



Keeping the World Flowing
for Future Generations



RH Range

Rack and Pinion Hydraulic Actuators

A varied range of rack and pinion actuators that offer the most economical solution for quarter-turn valves that have a fairly constant torque requirement throughout the stroke.

RH rack and pinion actuators are engineered to operate ball, butterfly, plug and other quarter-turn valves for either on/off or modulating service. The heavy-duty construction and compact design make this product ideal for skid manufacturers as well as offshore and process applications which require robust yet space saving valve actuation solutions. These actuators are also suitable for applications requiring medium depth submersion.

- Heavy duty rack and pinion hydraulic actuators
- Electroless nickel-plated cylinders
- Totally enclosed weatherproof housing
- Precision machined alloy steel rack and pinion mechanism
- Double-acting and spring-return versions available



RH Range Hydraulic Rack and Pinion Valve Actuators

Every Rotork actuator is built to provide long and efficient service with a minimum of maintenance.

The design, engineering and materials used in their construction ensure optimum performance even in the harshest environments.

The housing is available in five sizes. A hydraulic cylinder can be attached to either or both sides. A spring-can cylinder can also be fitted to either side for Emergency Shut Down (ESD) applications.

Operating Pressure: Up to 250 bar (3,625 psi)

Torque Output: Up to 3,700 Nm (29,900 lbf.in)

Temperature Ranges:

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

Override Options

A dependable manual override facility is an important part of many valve/actuator applications. Rotork has a variety of override options to meet virtually any requirement. Available options include hydraulic hand pump and gearbox solutions.



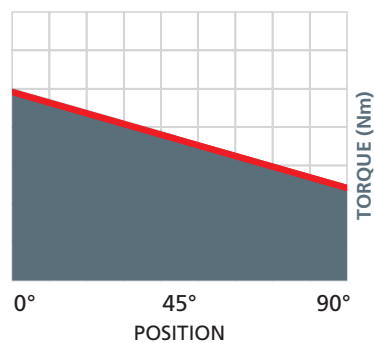
Key Design Features

- Double-acting and spring-return versions
- "Rack guide" transversal thrust support by means of two independent brass bushings
- Carbon steel or spheroidal graphite cast iron electroless nickel-plated cylinders fitted with mechanical end stop to ensure accurate angular stroke adjustment $\pm 5^\circ$
- Carbon steel piston with dynamic floating seal to reduce friction and avoid stick-slip effect even after prolonged periods without operation
- Precision machined alloy steel rack and pinion mechanism to provide minimum friction and efficient operation
- Totally enclosed carbon steel spring cartridge
- Visual indicator showing actuator/valve position

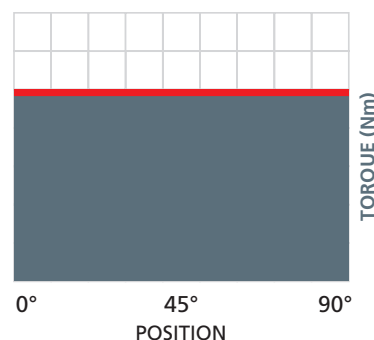
Approvals and Industry Standards

- Actuators certified in accordance with ATEX Directive
- Actuators certified in accordance with PED Directive
- Actuators certified in accordance with EAC
- Actuators certified IP66M/67M in accordance with IEC 60529
- Management system in accordance with ISO 9001:2008
- Certified suitable for use at SIL3 as a single device in accordance with IEC 61508

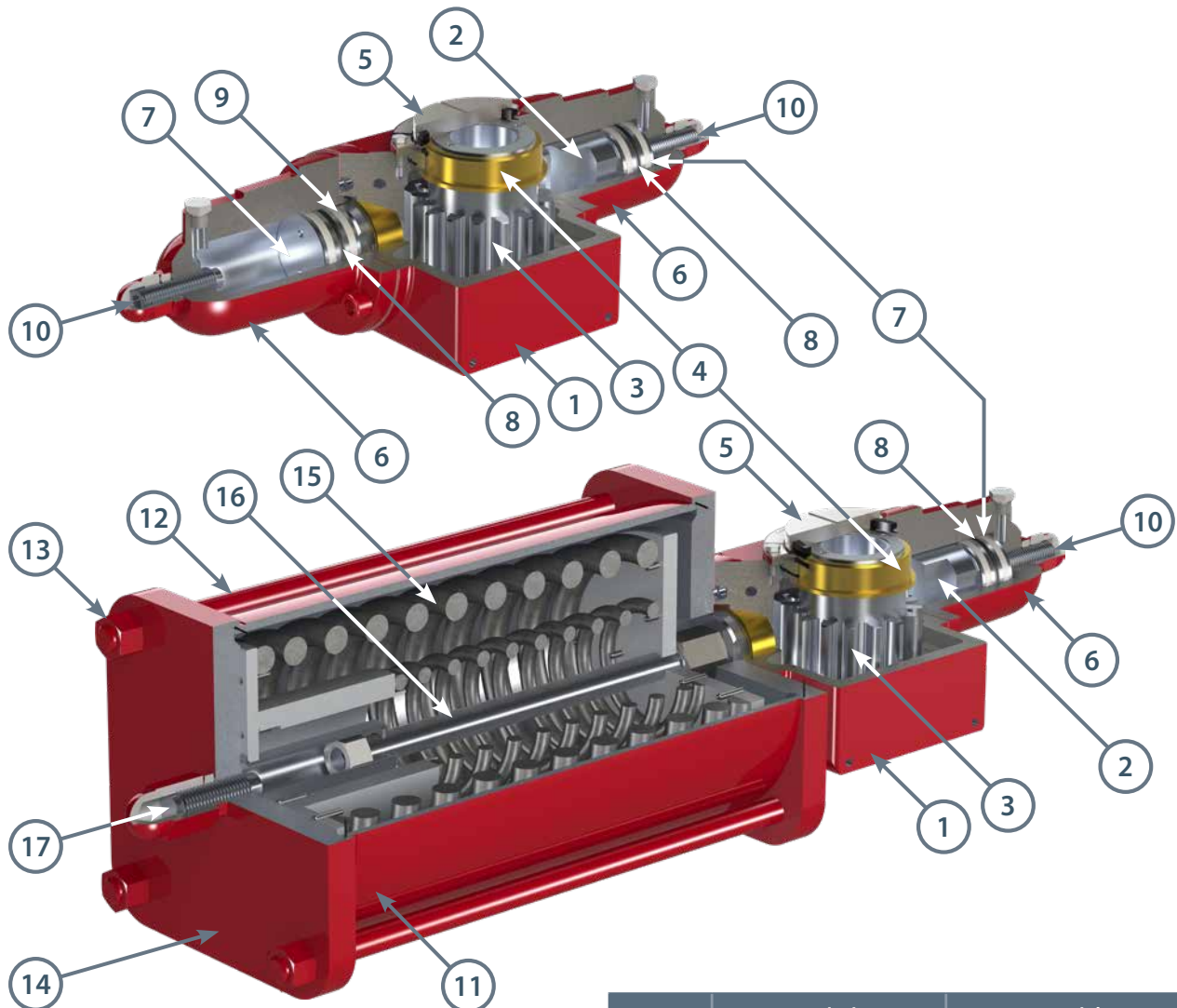
SPRING-RETURN ACTUATOR



DOUBLE-ACTING ACTUATOR



RH Range Hydraulic Rack and Pinion Valve Actuators



Item	Description	Material
1	Housing	Carbon Steel
2	Rack	Alloy Steel
3	Pinion	Alloy Steel
4	Bushing	Bronze
5	Cover	Stainless Steel
6	Hydraulic cylinder	Cast Iron/Carbon Steel
7	Piston	Carbon Steel
8	Piston Seal	PTFE/Buna-N
9	Wear Ring	PTFE
10	Stop Bolt	Alloy Steel
11	Spring Canister	Carbon Steel
12	Tie Rod	Alloy Steel
13	Nut	Carbon Steel
14	End Flange	Carbon Steel
15	Spring	Spring Steel
16	Safety Tie Rod	Carbon Steel
17	Stop Bolt	Alloy Steel

RH Range High Torque Double-Acting Actuators

RH extreme duty actuators are designed for some of the most challenging valve actuation applications on earth.

They are an excellent choice for the demanding requirements and adverse conditions found in applications for mining and offshore. The range has several features that set it apart from competing designs.

Maximum Operating Pressure (MOP)

Low pressure cylinders: 120 barg

High pressure cylinders: 207 barg

Low pressure cylinder MOP is based upon a design safety factor of 1.5. High pressure cylinder MOP is based upon design safety factor per ASME VIII Div.1. Alternative safety factors are available upon request.

Torque Output

Up to 700,000 Nm (6,200,000 lbf.in).

Units with output torque higher than 700,000 Nm (6,200,000 lbf.in) are available upon request.

Temperature Range

Standard: -30 to +100 °C (-22 to +212 °F)

High: -20 to +100 °C (-4 to +212 °F)

Low: -40 to +100 °C (-40 to +212 °F)

Key Design Features:

- Standard rotation 90° (+/-5°)
- Totally enclosed weatherproof housing in carbon steel
- Electroless nickel-plated cylinders with redundant piston seals
- Double acting with four hydraulic cylinders
- Dual rack design
- Female input shaft allows direct mounting to valve topworks

Balanced, Compact Design

RH extreme duty actuators provide a tremendous output torque for their size and are suitable for heavy duty applications.

The range's robust double-acting hydraulic design with provision of four power cylinders results in very compact footprint – in some cases even smaller than that of the valve.

The design is balanced to facilitate installation and removal and, unlike most actuators, the lifting lugs are designed to support the weight of both the actuator and the valve. Furthermore, when used in high-torque applications, the piston design has been proven to have a lower swept volume than vane type actuators.

The reduced size, weight and power consumption of associated power units provides the end user benefits of lower cost of installation and ownership.

Serviceability

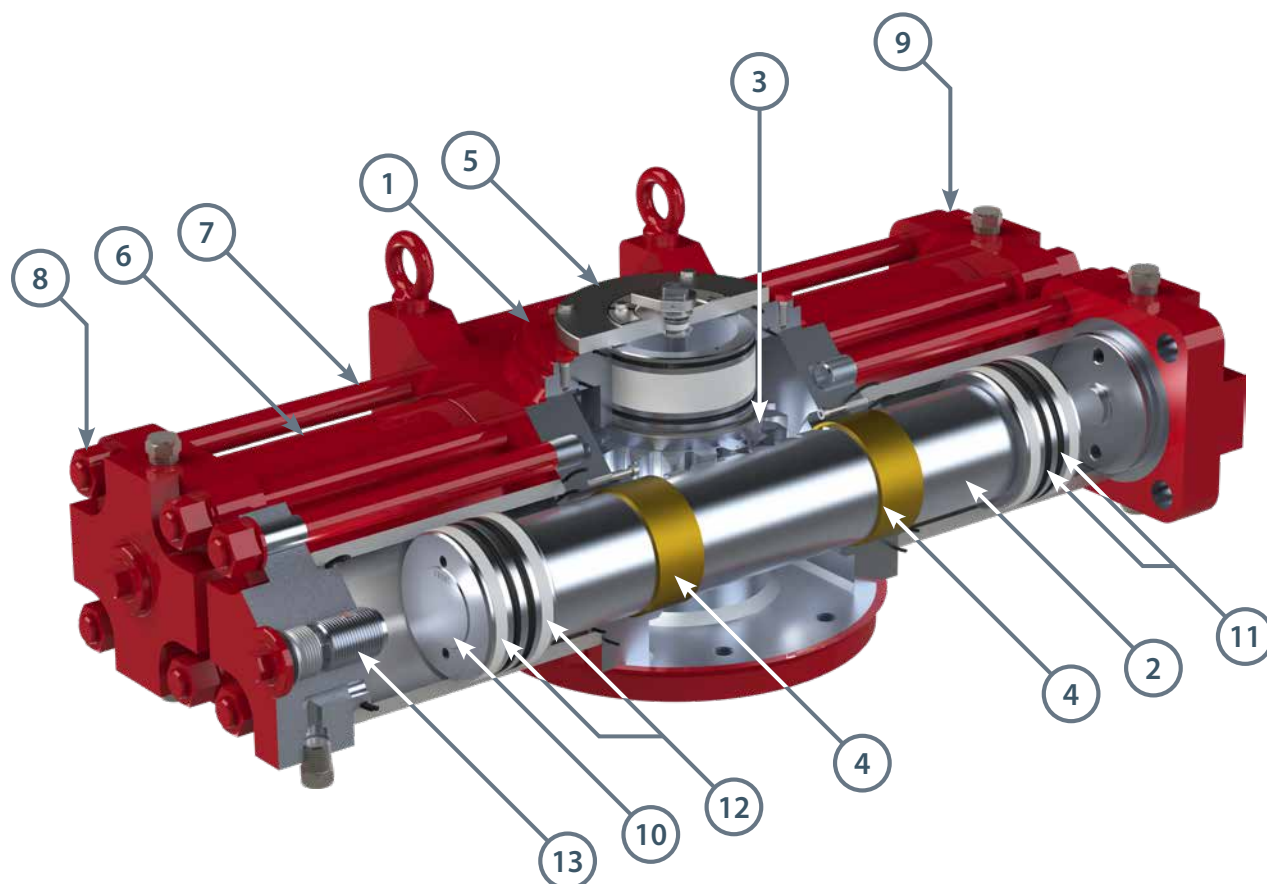
The trouble-free rack and pinion design provides for ease of service and low maintenance cost. Unlike vane type actuators, the actuator can be field serviced.

Our conventional cylinder-based design has redundant of the shelf seals and provides virtually zero leakage. Only the cylinder being serviced need be disturbed so actuator removal from the valve is not necessary. But, due to the balanced design, removal is easily accomplished if desired to facilitate access.

Like all our actuators, the RH extreme duty actuator range has the unparalleled support of Rotork's vast global sales, field service and maintenance networks.



RH Range High Torque Double-Acting Actuators



Item	Description	Material
1	Housing	Carbon Steel
2	Rack	Alloy Steel
3	Pinion	Alloy Steel
4	Bushing	Bronze
5	Cover	Stainless Steel
6	Hydraulic cylinder	Carbon Steel
7	Tie Rod	Alloy Steel
8	Nut	Carbon Steel
9	End Flange	Carbon Steel
10	Piston	Carbon Steel
11	Piston Seal	PTFE/Buna-N
12	Wear Ring	PTFE
13	Stop Bolt	Alloy Steel



RH Range Model Number Designation

Example Model Number

R H - 060 - 045 F / C1 - HPB

ACTUATOR TYPE

R = Rack and Pinion

SUPPLY TYPE

H = Hydraulic

CENTRE BODY SIZE

015, 030, 060, 090, 105, 120, 125, 145, 155,
185, 225, 240, 250, 280

CYLINDER SIZE

TEMPERATURE

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

D2 = Double-Acting - Two Cylinders

D4 = Double-Acting - Four Cylinders (only with body sizes 090, 105, 125, 145, 155, 185, 225, 250, 280)

MANUAL OVERRIDE TYPE

HPB, HPC (not applicable for D4)

RH Range Options

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 override options for rack and pinion actuators with up to 3,400 Nm torque output include hydraulic override solutions as a standard. Contact factory for gear reducer 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 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 customised 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.



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

rotork®

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