

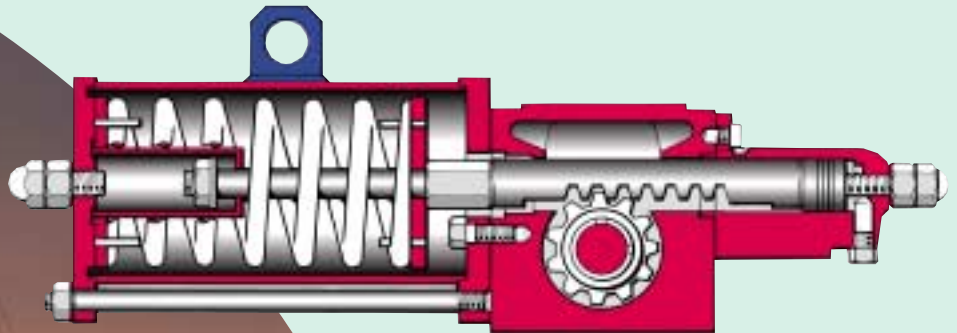
RP AND RH RANGE FLUID POWER ACTUATORS

PNEUMATIC AND HYDRAULIC ACTUATORS FOR QUARTER TURN VALVES



date of issue 01/01

ROTORK RACK AND PINION ACTUATORS



RP and RH rack and pinion actuators are designed to operate ball, butterfly, plug and other valves, which require a quarter-turn movement for either on/off or modulating service. Offering the most economical solution when valve torque requirements are more or less constant throughout the stroke, they are available in four main types:

RP - Double acting pneumatic

RH - Double acting hydraulic

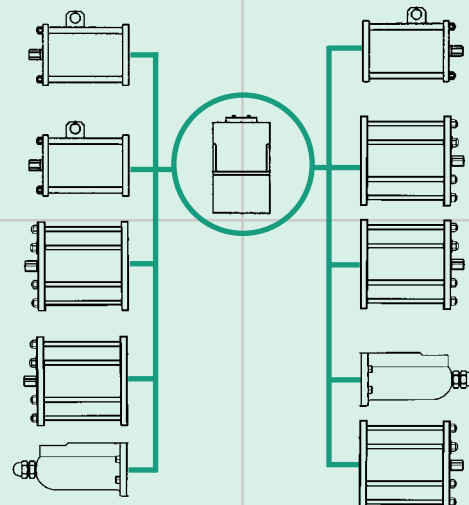
RP/S - Spring return pneumatic

RH/S - Spring return hydraulic

ROTORK ACTUATORS - MODULAR CONSTRUCTION

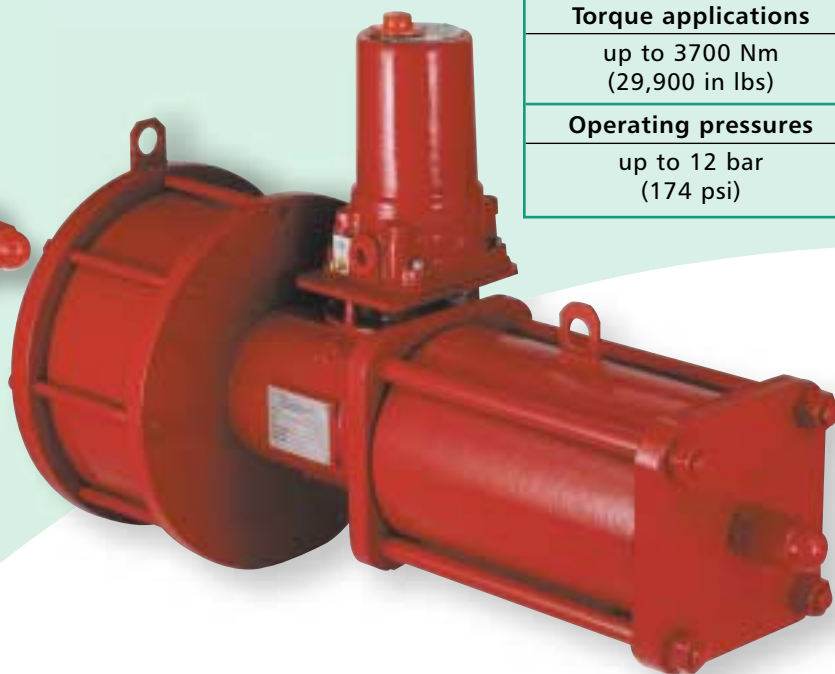


Rotork RP and RH Range actuators share a modular construction design. The centre body is available in five sizes. A pneumatic cylinder can be attached to either or both sides. A spring can cylinder can also be fitted to either side for Emergency Shut Down (ESD) applications. Modular construction and stocking of components by Rotork Fluid System Centres and a worldwide network of distributors facilitates quick delivery times.



RP RANGE QUARTER-TURN PNEUMATIC ACTUATORS

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RP RANGE ACTUATORS for pneumatic operation

Torque applications

up to 3700 Nm
(29,900 in lbs)

Operating pressures

up to 12 bar
(174 psi)

RH RANGE QUARTER-TURN HYDRAULIC ACTUATORS



RH RANGE ACTUATORS for hydraulic operation

Torque applications

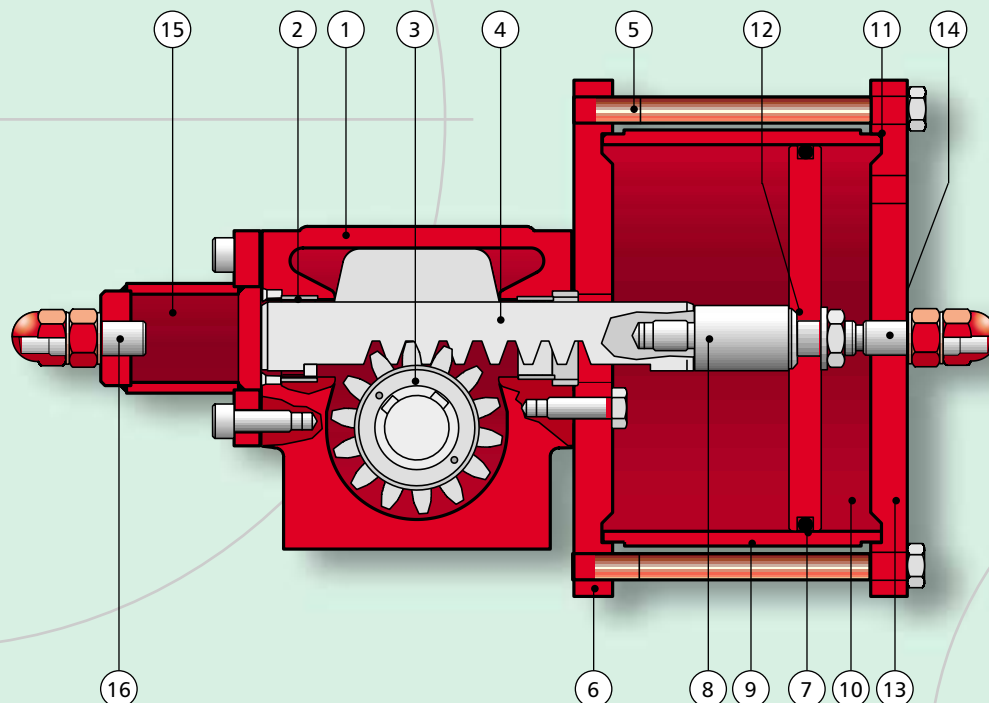
up to 3,700 Nm
(29,900 in lbs)

Operating pressures

up to 250 bar
(3,625 psi)

INSIDE THE RP RANGE ACTUATOR

Pneumatic double acting actuator illustrated, also available as spring return type



ITEM	DESCRIPTION	MATERIAL	U.S. STANDARD EQUIVALENCE
1	Housing	Nodular Cast Iron	ASTM A 536 gr 60-40-18
2	Bushing	Bronze	ASTM B427 Alloy Uns N. C90800
3	Pinion	Alloy Steel	AISI SAE 9840
4	Rack	Alloy Steel	AISI SAE 9840
5	Screw	Carbon Steel	AISI SAE 9840
6	Head Flange	Carbon Steel	ASTM A 283 gr.D
7	O Ring*	NBR	
8	Spacer	Carbon Steel	AISI SAE 1040
9	Cylinder	Carbon Steel (ENP)	API 5LX grX52
10	Piston	Carbon Steel	ASTM A 283 gr.D
11	O Ring*	NBR	
12	O Ring*	NBR	
13	Bottom Flange	Carbon Steel	ASTM A 283 gr.D
14	Stop Setting Screw	Alloy Steel	AISI SAE 9840
15	Rack Protection	Carbon Steel	AISI SAE 1040+API 5LX grX52
16	Stop Setting Screw	Alloy Steel	AISI SAE 9840



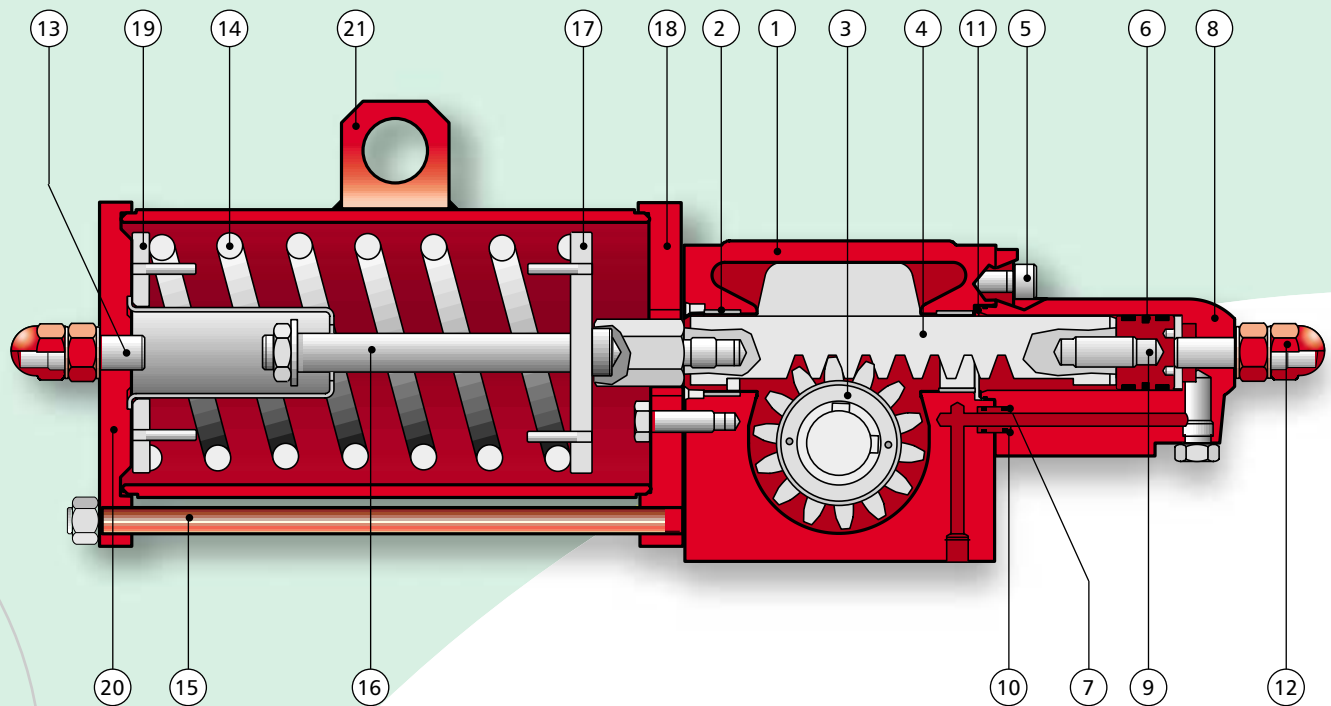
Full specification on CD ROM

Rotork Fluid System has available a CD ROM with an overview of our extensive line of fluid power products. It also contains an interactive sizing guide, downloadable dimension drawings, schematics, specifications and assorted technical information sheets. To obtain a copy for your PC, contact the Rotork Fluid System office nearest you.

INSIDE THE RH RANGE ACTUATOR

*Hydraulic spring return actuator illustrated,
also available as double acting type*

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ITEM DESCRIPTION	MATERIAL	US STANDARD EQUIVALENCE
1 Housing	Nodular Cast Iron	ASTM A 536 gr60-40-18
2 Bushing	Bronze	ASTM B427 Alloy Uns N. C90800
3 Pinion	Alloy Steel	AISI SAE 9840
4 Rack	Alloy Steel	AISI SAE 9840
5 Screw	Carbon Steel	
6 Seal*	NBR + PTFE	
7 O Ring*	NBR	
8 Cylinder	Nodular Cast Iron (ENP)	ASTM A 536 gr60-40-18
9 Piston	Carbon Steel	
10 O Ring*	NBR	
11 O Ring*	NBR	
12 Stop Setting Screw	Alloy Steel	AISI SAE 9840
13 Stop Setting Screw	Alloy Steel	AISI SAE 9840
14 Spring	Alloy Steel	ASTM A 29 gr.D
15 Tie Rod	Alloy Steel	AISI SAE 9840
16 Safety Tie Rod	Alloy Steel	AISI SAE 9840
17 Spring Driving Flange	Carbon Steel	ASTM A 283 gr.D
18 Head Flange	Carbon Steel	ASTM A 283 gr.D
19 Spring Retaining Flange	Carbon Steel	ASTM A 283 gr.D
20 Bottom Flange	Carbon Steel	ASTM A 283 gr.D
21 Lifting Plate	Carbon Steel	ASTM A 283 gr.D

Paint specification

Offshore service application to protect against severe weathering, chemical atmospheres, salt spray and petroleum products.

Surface preparation - Sandblasting to grade SA 2.1/2

Prime coat - Inorganic zinc 75 microns DFT

Intermediate coat - epoxy 110 microns DFT

Final coat - Polyurethane 40 microns DFT

Colour - RAL 3011 Dark red 225 microns total DFT



* Actuator Seals

Standard **NBR** -20°C to 60°C (-4°F to 140°F)

High Temp **Viton** >60°C (>140°F)

Low Temp **Fluorosilicone** <-20°C (<-4°F)

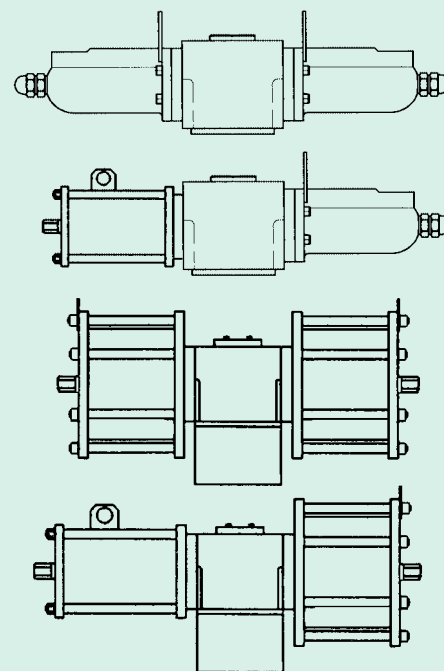
KEY DESIGN FEATURES

Every Rotork Fluid System actuator is built to provide long and efficient service with minimum maintenance. The design, engineering and materials used in construction ensure optimum performance even in the harshest environments. Listed here are some of the most important features that enable Rotork RP and RH actuators to achieve and maintain this high level of service.

The RP and RH actuators are specifically engineered to operate small to medium size 1/4 turn valves. The heavy duty construction and compact design make this product ideal for Skid manufacturers, FPSO vessels and process applications which require space saving actuator solutions.

RP/RH Range Quarter-turn operation:

- ➔ The standard range covers torque requirements up to 3,700 Nm
- ➔ Double acting and single acting (spring return) versions are available.
- ➔ Totally enclosed weather-proof housing in nodular ductile iron.
- ➔ 'Rack guide' transversal thrust support by means of two independent brass bushes.
- ➔ Carbon steel or nodular 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 enclosure cartridge.
- ➔ Visual position indicator showing actuator/valve.
- ➔ Double acting actuators can be supplied with emergency tanks to allow operation during supply failure.



CONTROLS

rotork fluid system



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.

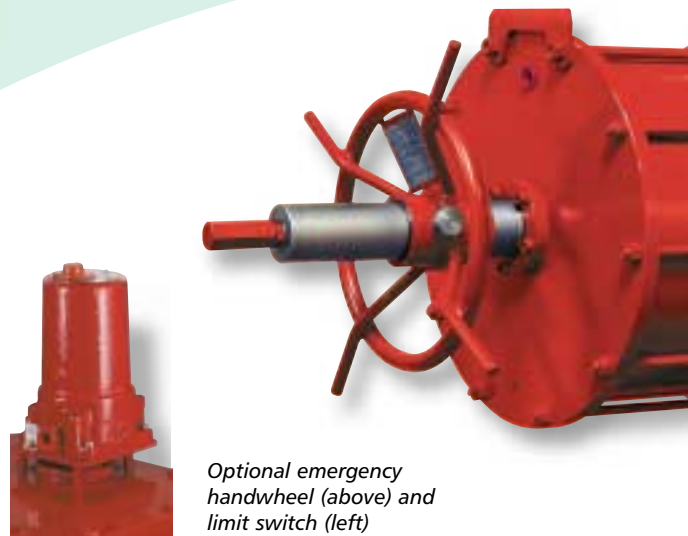
Emergency and Manual override

Emergency manual operating is guaranteed using the optional jackscrew with handwheel. Reduction gearing for large actuators, declutchable and removable handwheels are also available.

For larger, high torque actuators, hydraulic manual override units are also available.

Limit switch

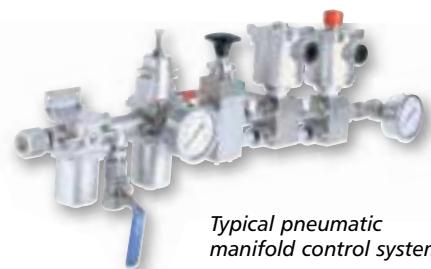
Specially designed for use in extreme environments, the MB1 limit switch has a mechanical position indicator, weather proof protection class IP 67 and is explosion proof to CENELEC EN 50014 and EN 50018 EEx-d-IIC T6 (see publication F600).



Optional emergency handwheel (above) and limit switch (left)

APPROVALS AND INDUSTRY STANDARDS

- ➔ All hydraulic actuators are flushed as standard. Flushing to NAS1638 class 6 is available on request.
- ➔ EN 10204 3.1b Certification for critical components.
- ➔ Actuators and controls in accordance with UK health and safety requirements for pipeline safety regulations SI 825 (1996).
- ➔ Actuator Design calculation procedure approval by Lloyds (report no. 094/5152).



Typical pneumatic manifold control system



- ➔ Rotork ensure that where applicable actuators offered will be in full compliance with EU pressure equipment directive PED SI-2001.
- ➔ Actuators are to IP66 standards.
- ➔ Hydrostatic valve and actuator testing facilities available.

Rotork Fluid System Centres of Excellence

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All Rotork Fluid System actuators are manufactured under a third party accredited ISO9001 quality assurance program