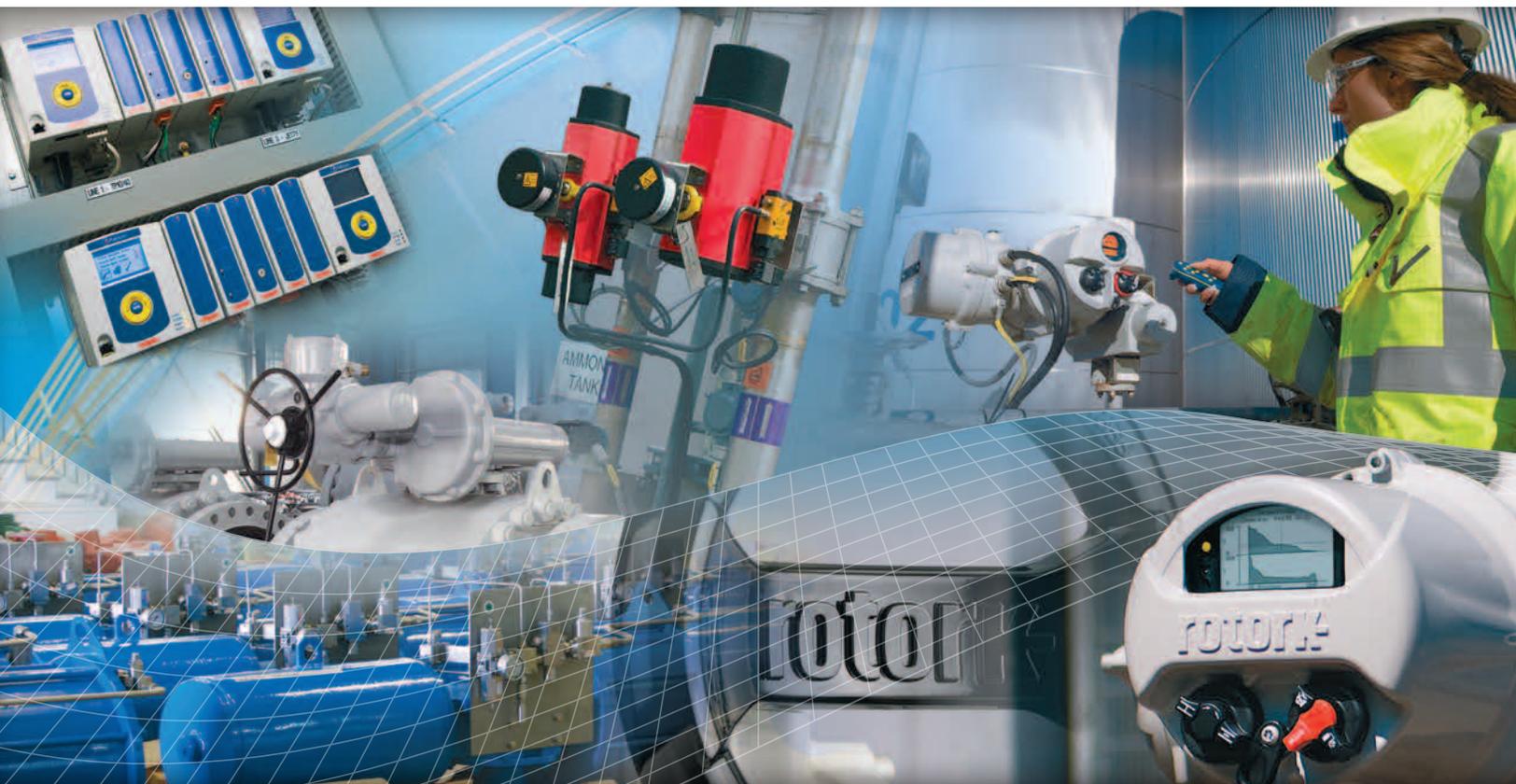


rotork®

Group Product Portfolio



Company Information
Product Ranges
Customer Services

Keeping the World Flowing

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About Rotork



For nearly sixty years, engineers have relied upon Rotork for innovative, dependable solutions to manage the flow of liquids, gases and powders. From safety systems that may be needed just once in a lifetime to process controls that are constantly on the move, Rotork flow control products remain the clear choice, worldwide.

Keeping the World Flowing

Since 1957, Rotork has grown to be a major international business with subsidiaries all around the world.

When you turn on a tap or switch on a light, turn on a kettle or put fuel in your car, a flow control product is being used somewhere in the process of delivering that service.

We are recognised as global leaders, designing and building the most reliable products, backed up by highly acclaimed customer service.

Rotork has established manufacturing facilities, a global network of local offices and agents who can truly provide a worldwide service. You will be able to locally source Rotork's products, supported by life-of-plant maintenance, repair and upgrade services.

Committed to Innovation

At every stage in the company's history, Rotork's engineers have focused on solving customer challenges - and developing new solutions - with levels of engineering skill and creativity that our competitors still cannot match.

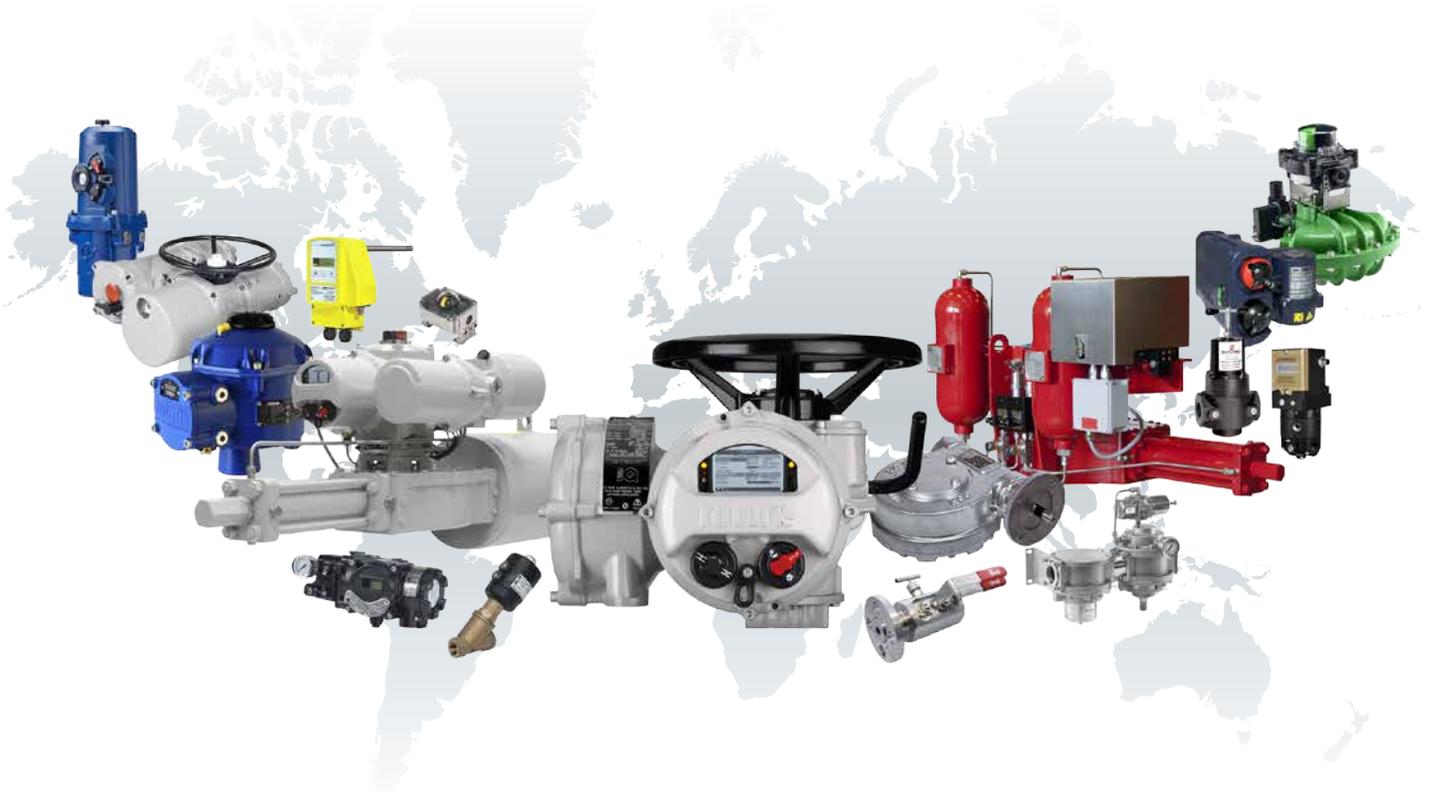
With every product that Rotork develops, you can be sure of one thing: That quality and reliability are an integral part.

Serving the World

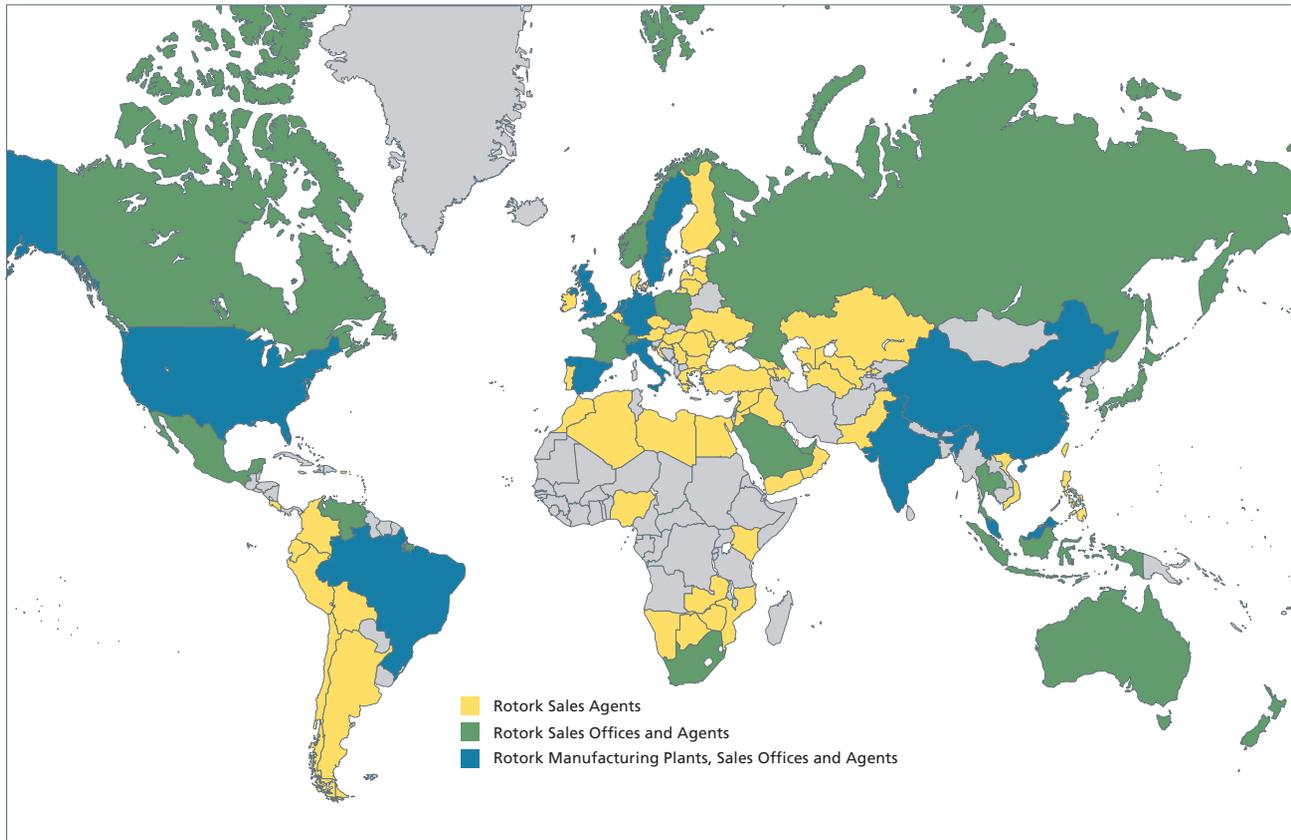
Rotork has always been committed to global supply, supporting operations in some of the most remote and challenging environments.

We have established manufacturing facilities across the globe which together with our own global network of local offices, regional *Centres of Excellence* and agents provide over 800 Rotork outlets worldwide.

You can be confident that our products and service remain the best in the world.



Worldwide Service



rotork®

Global Manufacturing

Rotork's manufacturing strength has been built over more than half a century, with international growth and strategic acquisitions. Rotork operates a truly global network of sales offices with manufacturing plants sited in Europe, Asia and North America. From heavy-duty gears to nuclear-certified actuators and pressure regulators, we are proud to be delivering the best solutions everywhere we work.

Global Culture

As an international business, supporting clients wherever their operations and project installations are located is part of our culture.

International Sales

Our international sales network allows us to support our clients wherever they are based, worldwide.

Centres of Excellence

In addition to manufacturing sites throughout the world, Rotork has regional *Centres of Excellence* providing local service and support.

Supply Chain Integration

We work closely with all our customers – from valve manufacturers and engineering contractors to end users.

Our manufacturing sites and *Centres of Excellence* are strategically located throughout the world to provide the best customer service and support locally, wherever you are based.

Rotork Structure

rotork[®] Controls

Rotork Controls manufactures electric valve actuators for heavy-duty valve applications, highly accurate process control actuators, explosionproof HVAC actuators and network control systems. Our products are trusted by customers worldwide for their reliability, precision and durability.

rotork[®] Fluid Systems

Rotork Fluid Systems specialises in the production of pneumatic, hydraulic and electro-hydraulic actuators and control systems. We are dedicated to providing 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 complete gearbox assemblies as well as a wide range of switchboxes, valve position monitors and adaption accessories.

rotork[®] Instruments

Rotork Instruments are specialist manufacturers of products for flow control, pressure control, flow measurement and pressure measurement. Our products are used in a number of sectors including pharmaceutical, biomedical, oil & gas and manufacturing industries.

rotork[®] Site Services

Rotork Site Services supports all the Rotork divisions. Site Services engineers are dedicated to providing customers with on-site support, installation and commissioning.

We operate a comprehensive Client Support Programme (CSP) designed to reduce customer maintenance downtime, increase production efficiency and reduce costs.

These teams are strategically located around the world to provide a local service backed by Rotork's network of manufacturing centres and offices.



Intelligent Electric Actuators

rotork® Controls

Heavy-duty valve actuators are Rotork's core business. Since 1957 Rotork has grown to be the world's largest independent manufacturer.

In addition to our traditional multi-turn and part-turn actuators, Rotork also manufactures highly accurate rotary and linear actuators for process control applications as well as a range of HVAC actuators and network control systems.

Rotork Controls has manufacturing facilities in the UK, USA, Germany, Spain, China, Malaysia and India. Rotork Controls is headquartered in Bath on the same site as the Group R&D centre.

Rotork Controls delivers the following product ranges:

- Intelligent multi-turn and part-turn valve actuators
- Part-turn / rotary and linear control valve actuators
- Heavy-duty part-turn / rotary and linear valve actuators
- Small part-turn / rotary valve actuators
- Explosionproof actuators, sensors, switches and controls
- Network control systems

A full listing of our worldwide sales and service network is available on our website at www.rotork.com

Test Facilities – Quality and Safety

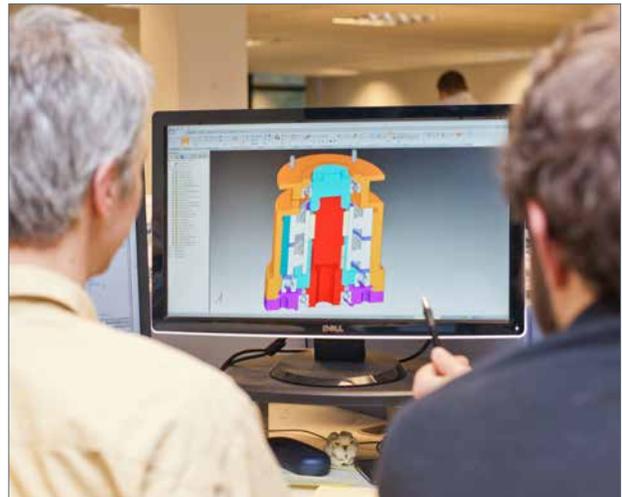
Rotork continually researches new technologies and develops innovative and industry leading products. We have dedicated research and development centres around the world that all work together to produce the strongest line of valve actuation products available on the market today.

Reliability and Quality Assurance

Rotork Controls is committed to providing our customers with robust and dependable products that meet or exceed their expectations.

We have test facilities located at all of our manufacturing centres. Every product is tested and qualified before shipment to the customer. Our products are manufactured to comply with stringent quality standards authorities around the world.

All Rotork products are designed and manufactured to the highest levels of performance and reliability.



Intelligent, Non-Intrusive Electric Actuators

IQ – multi-turn actuators

IQ
range



The world's most advanced intelligent, non-intrusive electric valve actuator, proven in the most arduous environments. Available in multi-turn, part-turn and linear configurations.

- Non-intrusive infra-red or *Bluetooth*® technology for simple configuration
- Rugged construction double-sealed to prevent water and dust ingress during site wiring (IP66/IP68 - 7 m, 72 hrs)
- Highly intuitive user interface with multilingual text display for status and setup
- Oil bath lubricated
- Detachable thrust bases across the entire range
- Explosionproof option available
- Approved for use in SIL applications
- Multi-turn direct drive: 14 to 3,000 Nm (10 to 2,200 lbf.ft) Secondary gearboxes are available
- Single-phase, three-phase and DC supplies

See PUB002-038 for further details.

IQ Remote Hand Station



Remote Hand Station enables remote operation, interrogation and configuration of IQ 3rd generation actuators. For use when the actuator is located in a hazardous, inconvenient or unpleasant location.

- Installation using standard data cable, up to 100 metres away from the actuator
- Powered via the attached actuator (24 VDC output)

See PUB002-056 for further details.

IQM – multi-turn modulating actuators



The IQM includes all the advanced features of the IQ range combined with Rotork's motor and gearing technology to produce an intelligent modulating actuator range.

- Direct output torque range 12 to 550 Nm (9 to 400 lbf.ft)
- Thrust range with linear output IQML 16 kN to 57 kN (3,500 to 12,800 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 PUB002-038 for further details.

IQT – part-turn actuators



For part-turn applications the IQT incorporates advanced features from the IQ range, is designed for direct drive and can be mounted at any operating angle.

- Non-intrusive infra-red or *Bluetooth*® technology for simple configuration
- Secure self-locking output for butterfly valve and dampers without the use of additional brakes
- Direct drive quarter-turn output
- Variable output speed
- Torque range 50 to 2,000 Nm (37 to 1,475 lbf.ft)

See PUB002-038 for further details.

Multi-functional Electric Actuators

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:
Direct drive 14 to 3,000 Nm (10 to 2,200 lbf.ft)
Part-turn up to 250,000 Nm (185,000 lbf.ft)
Multi-turn up to 40,800 Nm (30,000 lbf.ft)
- Oil bath lubricated IP68 double-sealed option
- Complete integral motor control or customer supplied motor control. Separate motor control available where required (syncroset actuator)
- Isolating and regulating duty

See PUB003-001 (A) or PUB005-001 (AWT) for further details.

Q – single-phase part-turn

Q range



The Q range is a single-phase part-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 PUB007-001 for further details.

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 PUB008-001 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. 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 PUB004-001 for further details.

Electric Control Valve Actuators

Linear and quarter-turn actuators

CVA range



- Watertight IP67 and explosionproof enclosures
- Linear: Thrust range 890 to 22,241 N (200 to 5,000 lbf)
- Quarter-turn: Torque range 54.2 to 271 Nm (480 to 2,400 lbf.in)
- Comprehensive data logging
- Optional programmable fail-to-position option
- High performance, continuous unrestricted modulating duty - S9
- Pakscan, HART, Profibus, Modbus and Foundation Fieldbus available. Optional hard-wired RIRO (Remote In Remote Out)
- Watertight IP68 and explosionproof enclosures
- Temp. range -30 to 70 °C (-22 to 158 °F) + Low Temp. Option
- 'Intrinsically Safe' control & instrumentation. Non-intrusive setup / calibration using Bluetooth wireless technology
- Optional manual override

See PUB042-001 for further details.

IQTF – Full output turn actuators

IQT range



The IQTF provides extended output rotation for part-turn valve types requiring more than 90° for operation. Typical valves include 180° and 270° diverter valves and multiport manifolds requiring bi-directional 360° operation. The IQTF actuator has a low output speed for increased positional accuracy and may also be utilised for low turn, multi-turn applications where slow operation is required. Additional features listed on p7.

- 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
- Standard duty S2/S3 25%, Modulating duty S4 50%

See PUB002-006 for further details.

Linear, quarter-turn and rotary actuators

CMA range



- Linear: Up to 3336 N (750 lbf) rated thrust and 5,004 N (1,125 lbf) seating thrust
- Quarter-turn: Up to 113 Nm (1,000 lbf.in) rated torque and 124 N (1,100 lbf.in) seating torque
- Rotary: up to 28 Nm (250 lbf.in) rated torque, up to 45 Nm (400 lbf.in) rated torque with GB3
- Precise control and continuous modulation
- Optional: local controls & fail-to-position Reserve Power Pack.
- Pakscan, HART, Profibus, Modbus, Devicenet and Foundation Fieldbus available. Optional hard-wired RIRO (Remote In Remote Out)
- Seating torque / thrust capability (60 - 150% of rated) for required tight sealing at the valve in the CLOSE position
- Temp. range for EP Product: -20 to 65 °C (-4 to +149 °F)
- Temp. range for WT Product: -30 to 70 °C (-22 to +158 °F)

See PUB094-001 for further details.

Linear, quarter-turn and rotary actuators

GPSA range



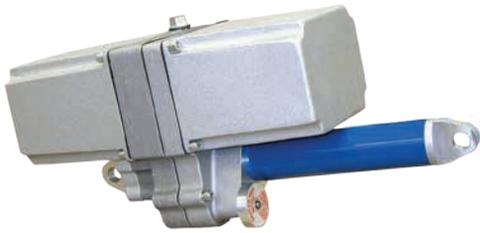
- Rotary: Rotation 90° to 20 turns
- Rotary: Torque range up to 14 Nm (125 lbf.in)
- Linear: Stroke distance up to 35 mm (1.375")
- Linear: Thrust range up to 890 N (200 lbf)
- Continuous unrestricted modulating duty
- HART, Profibus and Foundation Fieldbus available
- Temperature range from -30 to 65 °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 PUB043-001 for further details.

Accurate Damper Drive Actuators

Heavy-duty linear actuators

2000 series



- Stroke distance from 6" to 30" (152 to 762 mm)
- Thrust range up to 27,335 N (6,150 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
- ATEX approved for LA-2520
- Manual override standard

See PUB045-002 for further details.

Heavy-duty rotary actuators

1700/ 5000 series



- Torques from 67 to 16,950 Nm (50 to 12,500 lbf.ft)
- Rotation 90° to 120°
- Modulating duty: 2,000 starts per hour
- Manual override standard
- Automatic torque limiting
- Self locking drive system to hold in last position and prevent back driving up to thrust rating
- AC input power (single- or three-phase); DC input power version for 1700 only
- Temperature range from -40 to 85 °C (-40 to 185 °F)

See PUB050-001 for further details.



Heavy-duty rotary actuators

6000 series



- Up 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 PUB052-001 for further details.

HVAC Solutions – Explosionproof Actuators and Control Systems

Quarter-turn explosionproof actuators

ExMax range



ExMax electric 90° quarter-turn damper and valve actuators are designed for use in Ex areas for all gases, mists, vapours and dust.

- 24 to 240 VAC / VDC universal power supply
- Torque range 5 to 150 Nm (3.7 to 110.6 lbf.ft)
- Certificates: ATEX, IECEx, CSA, Inmetro, Kosha, EAC and others
- Control modes: On-off, 3 pos., modulating (0-10 VDC, 4 to 20 mA), depending on type
- Optional spring-return configuration (1 second available)
- Water- and dust-tight IP66 rating
- Stainless steel housing (option)
- Temperature range: -40 to +50 °C (-40 to +122 °F)
- Optional extras: 2 external Ex-auxiliary switches, Ex-e terminal box, safety temperature trigger, manual override

HVAC explosionproof sensors and switches

ExCos/ ExBin range



ExCos modulating sensors and ExBin binary switches are designed for direct use in hazardous locations. No additional modules in the panel required. No intrinsically safe wiring required. All parameters adjustable on site without additional tools or measuring devices. Sensors and switches for pressure, differential pressure, temperature and humidity available. Explosionproof design for all gases, mists, vapours and dust.

- Operating temperature range -20 to +50 °C (-4 to +122 °F)
- Measurement pressure range 0 to ±7,500 Pa
- Measurement temp. range -40 to +125 °C (-40 to +257 °F)
- Measurement humidity range 0 to 100% rH
- Stainless steel housing (option)
- Certificates: ATEX, IECEx, (CSA), Inmetro, Kosha, EAC and others
- Water- and dust-tight IP66 rating, integrated junction box

Linear explosionproof actuators

ExMax+Lin/ ExRun range



ExMax + LIN and ExRun electric linear valve actuators are designed for use in Ex areas for all gases, mists, vapours and dust. ExMax + LIN with spring-return (safety function).

- Thrust range 500 to 10,000 N (112 to 2,248 lbf)
- Certificates: ATEX, IECEx, CSA, Inmetro, Kosha, EAC and others
- Optional spring-return configuration (3, 10 or 20 secs avail.)
- Control modes: On-off, 3 pos., modulating (0-10 VDC, 4 to 20 mA), depending on type
- Water- and dust-tight IP66 rating
- Stainless steel housing (option for ExMax)
- Temperature range: -40 to +50 °C (-40 to +122 °F)
- Optional extras: Ex-d auxiliary switch with 2 adjustable contacts (2 mounting options available), Ex-e terminal box, manual override

HVAC explosionproof control systems

ExReg range



ExReg controller system has been designed for use in Ex areas for all gases, mists, vapours and dust. In combination with Ex-Max actuators it is a closed loop control system for volume flow control (VAV, CAV), pressure, temperature and humidity.

- Operating temperature range -20 to +50 °C (-4 to +122 °F)
- Measurement differential pressure range 0 Pa to 300 Pa
- Measurement temp. range -40 to +125 °C (-40 to +257 °F)
- Measurement humidity range 0 to 100% rH
- Stainless steel housing (option)
- Certificates: ATEX, IECEx, (CSA) and others
- Water- and dust-tight IP66 rating, integrated junction box
- Integral PID loop
- Pre-defined parameter sets for the most common control tasks
- Can be configured on site in the hazardous location

Fluid Power Actuators and Control Systems

rotork® Fluid Systems

Rotork Fluid Systems manufactures a comprehensive range of high quality fluid power actuators and control systems. We are dedicated to providing superior performance actuators for use on general purpose (on / off), protective service and special valve applications.

Our manufacturing facilities are located in Germany, Italy, Sweden, UK and 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

A full listing of our worldwide sales and service network is available on our website at www.rotork.com



Centres of Excellence – Knowledge and Experience

In addition to these 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.

Test Facilities – Quality and Safety

Rotork Fluid Systems' test facilities include bespoke specialist testing systems that ensure reliable operation and lifetime functionality of our products.

In keeping with Rotork's philosophy of continuous development, Rotork Fluid Systems has dedicated research and development facilities around the world.

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 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.

Test 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 and other commonly used transducers.

Fluid Power Actuators and Control Systems



Rack and pinion actuators

RCR range



- 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 5,800 Nm (51,000 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)
- Smart Valve Monitor (SVM) partial stroke testing compatible

See PUB014-004 for further details.

Compact scotch yoke actuators

RC200 RCI200 ranges



- 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
- Smart Valve Monitor (SVM) partial stroke testing compatible

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

Fluid Power Actuators

Heavy-duty scotch yoke actuators

CP range



- Pneumatic and hydraulic actuators in double-acting and spring-return configurations.
- Corrosion resistant cylinders.
- Complies with EN60529 (1991) + (A1:2000) for IP67M.
- Actuators certified to ATEX 94/9/EC.
- Actuators certified in accordance with PED 97/23/EC.
- Torque output to 4,500 Nm (39,800 lbf-in).
- Compatible with SVM partial stroke testing.
- Certified suitable for use at SIL3 as a single device in accordance with IEC 61508.

See PUB013-001 for further details.

Heavy-duty rack and pinion actuators

RH range



- 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
- Complies with EN60529 (1991) + (A1:2000) for IP67M
- 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
- Smart Valve Monitor (SVM) partial stroke testing compatible

See PUB019-004 for further details.

Heavy-duty scotch yoke actuators

GP/ GH range



- Pneumatic and hydraulic actuators in double-acting and spring-return configurations
- Corrosion resistant cylinders
- Complies with EN60529 (1991) + (A1:2000) for IP67M
- 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)
- Smart Valve Monitor (SVM) partial stroke testing compatible

See PUB011-001 (GP/GH) 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)
- Smart Valve Monitor (SVM) partial stroke testing compatible

See PUB020-001 for further details.

Fluid Power Actuators

Extreme-duty rack and pinion actuators

RHQ range



- Hydraulic, double-acting actuators
- Balanced, compact design
- Totally enclosed weatherproof housing to IP 68
- 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.

Compact quarter-turn self-contained actuators

CQ range



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 600,000 Nm
- Stroke adjustment 90° ±5°
- Std. temp. range -30 to 100 °C (-22 to 212 °F)
Low temp. range available down to -60 °C
- Certified to IP66M/IP68M, PED, ATEX, IECEx, GOST

See PUB119-001 for further details.

Vane actuators

K-TORK range



- 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

TYPE K range



- 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 °C (300 °F)
- Highly accurate and responsive
- Designed for safety and serviceability in harsh environments
- Control options: Profibus, HART and Foundation Fieldbus bus control. Pneumatic, analogue and digital positioners
- Infinite duty cycle

See PUB000-062 for further details.

Fluid Power Actuators

Gas over oil actuators

GO range



- 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
- Complies with EN60529 (1991) + (A1:2000) for IP67M
- 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)
- Smart Valve Monitor (SVM) partial stroke testing compatible

See PUB017-001 for further details.

Direct high-pressure gas actuators

HPG range



- Hydraulic manual override standard
- Speed control in both directions standard
- Complies with EN60529 (1991) + (A1:2000) for IP67M
- 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)
- Smart Valve Monitor (SVM) partial stroke testing compatible

See PUB016-001 for further details.

Mechanical fluid power stepping actuators

Twin Power range

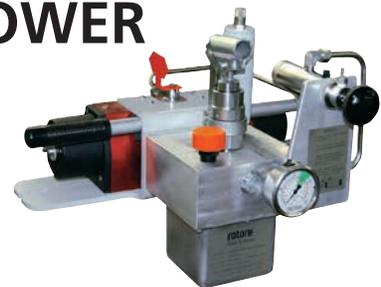


- Pneumatic or hydraulic versions available
- Torque output to 800 Nm (7,080 lbf.in)
- Modular system for flexibility
- Robust design can be supplied suitably trimmed for various severe or hazardous environments

See PUB025-002 for further details.

Self-contained fail-safe actuators

manPOWER range



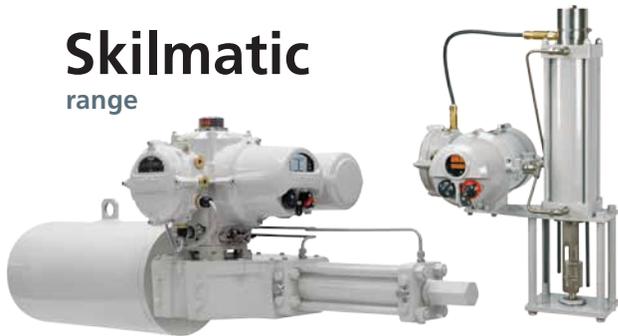
- Manually energised, spring-return fail-safe operation
- Cost-effective solution for infrequently operated valves and dampers
- Watertight or explosionproof construction
- Highly configurable with a multitude of options

See PUB062-002 for further details.

Fluid Power Actuators

Electro-hydraulic actuators

Skilmatic range



Skilmatic range SIL3 certified feature Rotork double-sealed terminal compartments and user displays for position, pressure, diagnostics and fault indication.

- Linear thrusts: 1.7 to 5,500 kN (382 to 1,230,000 lbf)
¼ turn torques: 65 to 600,000 Nm (575 to 5,000,000 lbf.in)
- Two-position, ESD or modulating operation in spring-return or double-acting executions
- Single-phase, three-phase or 24 VDC power supply
- Non-intrusive infrared configuration and *Bluetooth* data transfer
- Optional bus communications via all major protocols
- Partial stroke test capability
- Watertight or explosionproof ATEX, FM, CSA IEC and GOST

See PUB021-001 for further details.

Electro-hydraulic actuators

SB range



- 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.
- Single-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 PUB021-020-00 for further details.

Electro-hydraulic fluid power stepping actuators

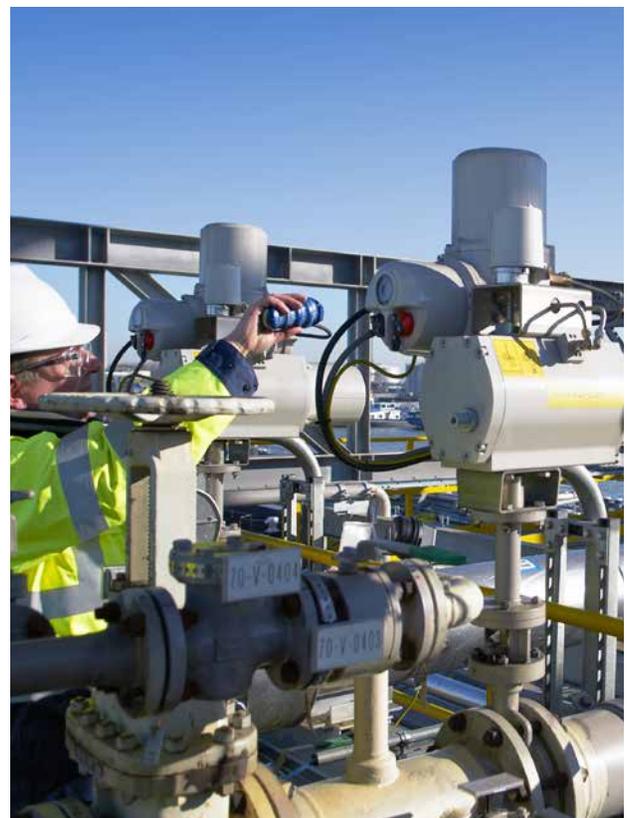
Midland-ACS range



The Midland-ACS range electro-hydraulic stepping actuators are a cost effective solution for the positioning control of 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

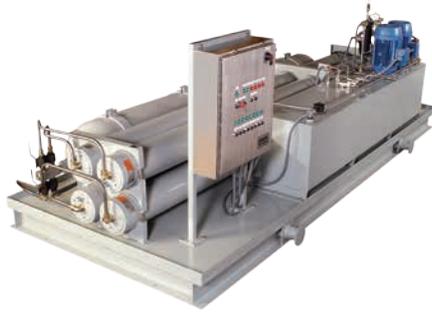
See PUB025-003 for further details.



Fluid Power Actuators

Hydraulic power units

HPU range



- 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

Hiller range



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.



Fluid Power Actuators

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
- 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.

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 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.

Valve Remote Control System

MASSO

range



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.



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, Netherlands, Italy, China, USA and India.

Rotork Gears provides an extensive range of valve gearboxes, designed to withstand the harsh challenges of valve operating environments, including subsea and nuclear. We also provide a complete range of mounting brackets, extension shafts, pedestals and accessories for the valve and actuator industry.

Rotork Gears delivers the following product ranges:

- Manual and motorised multi-turn gearboxes
- Manual and motorised quarter-turn gearboxes
- Worm gear quarter-turn gear operators
- Subsea quarter-turn gear operators
- Override quarter-turn gear operators
- Mounting kits and accessories

A full listing of our worldwide sales and service network is available on our website at www.rotork.com



Engineering and Working Capabilities

From the moment you first contact Rotork Gears you benefit from industry leading expertise gained over several decades working at the forefront of valve technology.

At Rotork Gears we pride ourselves on delivering innovative solutions to suit individual needs, backed up by the product quality and after-sales care you'd expect from one of the most internationally respected names in engineering.

Rotork Gears' products are world-class in design and meet or exceed national and international standards. Although we are, naturally, accredited to BS EN ISO 9001, your assurance of quality comes from our specialist application engineering, continuous testing of materials and the life testing of completed gearboxes.

Test Facilities – Quality and Safety

Rotork Gears has extensive test facilities at its manufacturing locations. We have a comprehensive set of test rigs for testing multi-turn and quarter-turn gearboxes across a wide range of torques. We can carry out life testing, overload testing and environmental testing in-house.

Reliability and Quality Assurance

Rotork Gears is committed to fully understanding customer needs and expectations, and meeting or exceeding these needs. Rotork Gears has an established quality management system that meets the requirements of BS EN ISO 9001.

This system embraces all aspects of the organisation from new product design and life testing, to specialist application engineering.

Rotork Gears is committed to:

- Building business success through customer satisfaction
- The promotion and full understanding of customer needs within the organisation
- Continuous improvement of products and customer service operations
- Creating a quality culture by making continuous improvement and quality a fundamental part of every employee's performance and responsibility

Quality objectives with measurable outputs are established on an annual basis and reviews held through the year to verify progress against the objectives. The quality manual and policy documents are also reviewed on an annual basis for adequacy and effectiveness. These documents are available to interested parties on request.

Valve Gear Operators and Accessories

IB motorised multi-turn gearboxes

IB bevel gear operator



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

- Torque range up to 8,135 Nm (6,000 lbf.ft)
- Thrust range up to 1,320 kN (296,750 lbf)
- Totally enclosed gearing
- Grease filled for life
- Removable output sleeve

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

IW manual and motorised quarter-turn gearboxes

IW worm gear operator



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.

- Size 3 to 13 torque range up to 264,000 Nm (195,000 lbf.ft)
Size 14 to 17 torque range from 250,000 to 850,000 Nm (185,000 to 630,000 lbf.ft)
- 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° ($\pm 5^\circ$ adjustable)
- Optional lever arms for damper applications

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

Bevel gear operators

HOB/MPR range



Cost effectively designed commodity hand operated bevel gears suited for sluice gates, gate, and globe valves.

- Torque range up to 8,018 Nm (5,914 lbf.ft)
- Thrust range up to 1,557 kN (350,028 lbf)
- 11 sizes, ratios from 2:1 to 81:1
- Cast iron body
- Maintenance free
- IP67

Options: All types of environment. Position indicators. IP68.

IS motorised multi-turn gearboxes

IS spur gear operator



Complete range of heavy-duty cast iron multi-turn spur gearboxes suited for the most demanding 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 43,386 Nm (32,000 lbf.ft)
- Thrust range up to 2,900 kN (650,000 lbf)
- Totally enclosed gearing
- Grease filled for life
- Removable output sleeve

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

Valve Gear Operators and Accessories

Worm gear quarter-turn operators

AB 242

worm gear operators



The AB range of quarter-turn operators are heavy duty cast iron gearboxes suited for ball, plug and butterfly valves. The 242 range of quarter-turn operators are robust and light weight cast iron gearboxes for low torque manual applications.

- AB torque range up to 32,000 Nm (23,600 lbf.ft), 15 sizes, ratios from 34:1 to 729:1
- 242 torque range up to 2,100 Nm (1,858 lbf.ft), 6 sizes, ratios from 40:1 to 60:1
- Rugged construction
- Stroke: 0 to 90° (± 5° adjustable)
- Sealed to IP67
- Temperature range -20 to 120 °C (-4 to 248 °F)
- ABLX range available with integrated limit switches

For further details - AB: PUB033-001 (metric data) and PUB033-002 (imperial data). 242: PUB099-001 (metric data) and PUB099-002 (imperial data). ABLX: contact Rotork Gears.

Override quarter-turn operators

ILG-D ILG-S

override worm gear operators



Complete range of manual declutchable sandwich override quarter-turn gearboxes for double-acting (D) and spring-return (S) pneumatic actuators.

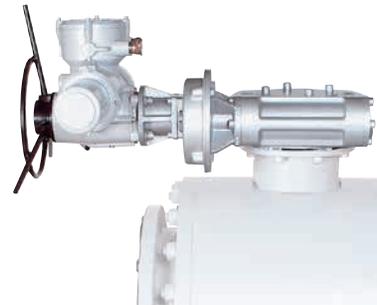
- ILG-D torque range up to 17,000 Nm (12,540 lbf.ft), 9 sizes, ratios from 35:1 to 468:1
- ILG-S torque range up to 32,000 Nm (23,600 lbf.ft), 10 sizes, ratios from 34:1 to 707:1
- Protected input shaft
- Cast iron housing
- Axial needle bearings
- Sealed to IP65, optional IP67 & IP68

For further details - ILG-D: PUB038-001 (metric data), ILG-S: PUB039-001 (metric data) and PUB039-002 (imperial data).

Worm gear operators

MOW

range



Heavy duty quarter-turn modulating gearboxes suited for control valves.

- Torque range up to 47,000 Nm (34,500 lbf.ft)
- 9 sizes, ratios from 40:1 to 3000:1
- Up to 1,200 starts per hour
- Ground and polished worm shaft
- Aluminium bronze worm wheel
- Comprehensive gear ratios combined with a selection of spur input reducers
- Angular contact bearings
- Removable output drive sleeves

Options: All types of environment.

See PUB085-006 (metric data) and PUB085-007 (imperial data) for further details.

WGS subsea quarter-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 membrane or piston type pressure compensators to balance the pressure and allow them to work at any depth.

- Torque range from 2,200 to 500,000 Nm (1,623 to 368,800 lbf.ft)
- Worm shaft supported on taper roller bearings
- High strength alloy steel worm screw hardened and ground
- Vertical or horizontal carbon steel ROV input (class 2 to 7)
- Stroke: 0 to 90° (± 5° adjustable)

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

Valve Gear Operators and Accessories

Light-duty worm gear 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
- Protected steel input shaft
- 7 models up to 1,500 Nm (1,100 lbf.ft)
- Removable drive sleeve
- Axial needle bearing
- Stroke 0 to 90° ($\pm 5^\circ$ adjustable)
- 2 keyways to cater for 45° & 90° positions
- Various inserts to suit all valve stems
- 232LX range available with integrated limit switches

232: See PUB034-001 (metric) and PUB034-002 (imperial) for further details. 232LX: contact Rotork Gears.

Worm gear operators

FB range



Quarter-turn cast iron gearbox suitable for use with fire protection (i.e. sprinkler) systems, includes limit switches to be incorporated into a supervisory electrical circuit. Designed and tested specifically to meet UL1901 specification and FM1112 Approval.

- Torque range up to 1,000 Nm (885 lbf.ft)
- 5 sizes, ratios from 40:1 to 60:1
- Worm gear
- Manual drive
- 3 x overload capacity
- 1,000 duty cycles

See PUB093-001 for further details.

Stainless steel gear operators

300 AB-SS WG-SS stainless steel ranges



300: Light duty pressed stainless steel quarter-turn gearboxes.

- Torque range up to 1,000 Nm (738 lbf.ft)
- 3 sizes, ratios from 37:1 to 45:1

AB-SS: Stainless steel 316 housing quarter-turn gearboxes.

- Torque range up to 26,000 Nm (23,012 lbf.ft)
- 14 sizes, ratios from 37:1 to 592:1

WG-SS: Heavy duty stainless steel 316 housing quarter-turn gearboxes.

- Torque range up to 125,000 Nm (110,634 lbf.ft)
- 2 sizes, ratios up to 3,795:1

For further details - 300: PUB035-001 (metric) and PUB035-002 (Imperial). AB-SS: PUB100-001 (metric) and PUB100-002 (Imperial). WG-SS: visit www.rotork.com/gears

Worm gear operators

MTW range



The multi-turn worm gearboxes are used for applications such as sluice gates and dampers.

- Torque range up to 162,000 Nm (119,000 lbf.ft)
- 11 sizes, ratios from 40:1 to 5,760:1
- Ground and polished worm shaft
- Aluminium bronze worm wheel
- Comprehensive gear ratios combined with a selection of spur input reducers
- Angular contact bearings supporting worm shaft
- Removable output drive sleeves

Options: Travelling nut for applications requiring mechanical stops. Lever arms. AWWA. All types of environment.

See PUB087-005 for further details.

Valve Gear Operators and Accessories

AB motorised quarter-turn gearboxes

AB550M

gear operator



1/4 turn devices for the motorised operation of ball, plug & butterfly valves and power & process dampers.

- Torque: 600 Nm (544 lbf.ft). Ratio: 34:1
- Supports electric actuator weight up to 46 kg (101 lbs) and a speed up to 96 rpm
- Bore: 45 mm (1¾ inch)
- Input: F/FA10. Output: F/FA07, 10, 12, 14, 16
- Cast iron housing and protected steel input shaft
- Axial thrust bearings
- Removable insert
- IP67 and ATEX approved

Options: High and low temperatures, ductile iron housing, firesafe to ISO 10497, IP68

See PUB123-001 (metric data) and PUB123-002 (imperial data) for further details.

Dual speed gear operator

DSIR

range



The Dual Speed Input Reducer is used to reduce the number of input turns required and therefore the operating time on manual gearbox applications.

- For use with any manual gearbox which can be fitted with an F14 or FA14 input flange
- Ratio can be switched between 1:1 and 4.25:1
- Output torque 720 Nm (6,373 lbf.in)

See PUB040-001 (metric data) and PUB040-002 (imperial data) for further details.

Spur gear operators

HOS/MPR

range



Multi-turn devices intended for the manual operation of gate, globe, sluice and penstock valves. For use above and underground with upward or downward input orientation.

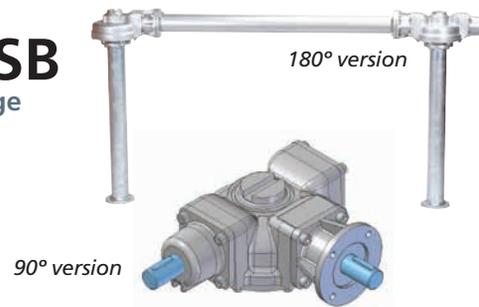
- Torque range up to 15,917 Nm (11,740 lbf.ft)
- Thrust range up to 1,557 kN (350,000 lbf)
- 14 sizes. Ratios from 2.04:1 to 151.9:1
- Totally enclosed gearing
- Cast iron gearcase
- IP67

See PUB122-001 (metric data) and PUB122-002 (imperial data) for further details.

Dual shaft bevel gear operators

DSB

range



Complete range of multi-turn bevel gearboxes with two shafts for use with dual stem sluice gates and penstocks.

- Torque range up to 8,135 Nm (6,000 lbf.ft)
- Thrust range up to 1,320 kN (296,750 lbf)
- 13 sizes. Ratios from 1:1 to 120:1
- Ductile iron baseplates
- Comprehensive gear ratios combined with a selection of spur input reducers
- Pinions mounted on ball bearings
- IP67

Options: All types of environment. Various position indications. IP68. Input shafts available at 90° & 180° to each other.

See PUB027-001 for further details.

Valve Gear Operators and Accessories

Nuclear rated bevel gear operators

IBN range



Heavy duty multi-turn bevel gearboxes suited for linear valve applications in nuclear installations. Built to exceed the IEEE 382 specification and the 10CFR50 quality standard and fully tested for in containment duty.

- Torque range up to 8,135 Nm (6,000 lbf.ft)
- Thrust range up to 1,320 kN (296,750 lbf)
- 6 sizes. Ratios from 2:1 to 8:1
- Ductile iron cast body
- Viton O-rings
- Special bearings
- Nuclear grease

See PUB027-003 for further details.

Nuclear rated spur gear operators

ISN range



Heavy duty multi-turn spur gearboxes for nuclear installations, suited for the most demanding linear valve applications as an alternative to the IBN gearboxes where higher torque and thrusts and larger stem acceptance is required. Built to exceed the IEEE 382 specification and the 10CFR50 quality standard and fully tested for in containment duty.

- Torque range up to 43,386 Nm (32,000 lbf.ft)
- Thrust range up to 2,224 kN (500,000 lbf)
- 3 sizes. Ratios from 6:1 to 24:1

See PUB027-003 for further details.

Nuclear rated worm gear operators

IWN range



Heavy duty quarter-turn gearboxes suited for plug, ball and butterfly valves in nuclear installations. Built to exceed the IEEE 382 specification and the 10CFR50 quality standard and fully tested for in containment duty.

- Torque range up to 48,809 Nm (36,000 lbf.ft)
- 7 sizes. Ratios from 40:1 to 70:1
- Ductile iron cast body
- Viton O-rings
- Special bearings
- Nuclear grease

See PUB027-003 for further details.

Nuclear rated manual worm gearboxes

242P range



The 242P series is a range of nuclear safety related gearboxes, qualified for outside containment environment. The 242P gearboxes are intended for the operation of ball, butterfly, plug and any other quarter-turn valves.

- Torque range up to 1,000 Nm (8,851 lbf.in)
- 5 sizes. Ratios of 40:1 to 60:1

See PUB105-001 for further details.

Valve Gear Operators and Accessories

Interlocking Systems

Alcatraz Interlocks range



Interlocking systems for safe operation to prevent potentially hazardous situations caused by errors in the operating sequence of industrial processes. The operator is forced to follow a predetermined sequence by means of a mechanical coded key transfer.

- Bespoke interlock systems designed to suit individual needs
- Easy to install and operate
- Stainless steel 316
- Fire tested according to API 607
- Test certificate EN 10204 3.1 available on request

Direct mount chain wheels



Direct Mount Chain Wheels mount directly onto the gearbox input shaft by means of a pin or coupling and are suitable for use with every gearbox range in our product offering.

- Cast iron chain wheels from 135 to 330 mm (5.32 to 13 inch) diameter
- Chain guides and bearing are standard
- Chain and chain wheel sprockets are to DIN 766
- Galvanized or stainless steel chain available
- Epoxy coating for durability available

Options: AISI316 chainwheel & chain, sheradisation protection, adaption design to suit application.

See PUB063-038 for further details.

Remote mounting and extension spindles

Valve and actuator remote mounting and extension spindles

Remote actuator mounting can be achieved using valve extension spindles or pedestal adaptors. Design and manufacture is done in house for specific applications. Lengths can be from 500 mm to 8 m, in stainless steel or carbon steel.

Extension spindle

- Underground applications
- Customer specified extension
- Welded construction for weight saving
- Position indication option
- Suitable for manual or actuated drives

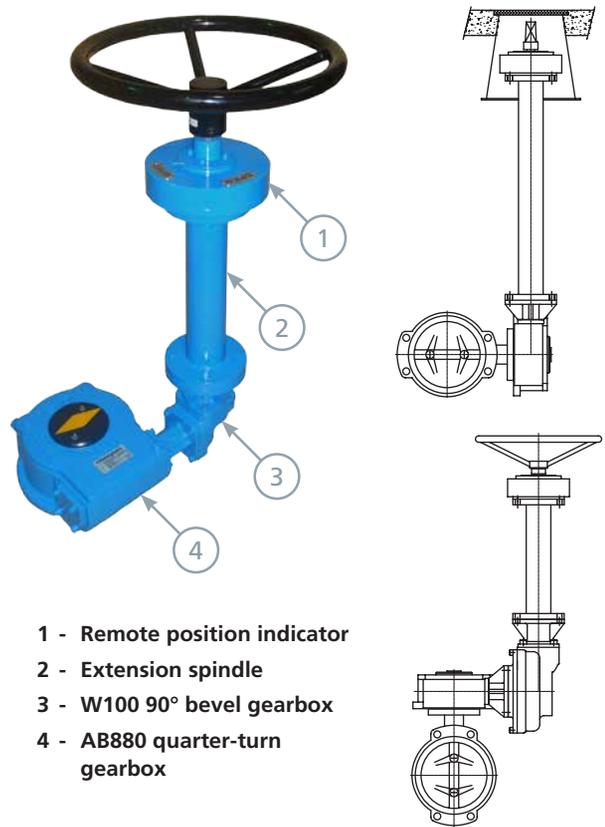
Options: Oil filled, environmental sealing, galvanized, plain or dynamic bearings, swivel joints.

Remote position indicator

Mechanical remote position indicators for buried service and shaft extension applications. 3 sizes. Ratios: ECL1 up to 35:1, ECL2 up to 120:1, ECL3 up to 394:1.

W100 1:1 bevel gearbox

1:1 bevel gearbox designed primarily to be used on AB and manual duty IW ¼ series gearboxes to change the input shaft direction by 90° for underground applications.



- 1 - Remote position indicator
- 2 - Extension spindle
- 3 - W100 90° bevel gearbox
- 4 - AB880 quarter-turn gearbox

Valve Gear Operators and Accessories

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. ISO 9001 accreditation was achieved in 1992. Rotork Valvekits supply the following components to the highest standards, with market leading delivery times:

- Mounting brackets and couplings
- Extensions
- Pedestals
- Locking devices
- Flexible drive technology
- Chainwheels, handwheels and spring-return handles
- Solenoids, switchboxes and positioners

See PUB063-040 for further details.



Locking levers - secure and tamper proof designs

- Locking plates, for quarter-turn ball and butterfly valves
- Multi-turn locking flanges for valves and gearboxes
- Interlocked valves

See PUB063-040 for further details.



Spool and pedestal adaptors

Quarter-turn valve adaption for rack and pinion or pneumatic actuators can be provided in the form of spool or pedestal type mounting kits.

These are fully enclosed adaptors with options of DD, square or keyed drives.

Construction materials will be carbon steel, supplied complete with fasteners, painted or natural.

- Valves from 1/4" to 48"
- F03 - F35 Flanges - ISO 5211/ DIN 3337
- Welded to ASME 9 standards
- Square, key or double D drive
- 100 to 500 mm in length

Options: O-ring seals, stress calculations, material certification.

See PUB063-030 for further details.



Network Control Systems

rotork®

Integration of the plant controls by use of network connectivity has been a hallmark of Rotork's 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®, HART® and DeviceNet®. See page 32 for more details. Innovative technology together with expert bus system knowledge ensures that Rotork can always provide the ideal solution for the control system.

A full listing of our worldwide sales and service network is available on our website at www.rotork.com



Bus Control System

Pakscan™

The Rotork *Pakscan*™ system is a world leader in actuation control automation and has been at the forefront of network technology since 1986. *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. With their high reliability and efficiency, coupled with low maintenance costs, *Pakscan* networks have proved to be the unrivalled leader in valve actuator communications.

Most Rotork actuators can connect to *Pakscan* using an additional option module. Other equipment can connect using *Pakscan* adaptors.

Completely engineered package

- Automatic network monitoring and fault management
- Field network fault tolerant and redundant connection to host
- Fully pre-configured Master Station
- HMI screen and keypad built-in
- Simple Modbus RTU / TCP host communications
- Field network wired and / or wireless
- Defined 2-wire transaction times and network distance
- Field and host communication diagnostics
- Easily expandable
- Hot standby capability
- Commission without the need for a host DCS or PLC
- Proven track record
- Built-in web server for full systems diagnostics

See *PUB059-030* for further details.

Bus Control System

P3 Master Station

The *Pakscan* P3 Master Station is capable of controlling up to 300 actuators, split between a wired current loop option card and a wireless option card. The P3 includes a fully redundant Hot Standby Master Station as an option. 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 email 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. The *Pakscan* pre-configured database and vast interface experience ensure smooth integration with any Modbus host system.

See PUB059-030 for further details.

Rotork P3 field mount Master Station

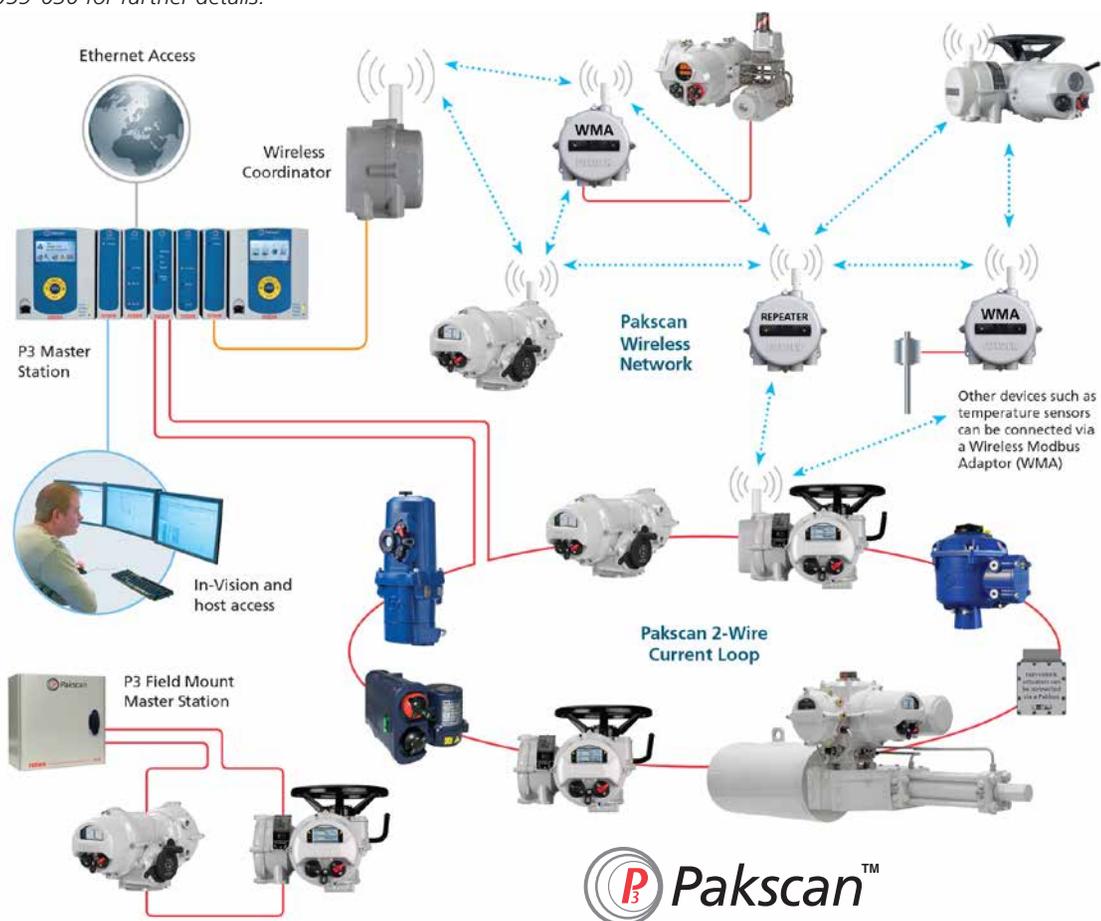
The *Pakscan* P3 Field Mount (P3F) Master Station enhances the P3 range by allowing the Master Station to be mounted close to the process. Enclosed in an environmentally protected IP65 box, it provides (via a DCS or PLC) control and monitoring of 32 field units utilising serial or TCP / IP Modbus communications. Configuration is achieved using the comprehensive built in web pages.

See PUB059-030 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 PUB059-024 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 PUB088-001 for further details.



Foundation Fieldbus®

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 PUB089-001 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 (EDS) 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 PUB090-001 for further details.

Multiple Bus Connectivity

Modbus®

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 PUB091-001 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 to 20 mA current loop and a superimposed digital variable frequency signal. Traditionally the 4 to 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
- Electronic Device Description (DD) files
- HART 7 compatible

See PUB092-001 for further details.

Precision Control and Indication

rotork® Instruments

Rotork Instruments are specialist manufacturers of products for flow control, pressure control, flow measurement and pressure measurement. Our solutions are trusted wherever there is a need for high precision and reliability, including pharmaceutical, biomedical, oil & gas and manufacturing industries.

We have production facilities throughout the world, complemented by a large network of distribution and support centres.

A full listing of our worldwide sales and service network is available on our website at www.rotork.com

Bifold®

YTC
YOUNG TECH Co., Ltd

rotork®
MIDLAND

rotork®
Fairchild

SOLDO
CONTROLS

m&m
International

Worldwide Industry and Application Experience

With nearly 60 years of extensive knowledge and experience, Rotork has provided products and services worldwide for virtually every industrial actuator application.

Rotork Instruments offers a range of precision control and valve accessory products from the Rotork Fairchild, Young Tech, Soldo®, Rotork Midland, Bifold® Fluidpower and M&M International companies:

- Isolation valves
- Pressure regulators and boosters
- Relief valves
- Pilot & manual valves
- Solenoid valves
- Field instrumentation
- Cylinders
- Subsea solenoids
- Ancillary products
- Controls
 - I/P Transducers
 - V/P Transducers
 - Switch boxes
 - Pneumatic positioners
 - Electronic positioners and controllers
 - Wireless valve monitoring

Rotork Instruments is proud to offer a diverse range of products which serve many different duties in a wide variety of applications. We also offer a factory customisation service, to create one-off units to meet specific needs.



Precision Control and Indication

Solenoids

Pneumatic Solenoid Valves



Designed and constructed of 316 stainless steel our ranges of pneumatic components are ideally suited for both hazardous areas and industrial use.

- Up to 500 psi / 35 bar working pressure
- 316L stainless steel body construction with conduit, flying lead and NAMUR interface
- Manual reset and manual override options
- Low power consumption version available
- Normally open, normally closed and diverting

Solenoids

Hydraulic Solenoid Valves



- Up to 20,000 psi / 1,380 bar working pressure
- 316L stainless steel body construction
- Manual reset and manual override options
- Low power consumption version available
- Normally open, normally closed and diverting

Solenoids

Industrial Solenoid Valves



- Direct-acting compact valve design - 1/4" to 8" sizes
- Zero pressure rated
- Exd options
- Suitable for vacuum applications

Solenoids

Piston Actuated Valves



- 3/4" to 2" sizes
- 316 stainless steel, brass and bronze body construction
- Thread, flange and clamp connections
- Normally Open, Normally Closed and Bi-directional options

Precision Control and Indication

Pilot and Manual Valves

Pneumatic and Hydraulic Spool Valves



- 1/4" to 1" sizes with mechanical, air and solenoid operator options
- 3/2 and 5/2 configurations
- 316L stainless steel body construction

Pressure Regulators and Boosters

Filters, Filter Regulators, Regulators, Flow Control, Volume Boosters and HIPEX Valves



Precision pneumatic regulators including pressure reducing, back pressure and vacuum models.

Volume boosters meet all the requirements of a precision device including accuracy, sensitivity, fast response, stability, drift-free settings, low output droop, Supply pressure effect immunity, high forward & exhaust flow capacity.

- 1/4" to 2" sizes
- 316L stainless steel and aluminium body materials

Relief Valves - Gaseous and liquid service ranges

Hydraulic and Pneumatic Thermal, Check and Precision Relief Valves



- Hydraulic range up to 1,380 bar working pressure
- Pneumatic range up to 12 bar working pressure
- Pneumatic range includes 1/4" to 1" NPT / BSP pressure relief valves
- Pressure control from 0.8 to 1,200 bar
- Working temperature:
Nitrile -20°C to +80°C
Viton 20°C to +150°C

Cylinders

VDMA Pneumatic Cylinders



VDMA range pneumatic cylinders. A range of double-acting, fully adjustable cushioned metric cylinders to VDMA 24562 and BS ISO 6431 standards. Profile barrels (MP range) or with conventional round barrels (MR range).

- 32 mm to 125 mm bore
- Ports 1/8" to 3/4" BSP
- Simple reliable design
- Meets international and european standards
- Clean lines
- Magnetic piston option
- Customers required stroke supplied as standard
- Adjustable air cushioning
- Lube free
- Full range of mounting accessories
- Customised designs available

Precision Control and Indication

Field Instrumentation

Pressure Transmitters



- Intrinsically Safe (IS) and Exd ATEX & IECEx certification
- Digital display and pipe mounting options
- IP67 and 316L stainless steel body material
- 0 to 2,200 bar pressure ranges
- 0.25% full scale accuracy

Instrument Pumps

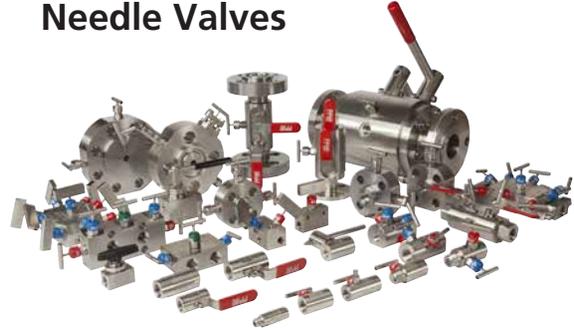
Motor Pumps



- **Chemical Injection Motor Pump Unit**
Worldwide approvals ATEX / CE / ISO 9001: 2000.
Flow rates upto 160 l/min @ 155 bar and 46 l/min @ 636 bar.
Designed for use with potentially hazardous chemicals.
Compact multi-piston pumps offer minimal pressure pulsation.
Hermetically tight, environmentally friendly.
- **Chemical Metering Hydrodrive Motor Pump Unit**
- **Water and Oil based fluids pump / motor pump unit**
- **Water Pumps and Motor Pumps Units**
Hydraulic pumps for water based fluids.
316 stainless steel external components.
Type TW :
High Pressure – up to 1,000 bar.
Standard version for intermittent operation.
Water cooled version for continuous operation.
Type SW :
For use with limited power availability – 0.5 to 0.75 kW.
24 VDC motor.
High pressure up to 690 bar.
- **Water Glycol Pumps and Motor Pump Units**
Type XW up to 1,040 bar.
- **Oil Pumps** – Type MPU / M / S / XH up to 690 bar with special high pressure version up to 1,000 bar.

Field Instrumentation

Instrumentation Ball and Needle Valves



One piece body construction ¼" to 1" NPT 414 bar up to 10,000 bar / 690 bar. Medium pressure range available from 10,000 to 20,000 PSI / 1,380 bar.

- **Ball Valves:**
State of the art design to reduce potential leak paths with a standard pressure ranging from 1,000 / 70 bar up to 10,000 psi / 690 bar, ¼" to 2" NPT.
- **Double Block and Bleed Monoflange and Piping Valves:**
Combines piping and instrument valves in a single assembly provides weight and space savings as well as reduction in potential leak paths. Up to and including Class 2500. Available in ¼", ⅜", 9/16", ¾", 1".

Ancillaries



Full range of ancillary products in 316L stainless steel specifically designed for severe environments with low temperature options available at -50 °C, to include:

- **Check Valves:**
13 bar up to 11 Cv
828 bar up to 190 lpm
690 bar, 51 lpm velocity check
- **Quick Exhaust Valves:**
Up to 12 bar pneumatic, ¼" to 2" options available
Ambient temperature range -20 to +70°C
- **Flow Regulators:**
Up to 1" NPT uni-directional and bi-directional flow options
- **Air Pressure Switches:**
Latch lock manual reset option
3/2 or 5/2 options
Thermal fuses – ½" NPT up to 200 °C

Precision Control and Indication

Controls

Electro-Pneumatic Transducers



Accurate, compact I/P, E/P, D/P & P/I electro-pneumatic transducers with extensive combinations of inputs and outputs carry standard FM, CSA, ATEX or IECEx agency approvals and maintain accuracies up to 0.15% and feature proportional pressure regulation.

- Accuracy: As low as + 0.15% full scale
- Repeatability: As low as + 0.1% full scale
- Max supply pressure: 1,380 kPa (200 psi)
- Max output pressure: 1,050 kPa (150 psi)
- Flow capacity: 15.3 to 1,189 m³/hr (9 to 700 SCFM)
- Pipe sizes NPT: ¼" to 1"

Controls

Electronic Controls



Explosionproof (Ex) and intrinsically safe (IS) range provides – control of electro-hydraulic actuators. Incorporating:

- HART protocol
- Remote control options
- 316L stainless steel option
- Suitable for Zone 0, 1 & 2 hazardous environments

Controls

Pneumatic Positioners



YT-1200, YT-1200L positioners are used for pneumatic valve actuators by means of pneumatic controller or control systems with an output signal of 3 to 5 psi or split ranges.

- The product can operate normally in very extreme environment, such as vibration and temperature
- Durability testing for a minimum of 2 million cycles
- Response time is very short and accurate
- Simple part change can set 1/2 split range
- It is economical due to less air-consumption
- Direct / Reverse action can be set easily
- Zero & Span adjustment processes are simple
- Feedback connection is easy

Controls

Limit Switchboxes and Sensors

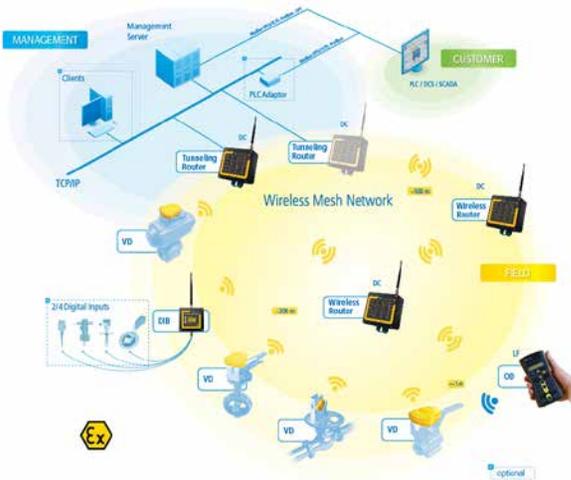


- **General purpose and intrinsically safe switchboxes**
Polymer, aluminium or stainless steel enclosures
Corrosion resistant enclosures NEMA 4/4X (IP65)
- **Explosionproof limit switchboxes**
Aluminium or stainless steel enclosures
Explosionproof certification; Certification options: UL, ATEX, INMETRO, CCOE, GOST, IECEx, SIL
- **Integral solenoid valve limit switchboxes**
Aluminium enclosure – designed to meet NEMA 4/4X (IP65)
AS-i interface or DeviceNet capable
- **BOLT proximity sensors.** Threaded body proximity switch for remote electrical indication of linear and rotary valve / actuator position.

Precision Control and Indication

Controls

Wireless Valve Monitoring



- Self-powered sensors
- Wireless redundant mesh network
- Hand-held configurators
- Interface to SCADA/PLC/DCS

Controls

Pneumatic and Hydraulic Manifolds



Compact Manifold

AXIS Stacker Manifold

Hydraulic Manifolds

- High flow rates up to 200 l/min (45 gpm)
- Low cost
- 316L stainless steel
- 1/4", 3/8", 1/2", & 1" thread milled NPT
- Offering reduction in cost and weight and an increase in performance

Controls

Freight Rail Wagon Door Systems



Photo credit: Drax Biomass

Subsea

Subsea Valves and Controls



Shuttle Valves – up to 690 bar

Pilot Operated Valves – Ball seated and slide up to 1,035 bar

Pilot operated valves (Shear plane sealing) – up to 690 bar

Solenoid Valves – up to 690 bar

Special Valve products

Control pod products

- Valves for operation directly immersed in sea water to 3,000 m / 1,035 bar / -40 to +121 °C
- Extensive qualification test programmes
- 1 million cycles operation
- Option of seawater as operating medium
- Up to NAS 1638 Class 12
- Leakage 0 to 0.2 cc/min
- 18 to 28 VDC, 15 Watt

Projects, Services and Retrofit

rotork® Site Services

Rotork staff are dedicated to providing client support across all Rotork divisions with the aim of maximising the client production cycle. These teams are based out of service centres around the world and are complemented by factory-trained agents.

Our expert technicians support Rotork customers, allowing us to deliver on our promise of global solutions backed by local service.

We provide a full range of flow control services:

- Emergency and planned service
- Actuator overhauls
- Health checks
- Preventative maintenance
- Retrofitting actuators to existing valves
- Shutdown outages
- Certified inspection and safety checks
- Factory fitting of actuators to new valves
- Plant optimisation
- Repairs and upgrades
- Loan actuator service
- System Integration projects
- Automation projects

Visit www.rotork.com to identify your nearest Rotork Site Services centre.



Client Support Programme

Rotork offers a premium level of product reliability and availability through the flexible Client Support Programme (CSP). Designed to facilitate the highest production demands while providing a tiered approach to maintenance, the CSP is committed to reducing maintenance downtime and costs.

Through consultation, the CSP is tuned to deliver the optimum level of maintenance through predictive maintenance algorithms.



Features of the CSP are:

- Fixed term prices for Rotork products and services
- Customisable cover based on equipment criticality to production
- Equipment performance related targets for reliability and availability
- Priority support with customisable response times
- Fully parts and labour inclusive, no additional costs or discounted labour and parts
- Fix or replace options
- Periodic equipment performance and status reports
- Built-in regular health checks on all equipment

Benefits of the CSP include but are not limited to:

- Year-on-year reduced maintenance costs
- Easy budget management
- Maximised production resulting in reduced downtime
- Year-on-year improved reliability and availability
- Optimised resource usage to accelerate in-house projects
- Reduced lifecycle costs



Projects, Services and Retrofit

Preventative maintenance

To maximise plant up-time and minimise operating costs we offer clients a range of preventative maintenance programmes. We tailor the service in every case to reflect the type of actuators in service, the availability of asset information and the criticality of the plant.

Automation 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.

Emergency and planned service

We provide a full range of actuator services, covering any type of actuator in any location, including hazardous environments. Our services include installation, commissioning and upgrading as well as connection and installation of bus communication systems. We are also skilled at troubleshooting and repairing damaged or deteriorating assets. Depending on your requirements, we can offer guaranteed emergency response times or planned response.

Shutdown outages

For those customers who run tightly-scheduled shutdowns, we engage closely in the project to help meet demanding deadlines. A typical example might involve our staff removing large numbers of actuators, overhauling them in our workshops and re-commissioning them as part of the maintenance of a larger unit.

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.



Health checks

To help customers understand the state of their plant and assets, to better inform maintenance and replacement decisions, we offer full inspection and reporting. In addition to a detailed and intrusive inspection of the actuators, we offer extra insights from our original factory build data.

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.

Actuator overhauls

After a long service life it is sometimes preferable to overhaul rather than replacing actuators. In our workshops we completely strip and rebuild actuators, returning them to their original state.



rotork®

Keeping the World Flowing

www.rotork.com

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

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Rotork are corporate members of the Institute of Asset Management



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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

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