

**rotork<sup>®</sup>**

## Product Portfolio



**Established Leaders in Actuation Technology**

# Contents



Section	Page
<b>Actuators</b>	
Rotork Controls actuators	7
Rotork Fluid Systems actuators	10
Rotork Process Controls actuators	14
<b>Gearbox &amp; Valve Kits</b>	
Gear operators and gearboxes	16
Valve adaption kits	18
<b>Communications Systems</b>	
Pakscan	19
Profibus	21
Foundation Fieldbus	21
Modbus	21
DeviceNet	21
HART	21
<b>Site Services</b>	
Rotork Site Services	22



Rotork is the global market leader in valve actuation products, with a fifty-year track record serving the oil and gas, power, water and waste treatment industries.

We strive always for technical excellence, innovation and the highest quality standards in everything we do. As a result, our people and products remain at the forefront of actuation technology.

Uncompromising reliability is a feature of our entire product range, from our flagship electric actuator range through to our pneumatic, hydraulic and electro-hydraulic actuators, as well as gear boxes and valve accessories.

Rotork is committed to providing first class support to each client throughout the whole life of their plant, from initial site surveys to installation, maintenance, audits and repair. From our network of national and international offices, our engineers work around the clock to maintain our position of trust.

**Rotork. Established leaders in actuation technology.**

## Complete Actuation Solutions - Worldwide

# rotork®

Rotork products are designed and manufactured to the highest possible level of engineering – a principle which drives all areas of our business.

So whether you require electric, fluid power, specialist gear or valve adaption products and services you'll benefit from the same commitment to quality and technical innovation on which our reputation depends.

Rotork has been at the forefront of actuation technology since 1957 and enjoys an unrivalled reputation for its commitment to the development of leading-edge techniques and processes. Rotork actuators can significantly reduce the cost of plant ownership and frequently offer the most cost effective solution.

Contact Rotork with your operational or safety application requirements. We will work with you from conception to design, from manufacture to installation.



---

1957

Oil bath lubrication replaces grease

---

1960

Switch mechanism with combined torque/limit switch

---

1964

Syncropak integral starter and controls

---

1970

Environmental double-sealing to IP68

---

1975

Monitoring facilities for control interface, 1400 series

---

1984

Syncrophase automatic phase correction, 1600 series

---

1992

'Non-intrusive' commissioning and interrogation via infra red remote control

---

2000

IrDA data exchange for configuration and datalogging

---

2006

IQ Pro range of intelligent actuators

---

2008

CVA intelligent control valve actuators

---

2010

Pakscan P3 Wireless networking technology

---



# Rotork Group of Companies



- International Sales Agent
- International Sales Office
- Manufacturing Plant



## rotork® Controls

Rotork Controls manufactures electric valve actuators and control systems for the heavy-duty valve market throughout the world.

At Rotork, we firmly believe our reputation is based on reliability backed by a proven track record over many years.

## rotork® Fluid Systems

Rotork Fluid Systems specialises in the production of pneumatic and hydraulic actuators and control systems. The company is dedicated to providing the marketplace with the latest technology, consistently high quality, innovative design and superior performance.

## rotork® Gears

Rotork Gears manufactures gearbox assemblies for use with actuators and as direct valve operators. Facilities around the world manufacture and assemble complete gearbox assemblies as well as a wide range of switch boxes, valve position monitors and adaption accessories.

## rotork® Process Controls

Rotork Process Controls specialises in producing continuous modulating duty actuators. The product range includes electric control valve actuators, heavy-duty damper actuators, linear and rotary actuators.

## rotork® Site Services

Providing worldwide planned and emergency actuation services including: actuator overhauling, health checks, retrofit, preventative maintenance, extended scope projects.





rotork



## Intelligent Electric Actuators

# rotork® Controls

Heavy-duty valve actuators represent Rotork's traditional core business – a sector in which the company has become the largest independent manufacturer in the world. Rotork Controls leads the way in the application of valve actuation technology in world markets and has manufacturing plants in the UK, the United States, Malaysia and India.

The Bath UK factory manufactures product for worldwide distribution, while our Rochester New York facility mainly serves customers in North and South America. Rotork's two Indian plants principally supply the indigenous Indian market. The Bath site is also the location of Rotork's Group head office and is the centre for all R&D activity company-wide.

### UK head office

tel +44 (0)1225 733200

email mail@rotork.com

### USA

tel +1 (585) 247 2304

email info@rotork.com

A full listing of our worldwide sales and service network is available on our website at [www.rotork.com](http://www.rotork.com)

### IQ Pro – multi-turn actuators



Provides intelligent communication options and a multilingual display. The IQ range offers multi- and quarter-turn isolating/regulating duty.

Torque range 14 to 3,000 Nm (10 to 2,200 lbf-ft) direct drive (multi-turn only). Higher torques when combined with IS or IB gearbox, up to 40,800 Nm (30,000 lbf-ft). Quarter-turn when combined with IW gearbox up to 250,000 Nm (185,000 lbf-ft).

- Complete integrated motor control.
- Simple non-intrusive, infra-red setup and adjustment.
- Digital, analogue or bus system remote control and status reporting.
- Comprehensive software tools for plant records and valve performance analysis.

See publication E110 for further details.

### IQT Pro – quarter-turn actuators



For quarter-turn applications the IQT is designed for direct drive, and can be mounted at any operating angle. The rugged construction is double-sealed to prevent water and dust ingress even during site wiring.

Torque range 50 to 2,000 Nm (36 to 1,475 lbf-ft).

- Available for three-phase, single-phase or DC supplies.
- Variable output speed.
- Multiport controller option.
- Secure self-locking output for butterfly valve and dampers without the use of additional brakes.

See publication E110 for further details.

## Multi-functional Electric Actuators

### IQM – multi-turn modulating actuators



The IQM range combines Rotork's motor and gearing technology developed over 40 years, with the latest electronic techniques used in IQ to produce the IQM modulating range.

Torque range 12 to 550 Nm (9 to 400 lbf-ft).

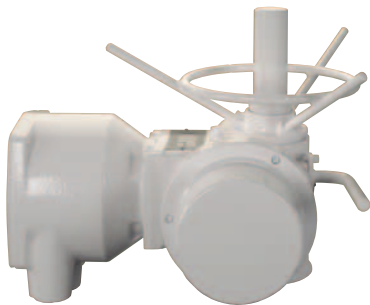
Thrust range with linear output IQML 16 kN to 55 kN (3,500 to 5,600 lbf).

- Modulating duty on valves and dampers.
- Up to 1,200 starts/hour. S4 – 50% duty.
- Solid state starter.
- Dynamic breaking facility, for high accuracy.

See publication E110 for further details.

### Nuclear applications

**NA**  
range



Rotork NA range actuators have been qualified for safety related duty in nuclear reactor installations. The qualification is in accordance with US standard IEEE 382, 1980.

Rotork type NA actuators have been manufactured in strict accordance with the latest quality procedures for use in nuclear environments.

- Total environmental sealing.
- Designed for active and passive duty.
- Torque limiter brake options.
- Thrust compensator options.
- Inside and outside containment capability.

See publication PUB004-001 for further details.

### A and AWT – multi-turn actuators

**A/AWT**  
range



The A / AWT range combines the qualities of a robust electric motor and a well proven simple mechanical drive. Total environmental sealing to IP68 allows the inclusion of integral motor starter and control electronics.

Torque range 14 to 3,000 Nm (10 to 2,200 lbf-ft) direct drive, up to 250,000 Nm (185,000 lbf-ft) quarter-turn and up to 40,800 Nm (30,000 lbf-ft) multi-turn.

- Oil bath lubricated IP68 double-sealed option.
- Complete integral motor control or customer supplied motor control.
- Isolating and regulating duty.
- Separate motor control available where required (syncroset actuator).

See publication E210 (A) or E310 (AWT) for further details.

### Q – single-phase quarter-turn

**Q**  
range



The Q range is a single-phase quarter-turn direct drive electric actuator available in two versions, both environmentally sealed to IP68. Q standard for simple open/close duties where on/off control is required and the Q Pak which incorporates a specially designed control interface module enabling operation from a variety of remote control signals.

Torque range 30 to 406 Nm (22 to 300 lbf-ft).

- Rugged compact, double-sealed.
- Positive travel limitation through externally adjustable mechanical stops.
- Marine option.
- Simple remote control for basic applications.

See publication E610 for further details.



# Multi-functional Electric Actuators

## ROM – compact and lightweight design

### ROM range



Building on the simple specification of the ROM / RBM range, Rotork now offer a more complete control solution with the introduction of the new ROMpak.

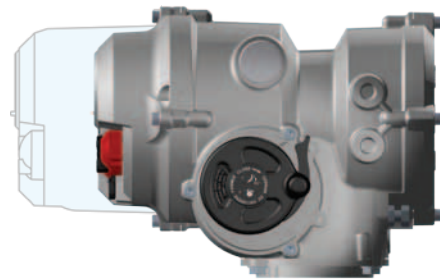
ROMpak introduces: Local controls for ease of operation; Dual local indicators – mechanical and LED; Phase rotation correction for ease of installation. Options include: bluetooth non-intrusive configuration, bus communication, Folomatic/CPT and datalogger.

Torque range 35 to 650 Nm (25 to 480 lbf-ft).

- Efficient yet simple gearing.
- Wide range of supply voltages available.
- Single-phase, three-phase and DC options.
- Watertight IP67 rating.

See publication E611 (ROM/RBM) and E612 (ROMpak) for further details.

## Special applications



Rotork offer many actuation solutions for specialised applications. For example, the IQTN (shown above) has been especially developed for use in marine applications where space is at a premium. Rotork have developed this product which now enjoys all the benefits and performance of the standard IQT range whilst reducing the actuators weight and space envelope and increasing its shock resistance.



## Fluid Power Actuators and Control Systems

# rotork® Fluid Systems

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.

### UK head office

**tel** +44 (0)1225 733200  
**email** sales@rotorkfluidsystem.co.uk

### USA

**tel** +1 (585) 247 2304  
**email** rfsinfo@rotork.com

### Italy

**tel** +39 0583 93061  
**email** fluid@fluidsystem.it

A full listing of our worldwide sales and service network is available on our website at [www.rotork.com](http://www.rotork.com)

### Scotch yoke actuators

## CP range



- Pneumatic and hydraulic actuators in double-acting and spring-return configurations.
- Corrosion resistant cylinders.
- Actuators certified to IP 66M/67M.
- Actuators certified to ATEX 94/9/EC.
- Actuators certified in accordance with PED 93/27/EC.
- Torque output to 4,500 Nm (39,800 lbf-in).
- Compatible with SVM partial stroke testing.
- Certified suitable for use at SIL3.

See publication F200 for further details.

### Scotch yoke actuators

## GP/GH P/H ranges



- Pneumatic and hydraulic actuators in double-acting and spring-return configurations.
- Corrosion resistant cylinders.
- Actuators certified to IP 66M/67M.
- Actuators certified to ATEX 94/9/EC.
- Actuators certified in accordance with PED 93/27/EC.
- Nuclear safety related actuators certified to IEEE323-1974, IEEE344-1975 and IEEE382-1985.
- Torque output to 600,000 Nm (5,000,000 lbf-in).
- Compatible with SVM partial stroke testing.
- Certified suitable for use at SIL3.

See publications F100 (GP/GH) and F101 (PIH) for further details.

# Fluid Power Actuators and Control Systems

## Compact scotch yoke actuators

### RC range



- 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.
- Compatible with SVM partial stroke testing.

Contact Rotork for further details.

## Gas-oil actuators

### GO range



- Scotch yoke actuators in double-acting and spring-return configurations.
- Low- or high-pressure control logic options.
- ASME certified tanks.
- Hydraulic manual override standard.
- Speed control in both directions standard.
- PED or ASME approved gas/oil and power gas storage tanks.
- Actuators certified to IP 66M/67M.
- Actuators certified to ATEX 94/9/EC.
- Actuators certified in accordance with PED 93/27/EC.
- Torque output to 600,000 Nm (5,000,000 lbf-in).
- Compatible with SVM partial stroke testing.

See publication F301 for further details.

## Rack and pinion actuators

### RH range



- Double-acting and spring-return configurations.
- Hydraulic heavy-duty actuators (RH) with cast iron bodies and torque output to 3,400 Nm (30,000 lbf-in).
- Electroless nickel-plated cylinders for corrosion resistance.
- Pneumatic actuators (R) with UNI6060 hard anodised bodies and torque output to 4,100 Nm (36,600 lbf-in).
- Nickel-plated, anti-blowout pinion.
- Valve mounting dimensions per ISO 5211 DIN 3337.
- Compatible with SVM partial stroke testing.

See publication F400 for further details.

## Linear actuators

### LP/LH range



- 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).
- Compatible with SVM partial stroke testing.

See publication F501 for further details.



# Fluid Power Actuators and Control Systems

## Direct high-pressure gas actuators

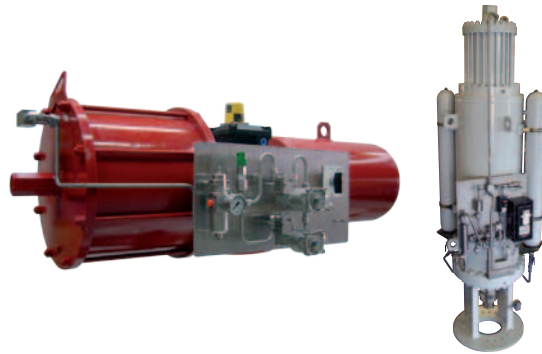
### HPG range



- Scotch yoke actuators in double-acting and spring-return configurations.
- Hydraulic manual override standard.
- Speed control in both directions standard.
- Actuators certified to IP 66M/67M.
- Actuators certified to ATEX 94/9/EC.
- Actuators certified in accordance with PED 93/27/EC.
- Torque output to 600,000 Nm (5,000,000 lbf-in).
- Compatible with SVM partial stroke testing.

See publication F300 for further details.

## Control systems



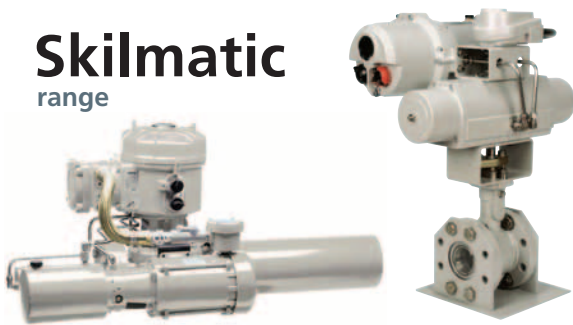
Control component packages are a part of any actuator/valve installation. Rotork has extensive experience in the design and assembly of all types of fluid power control systems to satisfy any customer requirement for on/off, modulating or ESD (emergency shutdown) service. Packages can be mounted on a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

Contact Rotork for further details.

## Electro-hydraulic actuators

### Skilmatic range



- Intelligent, self-contained electro-hydraulic actuators.
- Linear thrusts 1.7 to 5,500kN, 1/4 turn torques 65 to 600,000 Nm
- Two-position, ESD or modulating operation in spring-return or double-acting executions.
- Power supply – single-phase, three-phase or 24 VDC.
- Non-intrusive infrared setting & configuration.
- LCD display for position, pressure, diagnostics and fault indication.
- Optional bus communications via all major protocols.
- Partial stroke test capability.
- Watertight or explosionproof ATEX, FM, CSA IEC and GOST.
- Separate, double-sealed terminal compartment.
- Certified suitable for use at SIL3.

See publication F700 for further details.

## Electro-hydraulic actuators

### SB range



- Fully self-contained electro-hydraulic actuator.
- Torque output from 24 Nm to 7,400 Nm (212 lbf-in to 65,400 lbf-in).
- Two-position control.
- Quarter-turn spring powered fail-safe action.
- 110/230 VAC supply – minimal power consumption.
- Watertight IP65 to IP68 – optional flameproof ATEX and FM certified.

See publication F700 for further details.

## Fluid Power Actuators and Control Systems

### Smart valve monitor

## 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.
- Datalogging 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 publication F902 and F903 for further details.

### Multi-turn fluid power actuators

## Twin Power range



- 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.

Contact Rotork Fluid Systems for further information.

### Subsea actuators

## GSH GSR GSL GSP ranges



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 & splashzone trims.
- Retrievable and non-retrievable designs.
- Multitude of design options available.
- Installed base dating back to 1992 at depths up to 2,500 metres.
- Compatible with SVM partial stroke testing.

See publication F800 for further details.

### Hydraulic vane damper

## DH range



- ATEX certified.
- Environmental protection: IP 6X.
- Temperature class: T5 (-20 to 100 °C).
- Visual position indication.

See publication F901 for further details.

## Highly Accurate Electric Control Valve Actuators

# rotork® Process Controls

With more than 50 years of extensive knowledge and experience, Rotork Process Controls has provided products and services worldwide for virtually every industrial valve actuator application.

Rotork Process Controls offers four families of electric actuators:

- **Rotary Control Valve Actuators**
- **Linear Control Valve Actuators**
- **Heavy-duty Rotary Actuators**
- **Heavy-duty Linear Actuators**

With the unquestionable ruggedness of our actuators, Rotork Process Controls can meet any actuator requirement for any industrial process. Along with this durability comes accuracy and reliability, ensuring the precision necessary for your critical control applications.

### USA head office

tel +1 (414) 461 9200  
email rpcsales@rotork.com

### UK

tel +44 (0)1225 733200  
email mail@rotork.co.uk

A full listing of our worldwide sales and service network is available on our website at [www.rotork.com](http://www.rotork.com)

### CVA - Linear & Rotary actuators



The CVA range of linear and quarter-turn actuators provides an electrically powered process control operator suitable for most control valve types and sizes. The CVA sets a new standard for process control valve actuators. Rotork has proven expertise in applying new technologies in the automation of valves to bring enhanced performance and innovative features. This philosophy has now been applied to a new range designed specifically for the exacting demands of process control, specifically continuous modulating control valve applications. Using the combination of advanced actuator engineering and process control experience, plus specification input from major control valve end users, Rotork have produced a range of control valve actuators that are unique in the industry and provide solutions to many common control issues.

Quarter-turn torque range 54.2 to 271 Nm (480 to 2,400 lbf-in).

Linear thrust range 890 to 6672 N (200 to 1,500 lbf).

- Electrically powered.
- High performance, continuous unrestricted modulation duty - S9.
- High resolution and repeatability.
- Comparable life to pneumatic operators.
- Optional bus interfaces available.
- Comprehensive datalogging.
- Watertight IP68 and explosionproof enclosures.
- Programmable fail-to-position option.
- Separate, double sealed terminal compartment.
- 'Intrinsically Safe' control & instrumentation compatible.
- Non-intrusive setup/calibration using Bluetooth.
- Optional manual override.
- Available in both Quarter-turn and Linear configurations.

See publication PUB042-001 for further details.



# Highly Accurate Electric Control Valve Actuators

## Smart valve actuators

### GPSA range



- Rotary: Rotation 90° to 20 turns.
- Rotary: Torque range up to 14 Nm (125 lbf-in).
- Linear: Stroke distance up to 35 mm (1.375").
- Linear: Thrust range up to 890 N (200 lbf).
- Continuous unrestricted modulating duty.
- HART, Profibus and Foundation Fieldbus available.
- Temperature range from -30 to 65 °C (-22 to 150 °F).
- Automatic thrust limiting.
- Self-locking drive system to hold in last position and prevent backdriving up to thrust rating.
- Manual override standard.

See publication P211 for further details.

## Valve actuators

### 1000 series



- Rotary: Rotation from 10° to 20 turns.
- Rotary: Torque range up to 40 Nm (350 lbf-in).
- Linear: Stroke distance up to 38.1 mm (1.5").
- Linear: Thrust range up to 4,003 N (900 lbf).
- Continuous unrestricted modulating duty.
- Temperature range from -40 to 65 °C (-40 to 150 °F).
- Automatic torque and thrust limiting.
- Self-locking drive system to hold in last position and prevent backdriving.
- Manual override standard.

See publication P310 for further details.

## Heavy-duty Linear Actuators

### 2000 series



- Stroke distance from 6" to 24" (152 mm to 610 mm).
- Thrust range up to 7,117 N (1,600 lbf).
- Modulating duty (2,000 starts per hour).
- HART available.
- Temperature range from -40 to 65 °C (-40 to 150 °F).
- Automatic thrust limiting.
- Self-locking drive system to hold in last position and prevent backdriving up to thrust rating.
- Manual override standard.

See publication P411 for further details.

## Heavy-duty Rotary Actuators

### 6000 series



- From 90° to 313° rotation.
- Torque range up to 35,256 Nm (26,000 lbf-ft).
- Double O-ring sealing.
- Continuous unrestricted modulating duty.
- HART, Profibus and Foundation Fieldbus available.
- Temperature range from -40 to 85 °C (-40 to 185 °F).
- Automatic torque limiting.
- Self-locking drive system to hold in last position and prevent backdriving.
- Manual override standard.

See publication P511 for further details.

## Valve Gear Operators and Accessories

# rotork® Gears

Rotork Gears is a specialist supplier of gearboxes, adaptations and accessories to the international valve and actuator industry with manufacturing plants in the UK, The Netherlands, Italy, China, and a customisation site in the United States. Each company provides cost-effective tailored solutions for all applications. Rotork Gears is dedicated to leading the valve accessory market whilst maintaining the unique strengths of the individual manufacturing companies.

Rotork Gears provide the widest range of valve gearboxes in the world, they are designed to withstand the harsh challenges of various environments, including subsea and nuclear. Rotork Valvekits provide a complete range of mounting brackets, extension shafts, pedestals and accessories for the valve and actuator industry. In addition Rotork Valvekits offer specialist design and consulting services to cover a whole range of valve and actuator adaption needs.

### UK head office

tel +44 (0)113 205 7276  
email sales@rotorkgears.co.uk

### USA

tel +1 (713) 983 7381  
email gears@rotorkgears.com

A full listing of our worldwide sales and service network is available on our website at [www.rotork.com](http://www.rotork.com)

### IW manual & motorised 1/4 turn gearboxes



Complete range of heavy duty cast and ductile iron quarter-turn worm gearboxes suited for plug, ball and butterfly valves serving the water, gas, chemical, power, and general industrial applications.

- IW size 3 to 13 torque range up to 264,000 Nm.  
IW size 14 to 17 torque range from 250,000 Nm to 850,000 Nm.
- Worm shaft supported by angular contact bearing.
- High efficiency and multiple ratios.
- Modulating and nuclear versions available.
- Removable drive sleeves up to IW11.
- Stroke: 0 to 90° (± 5° adjustable).

See publications PUB028-001, PUB029-001 (metric data) and PUB028-002, PUB029-002 (imperial data) for further details.

### AB worm gear 1/4 turn operators

## AB worm gear operator



Heavy duty cast iron quarter-turn gearboxes suited for ball, plug and butterfly valves serving the water, gas, chemical, power, and demanding industrial applications.

- Torque range up to 32,000 Nm (23,600 lbsft).
- 16 sizes. Ratios from 34:1 to 705:1.
- Steel input shaft (Stainless Steel optional).
- Rugged construction.
- Axial needle bearings.
- Polyurethane coating.
- Stroke: 0 to 90° (± 5° adjustable).
- FM/UL and APSAD versions.

See publications PUB033-001 (metric data) and PUB033-002 (imperial data) for further details.

## Valve Gear Operators and Accessories

### 232 worm gear 1/4 turn operators

#### 232 worm gear operator



The 232 range of quarter-turn operators have a die-cast aluminium housing and are intended for applications in power waterworks and gas pipelines, HVAC, fire protection and most general industrial applications.

- Lightweight design.
- Stainless steel input shaft.
- 6 models up to 1,500 Nm.
- Removable drive sleeve.
- Axial needle bearing.
- Stroke 0 to 90° ( $\pm 5^\circ$  adjustable).
- 2 keyways to cater for 45° & 90° positions.
- FM/UL and APSAD versions.

See publications PUB034-001 (metric data) and PUB034-0012 (imperial data) for further details.

### ILG-D override 1/4 turn operators

#### ILG-D Override worm gear operators



Complete range of manual declutchable sandwich override quarter-turn gearboxes for double-acting pneumatic actuators.

- Torque range up to 7,452 Nm (5,500 lbsft).
- 6 sizes. Ratios from 35:1 to 104:1.
- Plated input shaft.
- Cast iron housing.
- Axial needle bearings.
- IP65 (IP67 optional).

See publications PUB038-001 (metric data) and PUB038-002 (imperial data) for further details.

### WGS subsea 1/4 turn operators

#### WGS worm gear operator



The WGS range of quarter-turn operators are designed for heavy-duty subsea applications at any depth with carefully chosen materials to offer the highest level of reliability required in this very harsh environment. The operators are equipped with pressure compensators of membrane or piston type to balance the pressure and allow them to work at any depth.

- Worm shaft supported on taper roller bearings.
- High strength alloy steel worm screw hardened and ground.
- Vertical or horizontal carbon steel ROV input (class 1 to 7).
- Torque range from 500 to 500,000 Nm.
- Stroke: 0 to 90° ( $\pm 5^\circ$  adjustable).

See publications PUB036-001 (metric data) and PUB036-002 (imperial data) for further details.

### ILG-S override 1/4 turn operators

#### ILG-S Override worm gear operators



Complete range of sandwich manual override quarter-turn gearboxes for spring-return pneumatic actuators.

- Torque range up to 32,000 Nm (23,600 lbsft).
- 7 sizes. Ratios from 34:1 to 705:1.
- Plated input shaft.
- Cast iron housing.
- Axial needle bearings.
- IP65.

See publications PUB039-001 (metric data) and PUB039-002 (imperial data) for further details.



## Valve Gear Operators and Accessories

### IB manual & motorised multi-turn gearboxes

#### IB bevel gear operator



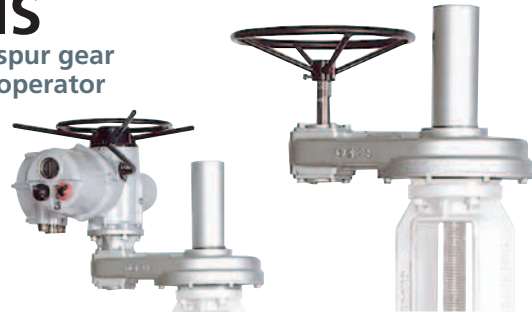
Complete range of heavy duty cast iron multi-turn bevel gearboxes suited for the most demanding manual and motorised applications for cast and fabricated sluice gates, gate valves and globe and pinch valves.

- Torque range up to 10,846 Nm.
- Thrust range up to 1,557 kN.
- Totally enclosed gearing.
- Grease filled for life.
- Removable output sleeve.
- Input flanges to suit electric actuators.

See publications PUB030-001 (metric data) and PUB030-002 (imperial data) for further details.

### IS manual & motorised multi-turn gearboxes

#### IS spur gear operator



Complete range of heavy duty cast iron multi-turn spur gearboxes suited for the most demanding manual and motorised applications where the gearbox input shaft needs to be parallel with the valve stem for globe and gate valves and sluice gates.

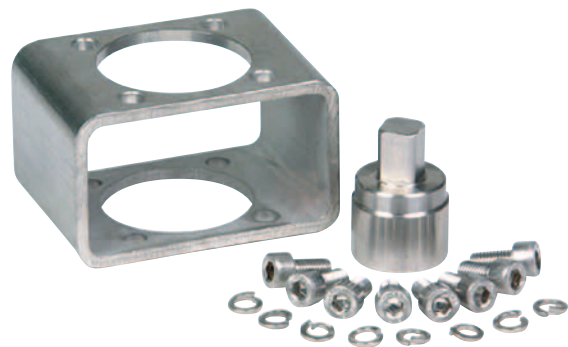
- Torque range up to 46,100 Nm.
- Thrust range up to 3,342 kN.
- Totally enclosed gearing.
- Grease filled for life.
- Removable output sleeve.
- Input flanges to suit electric actuators.

See publications PUB031-001 (metric data) and PUB031-002 (imperial data) for further details.

### Ball, butterfly and plug valve kits designed to order, precision CNC machined in stainless steel

## Mounting kits

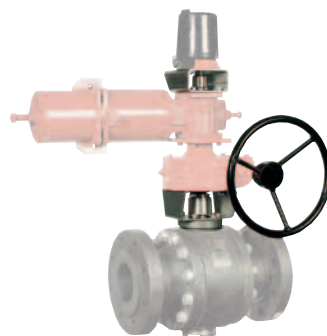
### Ball, butterfly and plug valve kits



Rotork Valvekits has manufactured, designed and supplied standard and non-standard mounting brackets to the valve and actuator industry since 1987. ISO9001 accreditation was achieved in 1992. Rotork Valvekits manufactures the following components to the highest standards, with market leading delivery times:

- Mounting brackets and couplings.
- Extensions.
- Pedestals.
- Locking devices.
- Chainwheels, handwheels and spring return handles.
- Solenoids, switch boxes and positioners.

Contact: [sales@rotorkvalvekits.co.uk](mailto:sales@rotorkvalvekits.co.uk) for further details.



## Pakscan Bus Control System

# rotork® Controls

Integration of the plant controls by use of network connectivity has been a hallmark of Rotork actuator products for many years. The use of proprietary and open systems makes the commissioning of the plant and the subsequent control and monitoring a simple and reliable task.

All Rotork actuators are compatible with a wide range of communication and process controls systems by including the appropriate option card. The actuator reports status feedback, via the field highway, to the overall plant control system (DCS or PLC) and valve control commands are actioned.

Our own Pakscan system compliments the open systems from Foundation Fieldbus, Profibus, Modbus and DeviceNet see page 21 for more details. Innovative technology together with expert bus system knowledge ensures that Rotork can always provide the ideal solution for the control system.

### UK head office

tel +44 (0)1225 733200

email mail@rotork.com

### USA

tel +1 (585) 247 2304

email info@rotork.com

A full listing of our worldwide sales and service network is available on our website at [www.rotork.com](http://www.rotork.com)

### Rotork Pakscan - the total control solution



The Rotork Pakscan system is a world leader in actuation control automation. First launched in 1986, Pakscan has been at the forefront of network technology since its inception, helping to control over 75,000 actuators.

Pakscan network systems offer the customer unrivalled control, reliability and customer support. This is supported by a worldwide service and support network to keep your plant running 24 hours a day, 7 days a week.

Modern facilities require up to date communications right down to plant level. Plant managers demand more information more quickly than ever before. Process operators need full control facilities at all times of the day and night. Maintenance managers want information so that their services can be scheduled economically. To meet these requirements, design engineers include field communications networks to allow every piece of critical plant to be controlled and monitored by computer. These computers are assigned to management, operations and maintenance tasks within their own network, exchanging data about the equipment and process under their control.

The Pakscan system provides the vital link between valve actuator and supervisory control. It is an intelligent, reliable, high integrity, fast and easy to install network between field equipment and the control room. It is specially designed for use with Rotork products.

For P3 Wireless information, see page 20.

### Pakscan P3 2-wire system:

- Clear cut performance responsibility.
- Defined transaction times and cable distance.
- Automatic cable monitoring and fault management.
- Field cable fault tolerant.
- Fully pre-programmed master station.
- HMI Screen and keypad built-in.
- Simple Modbus RTU / TCP host communications.
- Field and host communication diagnostics.
- Easily expanded.
- Hot standby capability.
- Commission without the need for a host DCS or PLC.
- Proven track record.
- Over 75,000 installed nodes.
- Built-in web server for full systems diagnostics..

See publication PUB058-001 for further details.

# Pakscan Bus Control System

## Rotork Pakscan P3 Wireless



The world-leading Rotork Pakscan network control system is now even more flexible and cost-effective to deploy thanks to the new P3 Wireless option. Over a secure wireless mesh network it maintains control of actuators and other field devices, as well as gathering extensive operating data for efficient, centralised asset management.

Whether you are installing a completely new control network or adding to an existing wired installation, Pakscan P3 Wireless provides a secure, resilient control and monitoring solution.

With its flexible wireless connectivity, it allows you to add new actuators to your control systems faster, without delays and costs involved in new cable runs. Fast data throughput means it can collect all the operating data you need to both monitor and predict the maintenance needs of Rotork actuators.

The P3 Wireless network has been designed to provide high levels of security and a degree of redundancy similar to Rotork 2-wire systems. P3 Wireless, like P3 2-wire, is fully integrated and controlled through the Pakscan P3 master station. Further host security measures include, password protection, IP address filtering to allow Modbus TCP access by designated addresses only and the configurable ability to enable/disable control from certain ports.

### P3 Wireless for New Control Networks:

- Fast, cost-effective installation and implementation
- Proven actuator control technology
- Detailed, centralised asset monitoring
- Minimal maintenance overhead
- Secure and resilient

### P3 Wireless for Network Upgrades:

- Fully integrated add-on for P3 master station
- Add new actuators quickly, cost-effectively
- New: Detailed, centralised asset monitoring
- Seamless integration of wired and wireless
- Secure and resilient

See publication PUB059-001 for further details.

## Rotork Pakscan P3 master station



The Pakscan P3 master station incorporates a local HMI which has a full colour integral display showing the status of all the field devices, the current state of the communications ports, system alarms and diagnostic information plus actuator control and set up facilities. The simple 5 button keypad provides easy navigation through the display screens.

Remote access to the asset management features are available via the built in web pages as well as the status, diagnostic, set up and control facilities provided by the local HMI. Asset management information includes historical master station command log, host port analyser, automatic alarm notification via e-mail and event loggers for both the master station and field control units. Web security is provided by named IP access, https (secure web pages) and password protection

The two serial and two ethernet host ports allow for redundant communication. Pakscans pre-configured database and vast interface experience ensure smooth integration with any Modbus host system.

See publication PUB058-001 for further details.

## Rotork P3 Field Mount master station



The Rotork P3 Field Mount (P3F) master station enhances the P3 range by allowing the master station to be mounted close to the process.

Enclosed in an environmentally protected IP65 box, it provides (via a DCS or PLC) control and monitoring of 32 field units utilising serial or TCP/IP Modbus communications. Configuration is achieved using the comprehensive built in web pages.

See publication PUB058-001 for further details.

## In-Vision - powerful, user friendly

In-Vision is a SCADA (Supervisory Control And Data Acquisition) software application for full, user friendly control of complex installations, such as oil storage depots and water treatment plants, where there may be a high number of actuators and process signals to control and display. Working with Pakscan and running on a standard PC, In-Vision offers a highly flexible series of graphic displays and controls that allow plant managers to view and control all aspects of their process at a fraction of the cost of other comparable systems.

See publication S210 for further details.

# Multiple Bus Connectivity

## Multiple fieldbus connectivity

Rotork actuators are compatible with most industry standard fieldbus systems via network cards that are fitted in the main electronics enclosure.

### Profibus

Profibus is a leading international network protocol for high speed data communications in industrial automation and control. The Rotork Profibus DP interface card provides comprehensive control and feedback data about the valve and actuator using DP-V0 cyclic communications whilst extended actuator diagnostics and configuration is included in the DP-V1 acyclic data supported by this module. EDD and DTM files allow the Rotork device to be incorporated into asset management systems giving access to performance critical parameters, whilst the independently certified GSD file guarantees device interoperability. Rotork provide an optional switch disconnect module allowing for ease of installation and have multiple configuration options within the GSD file to enable a choice of data collection.

- RS485 Profibus DP V0 and V1 compliant.
- Single and Dual Redundant options.
- Fully meets IEC61158-3 standard.
- Profibus PNO certified.
- Supports speeds up to 1.5 Mbit/s.

See publication PUB060-002 for further details.

### Foundation

Foundation Fieldbus has become widely accepted for use in process control systems. It's primary feature is the ability to distribute control away from the central DCS. The Rotork Foundation Fieldbus interface card connects directly onto the standard Foundation H1 bus system. The function blocks embedded in the module cover the control and monitoring of the valve and actuator. Using the certified Device Description files the FF card is simple and easy to use. The ability to report extensive actuator feedback within a single input block as well as system diagnostic information makes Rotork the first choice for use with a Foundation Fieldbus system.

- Foundation ITK inter-operability certified.
- Fully compliant with IEC61158-2 standard.
- Includes Link Master and LAS capability.
- Independent HIST approval by major DCS vendors.
- Full H1 Field capability.

See publication PUB060-003 for further details.

### Modbus

Modbus remains the most popular process communication protocol in use today with the widest acceptance and highest number of applied systems of any automation protocol. Rotork's Modbus interface card allows actuators to be connected to a 2 wire RS485 network for direct communication to a PLC

or DCS using Modbus RTU protocol. The resulting network is able to monitor and control the connected actuator. As the Modbus protocol is so simple the system engineer has full control over the data flow on the highway and the information to be collected and controls implemented. There are no complications with device description files or special programming tools required when setting up a Modbus system.

- RS485 2-wire RTU communication.
- International open standard.
- Single and Dual redundant options.
- Integral Repeater modules included where necessary.
- Up to 115 kbps.

See publication PUB060-005 for further details.

### DeviceNet

DeviceNet is an Open Network Standard for communication networks using the main features of CAN bus in an industrial environment. The Rotork DeviceNet interface module provides easy access to actuator process control and feedback information. The Electronic Data Sheet description file is used to set up the actuator parameters to allow the systems performance to be optimised. In addition to the standard actuator torque and position feedback a further analogue input is included as standard enabling integration of external analogue equipment onto the network. The Rotork module has been certified by the Open DeviceNet Vendor Association to ensure its interoperability with other devices.

- Up to 63 devices on each network.
- 4 wire cable, 2 for signal, 2 for power.
- Trunk and Drop line permitted.
- ODVA certified to ensure compatibility.
- EDS electronic device description file.

See publication PUB060-004 for further details.

### HART

HART (Highway Addressable Remote Transducer) is a process control communication protocol based upon the Bell 202 telephone communication standard and uses the FSK (frequency shift keying) principle. The signal consists of two parts, the analogue 4-20 mA current loop and a superimposed digital variable frequency signal. Traditionally the 4-20 mA loop is used for control and the superimposed digital signal for feedback, diagnostics and configuration. Configuration and feedback using the HART digital signal can be achieved using the host connected to the actuator to select the parameters required. The majority of the user configurable settings can be made over the HART communication protocol.

- Up to 63 devices on each network.
- HCF certified DD electronic device description files.
- HART 7 compatible.

See publication PUB060-006 for further details.



## Projects, Services and Retrofit

# rotork® Site Services

Rotork Site Services, the projects, service and retrofit division, is active in 47 service centres in over 20 countries around the world, with agents providing support services in another 55 countries, bringing the total number of expert technicians supporting Rotork customers to well over 1,000.

Rotork Site Services aims to further develop Rotork's services in the areas of maintenance, management and upgrading of installed actuation assets to ensure that Rotork can fully support and satisfy the increasing demands from its' customers on a global basis.

Visit [www.rotork.com](http://www.rotork.com) to identify your nearest Rotork Site Services centre.

### Emergency and Planned Service

Available for all types of actuator, in all areas (including hazardous environments). Some customers require guaranteed emergency response times, others require planned response for all types of actuator work, including installation, commissioning, upgrading, connection and installation of bus communication systems, troubleshooting and repair of damaged or deteriorating assets.

### Actuator Overhauls

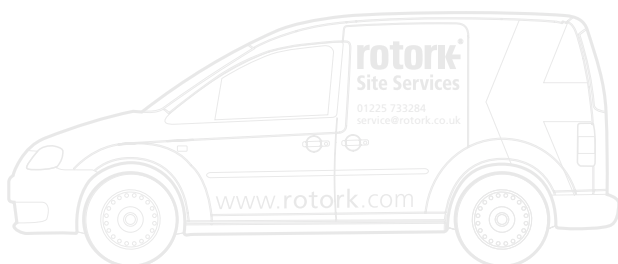
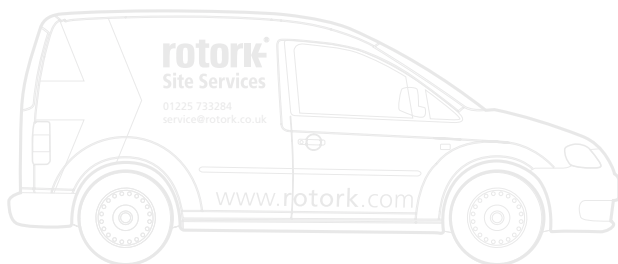
After a long service life customers may prefer their actuators to be completely overhauled rather than replacing them with new ones. In our workshops we completely strip and rebuild actuators, returning them to their original state.

### Health Checks

Some customers lack detailed information on their assets, making it difficult to prioritise maintenance and replacement investment. We can carry out a detailed and intrusive inspection of the actuators and combine this with build data from our own databases to give customers a holistic view of their assets.

### Preventative Maintenance

We provide preventative maintenance to enhance the integrity of actuators and their associated valves. We tailor programmes depending upon the type of actuators, the availability of asset information, and the criticality of the plant to maximise up-time whilst minimising operating costs.



## Projects, Services and Retrofit

### Retrofitting actuators to existing valves

We have extensive experience in fitting actuators to valves, penstocks and dampers that are already installed as part of existing plant. Whether customers are replacing obsolete actuators, changing power sources or motorising manual valves, we offer a tailor made solution to meet customers' specific requirements.

### Shutdown Outages

We can support customers in making sure that all their actuators are fully operational and that they meet tight shutdown deadlines. For example some power stations look for us to remove and overhaul in our workshops over 200 actuators when taking a unit out for maintenance. We do this, reinstall and commission the actuators and, where requested, carry out additional actuation projects simultaneously to ensure that customers make the most of their plant shutdown time.

### Factory fitting of actuators to new valves

The careful assembly of valve and actuator is critical to ensure that an automated valve performs correctly and reliably. Whilst this service is often carried out by valve manufacturers, if there is a need we can provide this service.

### Extended scope projects

This is a growing requirement and some of our service teams have the wide range of skills necessary to offer a "one-stop-shop" to automate part or all of a customer's process. Our capabilities cover all of the installation phases (scoping, design, procurement, manufacturing, installation, commissioning) on the broad scopes that typically surround actuation projects.





Electric Actuators and Control Systems  
Fluid Power Actuators and Control Systems  
Gearboxes and Gear Operators  
Projects, Services and Retrofit



UK  
Rotork plc  
*tel* +44 (0)1225 733200  
*fax* +44 (0)1225 333467  
*email* mail@rotork.com

USA  
Rotork Controls Inc.  
*tel* +1 (585) 247 2304  
*fax* +1 (585) 247 2308  
*email* info@rotork.com

**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

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

[www.rotork.com](http://www.rotork.com)

PUB000-002-00  
Issue 10/10

Formerly G000E. As part of a process of on-going product development, Rotork reserves the right to amend and change specifications without prior notice. Published data may be subject to change. For the very latest version release, visit our website at [www.rotork.com](http://www.rotork.com).

The name Rotork is a registered trademark. Rotork recognizes all registered trademarks. Published and produced in the UK by Rotork Controls Limited. POWTG1010