mechanical volt-free limit switches

See PUB021-020 for further details.

**ACS RANGE**

Control and choke valve actuators

The ACS range of modulating actuators are a cost effective solution for the positioning of control and choke valves.

- Extended opening and closing operating speeds with all optional features associated with the double-acting, single-acting and quarter-turn options
- Remote switching to activate / deactivate stepping function
- Reliable operation reduces cost of ownership
- Compact design reduces installation cost
- Lower cost of maintenance

See PUB025-003 for further details.
Fluid Power Actuators and Control Systems

**Hiller range**

Fluid power nuclear applications

The Hiller range encompasses rotary and linear pneumatic and hydraulic actuators in double-acting and spring-return configurations. The range also includes specialised linear hydro-pneumatic actuators designed to deliver very precise speed control.

Quality assurance for these products conforms to 10 CFR 50 APP B, 10 CFR 21, ANSI N45.2 and has been audited by both NUPIC and NIAC. Environmental and seismic qualifications comprise IEEE 323, 344 and 382.

Hiller products are supported with a stock of more than 10,000 spare parts for safety related service.

See publication PUB068-001 for further details.

**Control systems**

Control component packages are a part of any actuator / valve installation. Rotork has extensive experience in the design and assembly of all types of fluid power control systems to satisfy any customer requirement for on / off, modulating or ESD (emergency shutdown) service. Packages can be mounted on a panel or in a cabinet and mounted either on the actuator or at a remote location.

Rotork offers components from all leading industry suppliers as well as those of our own design including limit switch housings, quick exhaust valves, pneumatic and hydraulic manifolds, filter regulators, shuttle valves, linebreak safety systems, partial stroke testing and a torque limiting device.

**HPU range**

Hydraulic power units

- Hydraulic fluid capacity from 19 to 7,570 litres (5 to 2,000 U.S. gal)
- Operating pressures up to 345 bar (5,000 psi)
- Flow rates up to 3,785 lpm (1,000 U.S. gpm)
- Electrical classifications: NEMA 4, 4x, 7 or comparable CSA or ATEX ratings
- Custom engineered solutions to meet the specific demands of each application
- Sole source responsibility for the complete operating system including field survey, design, fabrication, test, installation and start-up
- Best-in-class documentation and service manuals

See PUB062-001 for further details.

**Fluid power nuclear applications**

- Hydraulic fluid capacity from 19 to 7,570 litres (5 to 2,000 U.S. gal)
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- Best-in-class documentation and service manuals

See PUB062-001 for further details.
**Fluid Power Actuators and Control Systems**

### Subsea range

The subsea product range encompasses actuator and gearbox designs for retrievable and non-retrievable applications. We are familiar with supplying subsea product to meet the harsh conditions and stringent demands of subsea applications.

- Hydraulic quarter-turn and linear subsea actuators in double-acting and spring-return configurations
- Subsea and splashzone trims
- Retrievable and non-retrievable designs
- Multitude of design options available
- Installed base dating back to 1992 at depths up to 2,500 m
- Smart Valve Monitor (SVM) partial stroke testing compatible

See PUB022-001 for further details.

### SVM range

- Compatible with fluid power actuators and valves for on / off service
- Safe and hazardous area versions available
- Comprehensive and versatile partial stroke testing – tests all final elements
- Data logging of valve performance for diagnostics and preventative maintenance
- Suitable for use at any SIL rating
- Can interface with DCS / ESD common system
- Improves SIL verification performance of final elements

See PUB026-001 and PUB026-002 for further details.

### Masso range

**Valve Remote Control System (VRCS)**

With more than 80 years of experience in specialist design, fabrication and installation of actuators and VRCS, the Masso range provides safety critical hydraulic and electro-hydraulic solutions for the marine and offshore industry.

CRCS – The Masso range hydraulic VRCS combines traditional hydraulic systems with advanced communication technologies.

ADCS – The Masso range electro-hydraulic system provides a flexible control solution, while bringing several advantages to shipyards and ship-owners worldwide.

Both systems are compatible with most Integrated Automation Systems (IAS).

See PUB121-001 for further details.