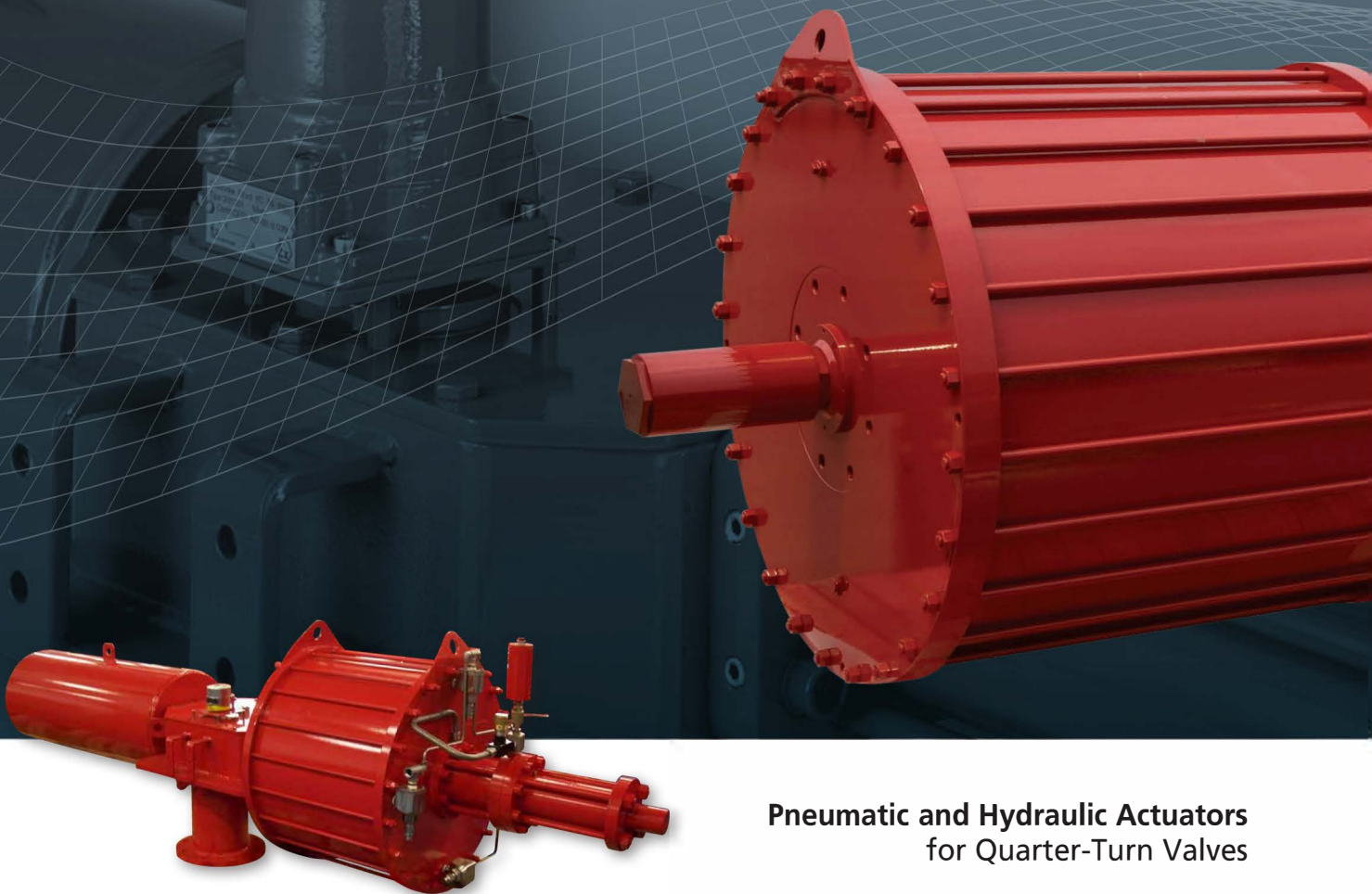


rotork[®] Fluid Systems

GP & GH Range



Pneumatic and Hydraulic Actuators
for Quarter-Turn Valves

Redefining Flow Control

Rotork Actuators – Quality Controlled

Rotork is a global leader in valve actuation technology. We provide a comprehensive range of valve actuators, controls and associated equipment, as well as a variety of valve actuator services including commissioning, preventive maintenance and retrofit solutions.

Rotork Fluid Systems specialises in the production and support of fluid power actuators and control systems. We are dedicated to providing the marketplace with the latest technology, consistently high quality, innovative design, excellent reliability and superior performance.

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

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

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

GP Range Pneumatic & GH Range Hydraulic Actuators

Proven, Dependable Design

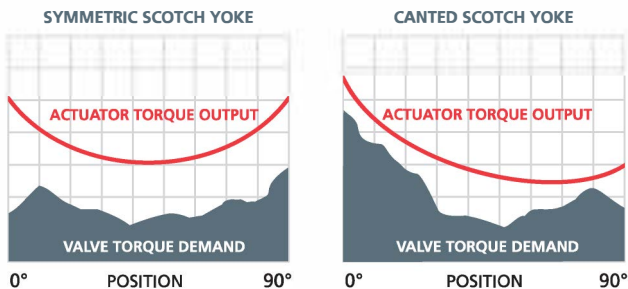
GP and GH range scotch yoke actuators are designed to operate ball, butterfly and plug valves requiring a rotary, quarter-turn movement for either on/off or modulating duty. The robust design has been proven in thousands of diverse applications the world over.

Safety by Design

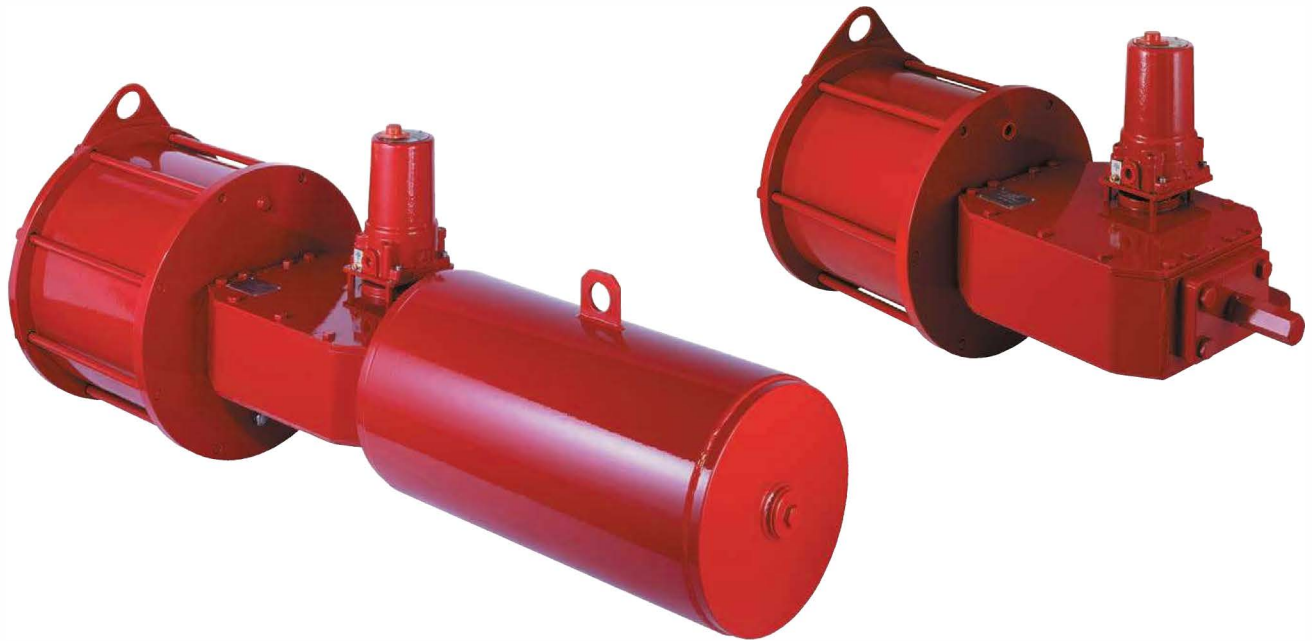
Spring-return units can be assembled to provide failsafe operation in either direction. The spring-return module is inherently safe since it can only be removed from the centreforce after all spring forces have been released. Centreforce bodies incorporate a pressure relief valve.

Two Torque Output Profiles

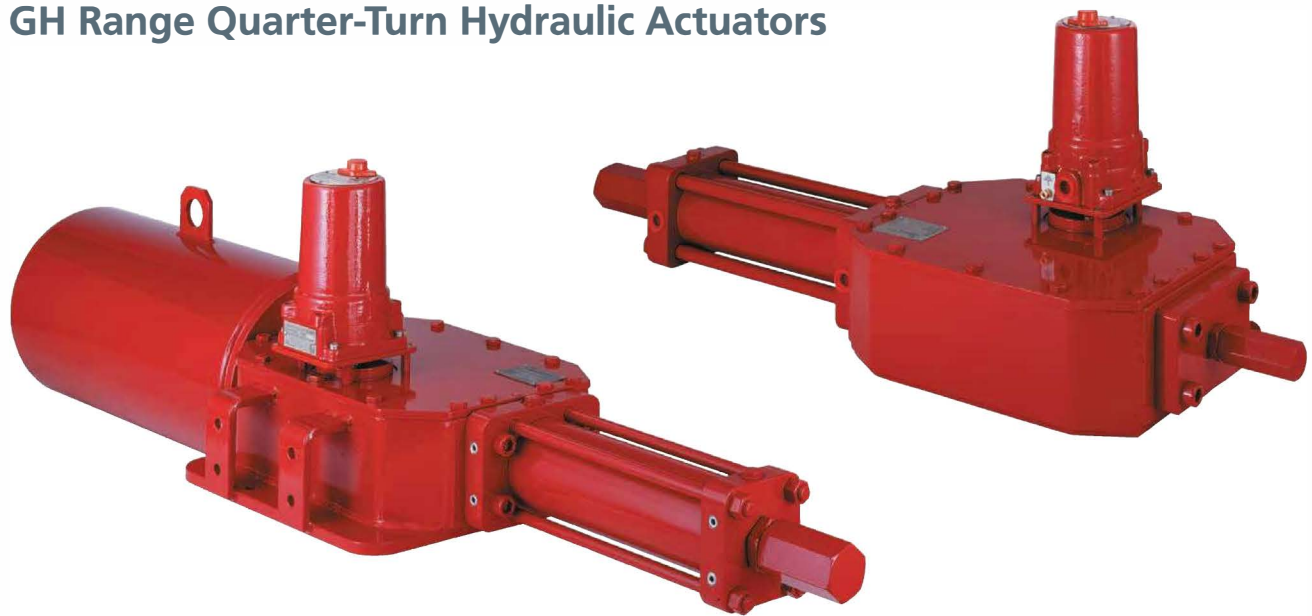
GP and GH range actuators can be supplied with either symmetrical or canted torque arms. The classic symmetric yoke delivers peak torque at both ends of stroke. The canted yoke is a Rotork design innovation that delivers peak torque at only one end of stroke. Use of canted arms can often reduce actuator size, weight and cost for valves with appropriate torque demand characteristics.



GP Range Quarter-Turn Pneumatic Actuators

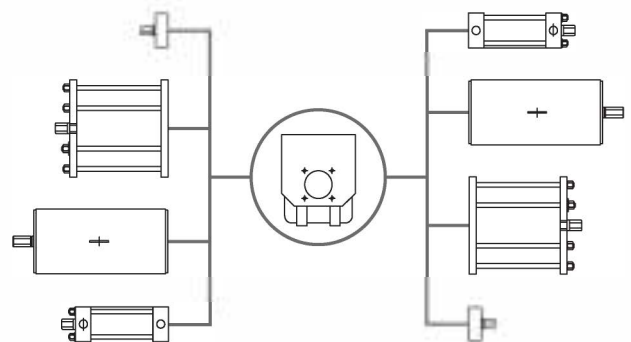


GH Range Quarter-Turn Hydraulic Actuators



Versatility

Rotork GP and GH range actuators share a modular construction design. The centre body is available in nine sizes. A pneumatic or hydraulic cylinder can be attached to either or both sides. A spring cartridge can also be fitted to either side for Emergency Shut Down (ESD) applications. Modular construction and stocking of components by Rotork Fluid Systems' *Centres of Excellence* and a worldwide network of distributors facilitates quick delivery times.



Inside the GP/GH Range Actuator

Every Rotork Fluid Systems actuator is built to provide long and efficient service with minimum maintenance. The design, engineering and materials used in their construction ensure optimum performance even in the harshest of environments.

Operating Pressure: Pneumatic up to 12 bar (175 psi)
Hydraulic up to 210 bar (3,000 psi)

Torque Output: Up to 600,000 Nm (5.3 million lbf-in)

Temperature Ranges:

| | | |
|--------------|---------------|-----------------|
| Standard: | -30 to 100 °C | (-22 to 212 °F) |
| High: | -20 to 160 °C | (-4 to 320 °F) |
| Low: | -40 to 160 °C | (-40 to 320 °F) |
| Extreme Low: | -60 to 160 °C | (-76 to 320 °F) |

Efficiency and Long Life

Minimum friction is ensured by electroless nickel-plated cylinders and bronze sliding blocks on the torque arm. A dynamic floating piston seal further reduces friction and avoids stick-slip effect, even after prolonged periods without operation.

Environmental Protection

O-ring sealing provides protection certified to IEC IP66M, IP67M.

Corrosion Resistance

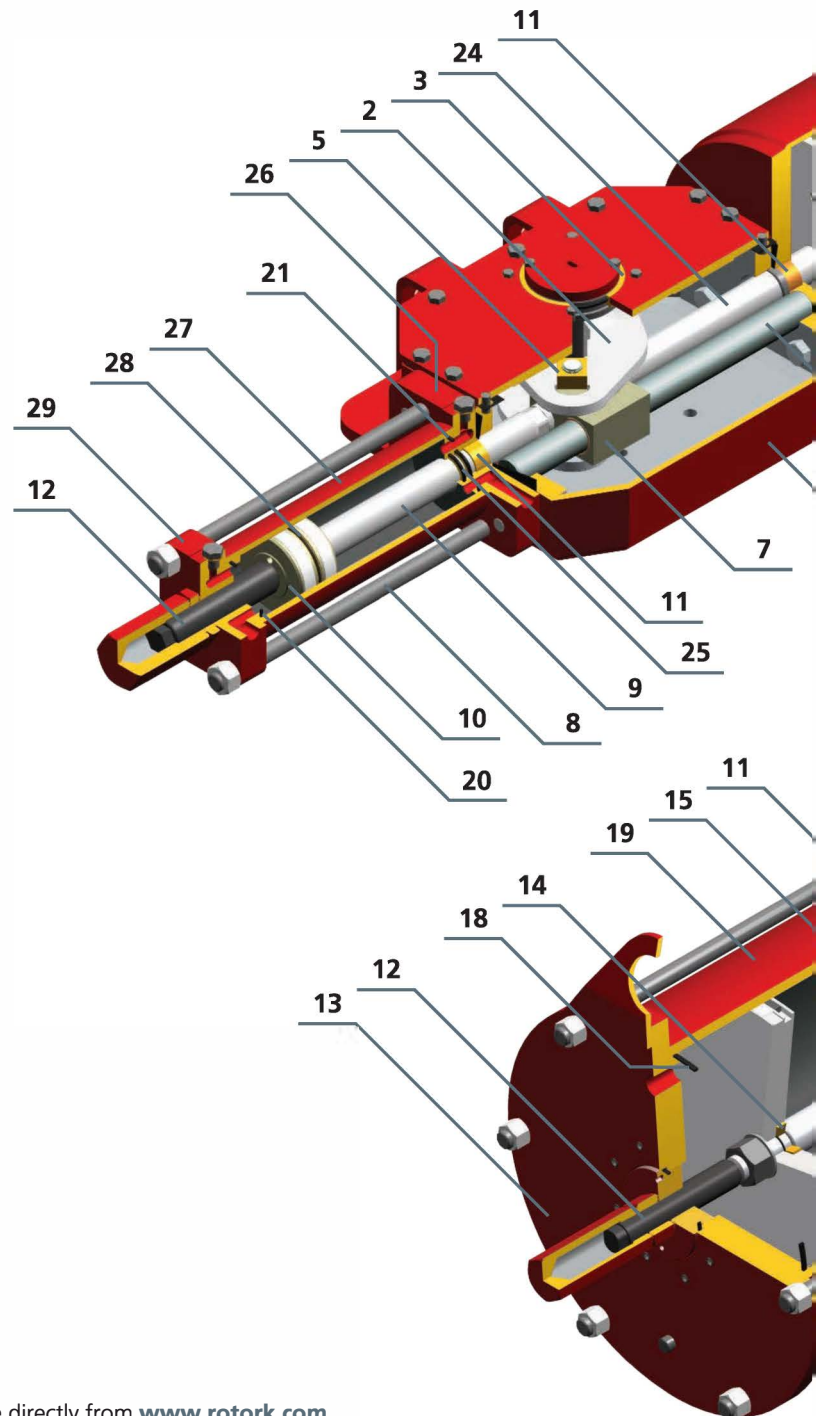
Extended service life provided by carbon steel, electroless nickel-plated cylinders and chromium plated piston rod.

Robust Yet Lightweight Design

Totally enclosed weatherproof centrebody fabricated in carbon steel or ductile iron (depending upon size) provide an excellent strength to weight ratio. The scotch yoke mechanism is available in either symmetric or canted design to meet application specific valve torque demand requirements with minimum cost and weight. The design incorporates a chromium plated alloy steel thrust bar to support the transverse loads of the scotch yoke.

Available Options

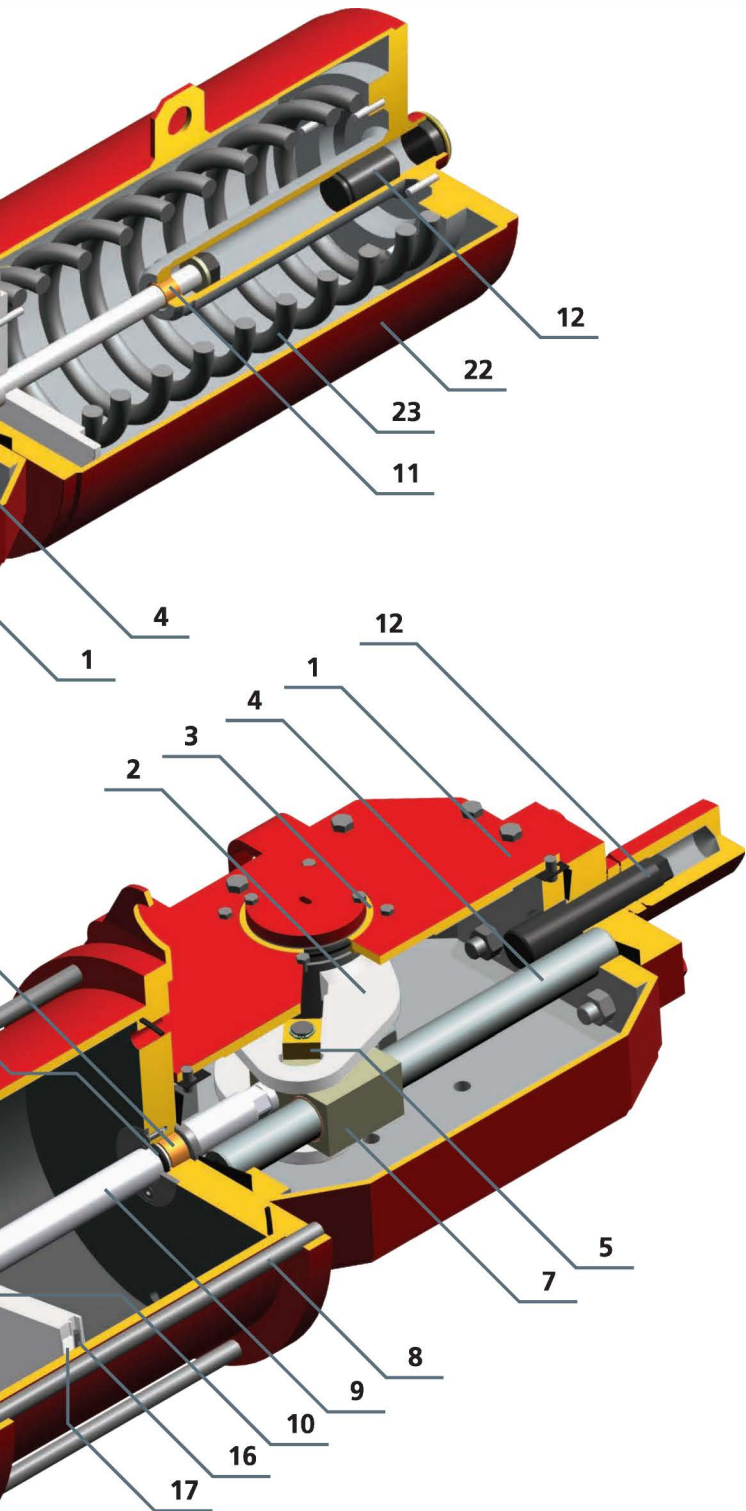
Manual override solutions. Stainless steel cylinders and tie rods. Custom paint specifications. Fibreglide® yoke bushing for modulating duty applications.



GP and GH range torque output and dimensional data are available directly from www.rotork.com

For quarter-turn pneumatic applications with torque requirements below that of the GP range, Rotork Fluid Systems offers two smaller ranges of scotch yoke actuators with outputs up to 4,500 Nm (39,828 lbf-in). Consult PUB013-001 (CP range) and PUB014-001 (RC200/RCI200 range).

For quarter-turn hydraulic applications with torque requirements below that of the GH range, we offer a robust range of ductile iron bodied rack and pinion actuators with outputs up to 3,700 Nm (29,900 lbf-in). Consult RH range brochure PUB019-004.



| ITEM | DESCRIPTION | MATERIAL |
|------|-----------------------|--|
| 1 | Centrebody | Carbon Steel or Ductile Iron |
| 2 | Yoke | Carbon Steel or Ductile Iron |
| 3 | Yoke Bushing | Bronze |
| 4 | Thrust Bar | Alloy Steel (chromium-plated) |
| 5 | Sliding Block | Bronze |
| 6 | Pressure Relief Valve | Stainless Steel (not shown) |
| 7 | Guide Block | Carbon Steel |
| 8 | Tie Rod | Alloy Steel |
| 9 | Piston Rod | Carbon Steel (chromium-plated) |
| 10 | Piston | Carbon Steel |
| 11 | Rod Bushing | Steel / Bronze / PTFE |
| 12 | Stop Screw | Alloy Steel |
| 13 | End Flange | Carbon Steel |
| 14 | O-ring | NBR |
| 15 | Seal | NBR / PTFE / Graphite |
| 16 | O-ring | NBR |
| 17 | Sliding Ring | PTFE / Graphite |
| 18 | O-ring | NBR |
| 19 | Pneumatic Cylinder | Carbon Steel (electroless nickel-plated) |
| 20 | O-ring | NBR |
| 21 | Seal | NBR / PTFE / Bronze |
| 22 | Spring Cartridge | Carbon Steel |
| 23 | Spring | Alloy Steel |
| 24 | Connecting Rod | Alloy Steel (chromium-plated) |
| 25 | Seal | NBR |
| 26 | Head Flange | Carbon Steel |
| 27 | Hydraulic Cylinder | Carbon Steel (electroless nickel-plated) |
| 28 | Seal | NBR / PTFE |
| 29 | Bottom Flange | Carbon Steel |

Approvals and Industry Standards

- Actuators certified in accordance with ATEX 94/9/EC.
- Actuators certified in accordance with PED 97/23/EC.
- GOST-R Russian certificate of conformity.
- GGTN-R Russian Rostechandzor RTN Permit.
- Complies with EN60529 (1991) + (A1:2000) for IP66M/67M.
- Management system in accordance with ISO 9001:2008.
- Certified suitable for use at SIL3 as a single device in accordance with IEC 61508.

See publication PUB000-012 or www.rotork.com for SIL data.

Optional Features

Manual Override

A dependable manual override facility is an important part many valve/actuator applications. Rotork has a variety of override options available to meet virtually any requirement. Available options include open or enclosed jackscrews in both gear reducer and declutchable versions, as well as a number of hydraulic override solutions.



Complete Control Systems

Control component packages are a part of any actuator/valve installation. Rotork has extensive experience in the design and assembly of all types of fluid power control systems to satisfy any customer requirement for on/off, modulating or ESD (emergency shut down) service. Packages can be mounted on a panel or in a cabinet and mounted either on the actuator or at a remote location. Rotork offers components from all leading industry suppliers as well as those of our own design including limit switch housings, quick exhaust valves, pneumatic and hydraulic manifolds, shuttle valves, linebreak safety systems and a torque limiting device.



Fire Protection Systems

Rotork Fluid Systems actuators and control systems can be customized to withstand exposure both to fire and very high environmental temperatures. A range of fire-proof systems is available that include flexible protective jackets, intumescent coatings and rigid enclosure systems.

For further information on Rotork's fire protection solutions, consult publication PUB000-004.



Model Number Designation

Example Model Number **G P - 085 S - 100 A / D1 - MH**

ACTUATOR TYPE

G = Scotch Yoke

SUPPLY TYPE

P = Pneumatic
H = Hydraulic

CENTRE BODY SIZE Nominal movement arm (mm)
085, 100, 130, 160, 161, 200, 201, 270, 271, 350

YOKE TYPE

C = Canted
S = Symmetric

CYLINDER SIZE

TEMPERATURE

GP Range (Pneumatic)

A = Standard
B = High
C = Low
E = Extreme low

GH Range (Hydraulic)

F = Standard
G = High
H = Low
L = Extreme low

CYLINDER / SPRING CANISTER CONFIGURATION

C0 - C9 = Spring-Return Fail Close - Spring Set # (0-9)
O0 - O9 = Spring-Return Fail Open - Spring Set # (0-9)
D1 = Double-Acting - Single Cylinder
D2 = Double-Acting - Two Cylinders

MANUAL OVERRIDE TYPE

M, MH, MHR, MHD, MHRD, MD, HPB, HPA, HPC, HP1, HP2, HPE, HZ

Extensive Product Range

Rotork Fluid Systems offers the world's most extensive line of fluid power valve actuators. Products include low- and high-pressure pneumatic, hydraulic and electro-hydraulic actuators. Scotch yoke, linear and rack and pinion designs are available in both double-acting and spring-return configurations. We also manufacture special build actuators for subsea and nuclear power applications and specialty products including a hydraulic damper for swing check valves and a manual/hydraulic power handwheel. Through other divisions, Rotork also offers complete lines of electric actuators and gearboxes.

