

rotork®

Fluid Systems

Established Leaders in Valve Actuation

Capabilities & Facilities



Worldwide Manufacturing Facilities
International Service and Support
Innovative Design and Technology
Industry Leading Reliability

Publication F001E Issue 01/10

Capabilities and Facilities

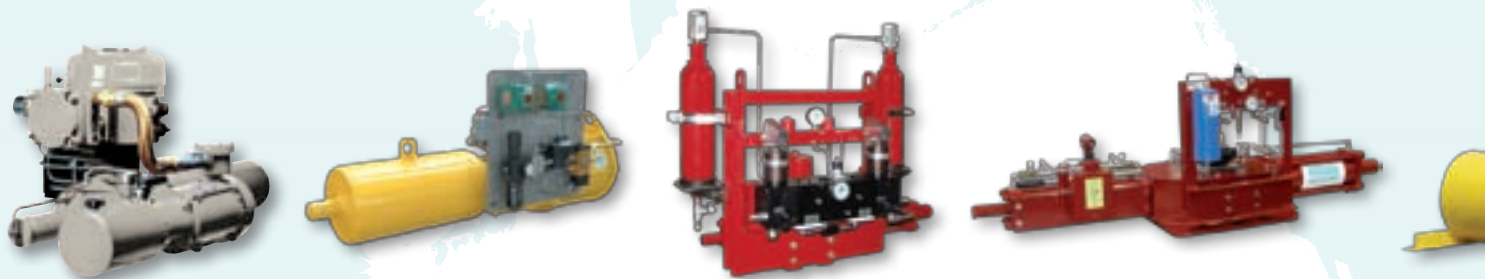
Rotork is a global leader in valve actuation technology. We provide a comprehensive range of valve actuators, controls and associated equipment, as well as a variety of valve actuator services including commissioning, preventive maintenance and retrofit solutions. Rotork Fluid Systems specialises in the production and support of fluid power actuators and control systems. We are dedicated to providing the marketplace with the latest technology, consistently high quality, innovative design, excellent reliability and superior performance.

Rotork Fluid Systems maintains dedicated engineering groups for Applications, Product Improvement and New Product Development so that our customers can gain all the benefits that ever advancing technologies have to offer and to ensure our efforts are in step with the continually evolving needs of our customers.

Most importantly, we have a long-standing commitment to meeting the special needs of a wide range of applications including: oil and gas exploration and transportation; municipal water and wastewater treatment; power generation; and the chemical and process industries.

With over fifty years of engineering and manufacturing expertise, we have tens of thousands of successful valve actuator installations throughout the world.

rotork[®]
Fluid Systems

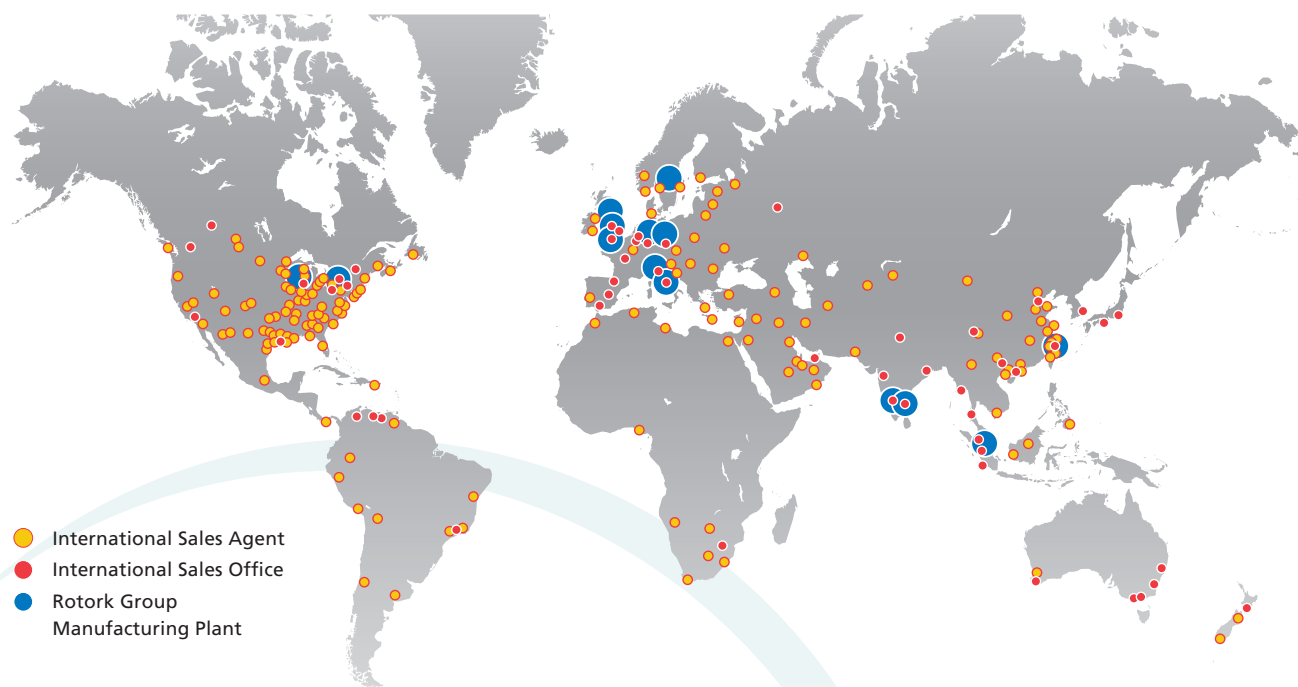


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Manufacturing Facilities – Worldwide Capacity



Rotork Fluid Systems maintain manufacturing facilities in Melle, Germany; Lucca, Italy; Falun, Sweden and Rochester, NY USA.

In addition to these manufacturing facilities, we maintain 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.

A vast network of Rotork international sales offices and agents provides even greater global coverage and ensures quick and effective response to customer requirements.



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Rochester, New York USA 5,600 metres² - 61,000 feet²



Lucca, Italy 11,000 metres² - 118,400 feet²



Melle, Germany 7,500 metres² - 80,000 feet²



Falun, Sweden 4,000 metres² - 43,000 feet²



Centres of Excellence – Knowledge and Experience

Rotork Fluid Systems' *Centres of Excellence* are stocking centres that serve as hubs in a global support network from which our staff provides support from quote, to contract, to installation and commissioning, to after sale service and support. They are fluid power actuation specialists able to provide solutions to virtually any application requirement.

Worldwide Locations

- Australia – Melbourne
- Canada – Calgary
- Singapore
- Spain – Bilbao
- United Kingdom – Leeds
- United States – Houston, Texas
- United States – Petaluma, California
- United States – North Kingstown, Rhode Island

Centre of Excellence Services

- Sales and contractual support.
- Application engineering.
- Consulting.
- Mounting of control components.
- Mounting of actuators on valves.
- Preventative maintenance.
- Actuator/controls service and repair.
- Retrofit.
- Installation, commissioning and on-site service (offshore qualified).
- Torque and thrust testing.
- Hydraulic flushing and NAS6 capabilities.
- Delta P testing of valve packages from 1"-24"; class 150-1500. Higher pressures and sizes can be accommodated.

All capabilities may not be available from every Centre of Excellence.



Test Facilities – Quality and Safety

Rotork Fluid Systems is committed to providing our customers with robust and dependable products that meet or exceed their expectations. To that end, we have engineered custom test systems to ensure proper operation and functionality of our products as well as assist in our research and product development endeavors.

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.
- Hydrostatic testing.
- Hydraulic filtration and flushing capabilities.
- Torque testing up to 350,000 Nm (3.1M lbf-in).
- Thrust testing up to 10,000 kg (22,046 lbf).
- Pneumatic pressures up to 120 bar (1,740 psi).
- Hydraulic pressures up to 360 bar (5,220 psi).

Our test systems include provision for a temperature controlled and monitored environment. The facilities are equipped with pneumatic, hydraulic and electrical connections.

Operation

A fixed scotch yoke actuator on one side of the test fixture serves as a load device. The actuator under test is mounted on the other side of the fixture and is connected to the load actuator via a torque shaft. The torque shaft incorporates strain gauges for data collection. A hydraulic control system connected to the load actuator facilitates control of load actuator dynamics.

Data acquisition software is used to acquire, store, and present measurement data from strain gauges, strain gauge based transducers, thermocouples, temperature sensors and other commonly used transducers.



Quality Assurance

Rotork Fluid Systems is committed to providing internal and external customers with products and services that meet or exceed their expectations. To facilitate these objectives a documented Quality Management system has been established in accordance with ISO9001-2000. This quality management system embraces every aspect of the companies business and involves all personnel.

Rotork Fluid Systems is committed to:

- Effectively communicating the importance of meeting customer needs throughout our organisation.
- Establishing appropriate levels of competency for all personnel.
- Providing products that comply with all statutory and regulatory requirements.
- Actively promoting our quality policy and helping personnel understand and implement the relevant aspects of the policy in their day-to-day responsibilities.

We are also committed to maintaining compliance with our Quality Management System and to continually working to improve it's effectiveness. Quality objectives with measurable outputs are established for relevant functions within the organisation. These are reviewed and monitored for effectiveness at Management Review Meetings and form the basis for implementing improvement measures. Our Quality Policy, Quality Manual and procedural documents are periodically reviewed for adequacy and effectiveness. Copies are available to interested parties upon request.

Product Range

Rotork offers the world's most extensive line of fluid power actuators. Products include pneumatic, hydraulic, and electro-hydraulic actuators. Scotch yoke, linear and rack & pinion designs are available, in both double-acting and spring-return configurations.

Scotch Yoke Actuators

GP (pneumatic) and GH (hydraulic) range scotch yoke actuators are designed to provide a rotary, quarter-turn movement for either on/off or modulating duty. The rugged yet compact design is available with two different yoke designs. The classic symmetric yoke delivers peak torque at both ends of stroke. Alternatively, they can be supplied with canted torque arms designed to deliver peak torque at only one end of stroke. Use of canted arms can often reduce actuator size, weight and cost for valves with appropriate torque demand characteristics.

Products



GP and GH range actuators share a modular construction. The centre body is available in ten sizes producing output torque up to 600,000 Nm (5.3 million lbf-in). (Publication F100).

P and H range actuators are very similar to their GP and GH cousins. The most significant difference being that the centre body is cast ductile iron rather than fabricated steel. (Publication F101).



CP range pneumatic actuators are a versatile, modular, scotch yoke design available in both double-acting and spring-return configurations. The compact and efficient design yields high torques even at low pressures. The design concepts found in Rotork's large, heavy-duty actuators has been applied to the CP range, which brings heavy-duty actuator qualities to small, quarter-turn actuators.

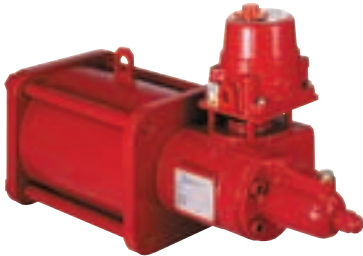
The actuator body is of rugged, ductile cast iron available in four body sizes. Cylinders are manufactured from carbon steel, electroless nickel-plated. (Publication F200).



The RC 200 range is an extremely compact pneumatic actuator. Its scotch yoke design is particularly suited for valves with high start or end torque requirements. The aluminium body is available in both double-acting and spring-return configurations with output torque up to 4,400 Nm (38,700 lbf-in). It has adjustable travel stops in both directions and an optional manual override is available. (Publication F211).

Rack and Pinion Actuators

Rack and pinion actuators often offer the most economical solution for quarter-turn valves that have a fairly constant torque requirement throughout the stroke.



RH (hydraulic) actuators are available in five body sizes to produce torque output up to 3,400 Nm (30,000 lbf-in) at operating pressures up to 250 bar (3,600 psi). They are available in either double-acting or spring-return configurations. (Publication F402).



R range pneumatic actuators are manufactured in eleven different body sizes providing up to 4,200 Nm (36,600 lbf-in) of torque at a maximum operating pressure of 8 bar (116 psi) and are available in both double-acting and spring-return configurations. They provide 90° of rotation with a constant torque output throughout the stroke. (Publication F401i).

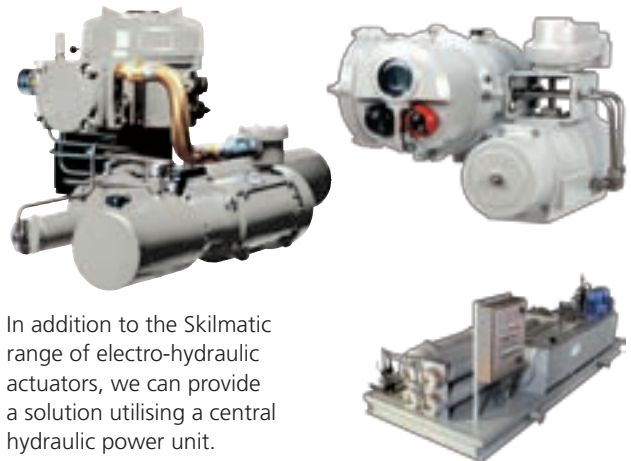
Gas-over-Oil Actuators

The GO range of pipeline actuators are designed to use pipeline gas as the motive power source. They utilise our robust scotch yoke mechanism field proven the world over in all types of fluid power applications. Motive force is generated by using pipeline gas to pressurise hydraulic oil. Control configurations are available to meet virtually any operation requirements. (Publication F301).



Electro-Hydraulic Actuators

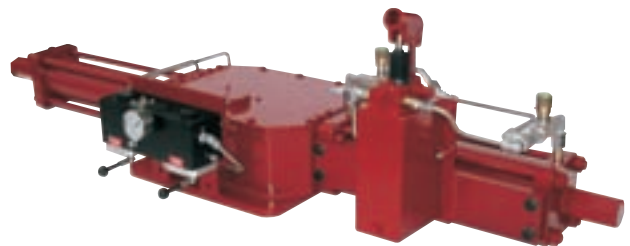
The Skilmatic range is a self-contained electro-hydraulic valve actuation solution available for both quarter-turn and linear applications. The actuators incorporate sophisticated electronics that provide non-intrusive set-up and interrogation via an infra-red hand held remote. They are suitable for on/off, modulating and emergency shutdown duties in applications up to SIL 3. Skilmatic actuators are compatible with all major digital communication systems including Rotork's own Pakscan. (Publication F700).



In addition to the Skilmatic range of electro-hydraulic actuators, we can provide a solution utilising a central hydraulic power unit.

High-Pressure Gas Actuators

The HPG range of pipeline actuators are designed to use pipeline gas as the motive power source. They utilise our robust scotch yoke mechanism field proven the world over in all types of fluid power applications.



Manual override is a standard feature of the range. Our design incorporates a separate cylinder for hydraulic override to ensure complete separation of highpressure pipeline gas from the hydraulic fluid. The use of an independent override cylinder allows replacement of power cylinder seals without removal of the actuator from the valve and will even allow for manual operation while the power cylinder is disassembled. Control configurations are available to meet virtually any operation requirements. (Publication F300).

Products

Linear Actuators

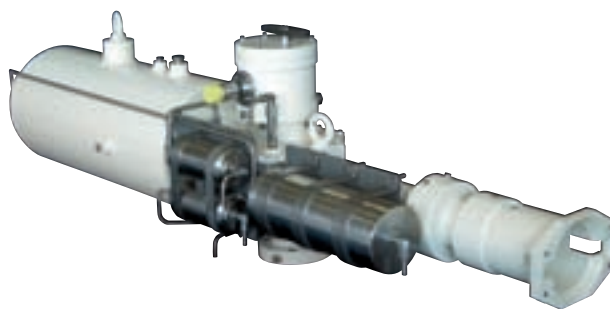
Rotork linear actuators offer the advantages of compact size, high performance and a simple but highly reliable design, and are ideal for operating on/off and control functions of both globe and wedge gate valves. Both spring-return and double-acting configurations are available with either pneumatic or hydraulic cylinders. Rotork Fluid Systems' *Centres of Excellence* will guide you in properly determining and meeting your linear actuator needs. (Publication F501).

In addition, we are able to supply low-pressure pneumatic linear actuators with hardware configured to suit the full range of industrial applications.



Subsea Actuators

The subsea product range encompasses actuator and gearbox designs for retrievable and non-retrievable applications. With an actuator installed base dating back to 1992 operating at depths ranging from 30m to 2000m, we are familiar with supplying subsea product to meet the harsh conditions and stringent demands of subsea applications. (Publication F800).



Control Systems

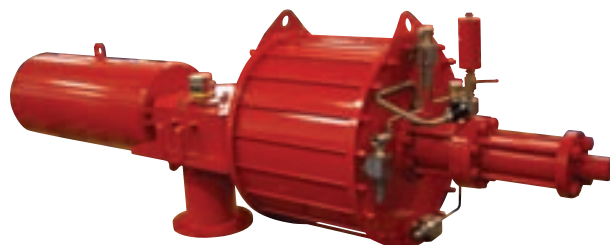
Control component packages are a part of any actuator/valve installation. Rotork has extensive experience in the design and assembly of all types of fluid power control systems to satisfy any customer requirement for on/off, modulating or ESD (emergency shut down) service. Packages can be mounted on 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, shuttle valves, linebreak safety systems and a torque limiting device.



Fast Acting Actuators

When very fast operating times are required (for example on steam turbine protection service), Rotork Fluid Systems can supply special actuators capable of performing the emergency operation within 0.1 sec.



SVM Smart Valve Monitor

The SVM is a sophisticated partial stroke testing system for both pneumatic and hydraulically actuated on/off valves. Although primarily used on shutdown valves, the system has also been utilised in blow-down, subsea, HIPPS and process shutdown applications. There are design variants for both hazardous and safe area installation. (Publications F902, F903).



Fire Resistant Actuators

Rotork Fluid Systems actuators and control systems can be customized to withstand exposure both to fire and very high environmental temperatures.

Developed and tested for use with several actuator models, a range of proprietary fire-proof systems is available. (Publication S310).

Solutions for Nuclear Power

Rotork Fluid Systems supplies "special build" actuators for the nuclear power industry designed and manufactured to meet the stringent requirements of IEEE323-1974, IEEE344-1975 and IEEE382-1985.

Twin Power Multi-turn Actuator

The Twin Power is a robust multi-turn actuator suitable for use with rising stem or rising wheel valves. Its modular design is available in both pneumatic and hydraulic powered variants and provides output torque up to 800 Nm. (Publication F904).



PHW Power Handwheel

The PHW is a versatile valve operator designed to work with both quarter-turn with gearbox combinations and rising stem linear designs. It operates either as a manual handwheel or hydraulically via an external power unit connected to the quick-connect fittings provided – one for each direction of travel. It is an excellent solution for seldom used or remotely located valves where automated actuation is not practical but faster valve operation is sometimes required than can be accomplished with a strictly manual handwheel. (Publication F900).



DH Hydraulic Damper

The DH range of quarter-turn hydraulic vane dampers are engineered to provide a simple, reliable solution to inherent problems often seen in swing check valve applications: namely down line surges from rapid disc reseating and excessive valve wear due to the disc flutter produced at some flow rates.

The rugged design features a self-contained hydraulic system that incorporates an easily adjusted valve for simple yet precise throttling control in both directions.

This closed loop hydraulic circuit protects the valve from potential valve contamination. (Publication F901).





Controls

Electric Actuators and Control Systems

Fluid Systems

Fluid Power Actuators and Control Systems

Gears

Gearboxes and Gear Operators

Site Services

Projects, Services and Retrofit

Latest product information and a full listing of our worldwide sales and service network is available on our website.

www.rotork.com

All Rotork Fluid Systems actuators are manufactured under a third party accredited ISO9001:2000 quality assurance programme.

Published and produced by Rotork Fluid Systems.

Rotork recognises all registered trademarks. As we are continually developing our products, their design is subject to change without notice.

POWTG0110