

### 1 Introduction

- 1.1 Rotork H range actuators are double-sealed to ensure the integrity of the lubricant in the center body and prevent the ingress of moisture and dirt. The piston rod is electroless nickel-plated to prevent corrosion and improve efficiency. These features make the H range actuator practically maintenance free.
- 1.2 The condition of the hydraulic supply to the actuator will effect the efficiency and life of the seals. Although it is not essential, seal life will be prolonged if a filter is incorporated in the hydraulic supply system. A pressure regulator is also recommended to prevent over-pressurization of the units.
- 1.3 Standard H range actuators are capable of operating in environments ranging in temperature from -10°F to 200°F (-23°C to 93°C). High and low temperature builds are also available.

### 2 Installation instructions

- 2.1 It is recommended that before lifting an actuator onto a valve, great care is taken to ascertain the position of the valve and orientate the actuator accordingly.
- 2.2 H range actuators can be mounted on valves in almost any desired position. It is usual however to align the centerline of the cylinder to the centerline of the associated pipework.
- 2.3 When the actuator has been bolted to the valve flange or adapter and keys inserted, the position of the stop bolts should be checked to ensure full opening and closing of the valve.  
  
If these end positions are not suitable, the stop bolts 21 may be adjusted by first loosening the jam nut 22 and screwing the bolts in or out until the desired position is obtained. Stroke the yoke away from the stop bolt when adjusting, then return it to check position. When the correct positioning is obtained, retighten the jam nut.
- 2.4 Certain valves incorporate their own stops. In these cases, it is recommended that the actuator stop bolt positions coincide with the valve stop positions.
- 2.5 Relocate the yoke cover so that the white bar lies parallel to the pipeline when the valve is open. This is the visual position indicator.
- 2.6 Once in position, the actuator should operate the valve with a smooth continuous action.  
  
If jerky operation occurs, the hydraulic supply should be checked for correct pressure and volume flow. Flow may be restricted by undersize pipe or fittings, these could throttle the flow thus reducing the hydraulic pressure at the actuator and causing intermittent motion. All Rotork actuators are tested prior to dispatch and copies of test certificates are available on request.
- 2.7 The speed of operation can be adjusted by varying the hydraulic supply. A needle valve in the supply or exhaust line will reduce flow and hence increase operating time.

### 3 Preventive maintenance

- 3.1 H range actuators are designed to be maintenance free however preventive maintenance may be desired and the following items should be covered in such a program.
- 3.2 Grease or oil levels in the body should be checked, the oil level should be approximately 1/2"/12.5mm from the inside of the top cover. Use Mobil SCH624.

BODY SIZE	CAPACITY	
	U.S. Gallon	LITERS
250	0.75	3.0
325	1.50	5.7
500	3.25	12.3
700	8.00	30.3
900	14.00	52.9

For greased filled units, all moving surfaces should be liberally coated with grease. Use Schaffer #221 Moly Ultra 800 EP.

- 3.3 When prolonged periods of storage or inactivity are encountered for H range actuators, it is recommended that the actuators are operated for three or four cycles every month. This will ensure that the flexibility of the seals is maintained and will prevent the seal material from taking a permanent set.

To prevent the ingress of contaminating or corrosive substances it is recommended that all hydraulic inlets or outlets be plugged not only on the actuator, but also on any accessories such as direction control valves or positioners. All openings such as electrical conduit to junction boxes should also be sealed.

Actuators should not be stored in an atmosphere harmful to the seal material. If available, indoor storage is preferable.

\*H range actuators are extremely robust, however, the above precautions are recommended to ensure the required durability of the actuator.

- 3.4 Should a full strip down by part of a preventive maintenance program, follow the disassembly procedure (Sections 4-8) taking care to renew all seals and gaskets.
- ### 4 Disassembly double-acting
- 4.1 For normal duty, H range actuators are designed to be maintenance free for life. In instances of high load and high frequency of operation, more comprehensive maintenance may be required. In such cases, the following disassembly procedure should be adopted.
  - 4.2 Ensure that the hydraulic supply is disconnected or locked off before removing the Hydraulic supply pipe from the actuator.
  - 4.3 Drain center body oil, if oil filled, by removing plug 26.
  - 4.4 Disconnect the hydraulic supply pipe from the actuator and remove the actuator from the valve.
  - 4.5 Remove the four yoke cover bolts 18.
  - 4.6 Lift off yoke cover 8, gasket 9 and seal washer 15.

- 4.7 Remove the six center body cover bolts 17.
- 4.8 Pry off center body cover 2 using the two screw driver slots adjacent to the dowel pins 16.
- 4.9 Remove cylinder bolt 270.
- 4.10 Slide off cylinder assembly 280.
- 4.11 Using piston 252 center the yoke 3 in the body 1.
- 4.12 Remove top slipper 4 and piston rod pin 5.
- 4.13 The piston rod 29 and location boss 254 can now be pulled out by grasping the piston 252.
- 4.14 Pull yoke 3 from body 1.
- 4.15 Remove lower slipper 4 from body 1.  
For access to piston rod seals in body.
- 4.16 Remove adaptor flange bolts 268.
- 4.17 Remove adaptor flange 267 to expose piston rod seal 52.
- 4.18 Remove piston rod cover bolts 202 or 01 hydraulic cylinder bolts 270.
- 4.19 Remove piston rod cover 201 or 01 hydraulic cylinder 280 to expose piston rod seal 52.  
For access to piston seal
- 4.20 Remove piston retaining bolt 260.
- 4.21 Separate piston 252 from piston rod 29 to expose seal 253.

## 5 Assembly double-acting

- 5.1 Prior to reassembly all seals and gaskets must be renewed and lightly smeared with clean grease. Care should be taken to ensure that sealing surfaces are clean.
- 5.2 To reassemble follow the exact reverse of the disassembly procedure.
- 5.3 Tighten piston retaining bolt 260, to recommended torque (Section 8.1).
- 5.4 Tighten adapter flange bolts 268, to recommended torque (Section 8.1).
- 5.5 Tighten cylinder bolts 270 alternating between opposite corners to recommended torque (Section 8.1).
- 5.6 Liberally pack all moving parts with grease, or fill with oil to the recommended level (Section 3.2).
- 5.7 Tighten cover bolts 17.

## 6 Disassembly spring-return

To remove spring cartridge with actuator on or off valve.

- 6.1 Before proceeding with the cartridge removal, it is essential that the piston 252 is at its farthest position from the center body (1).
- 6.2 To prevent unauthorized operation of the actuator, lock off or disconnect the Hydraulic supply.
- 6.3 Remove four cartridge retaining bolts 159.

- 6.4 Push cartridge toward center body and turn clockwise through 35 degrees, pull away from center body.
- 6.5 Follow steps 6.1 to 6.4 to remove spring cartridge.
- 6.6 Follow steps 4.3 to 4.20 to dismantle actuator with the exception of steps 4.17 and 4.18, the removal of the piston rod cover, instead remove the spring-return adapter 158 retained by bolts 162.

## 7 Assembly spring-return

The assembly procedure is the direct reverse of the disassembly procedure.

- 7.1 Assembly unit as explained in Section 5 for the DA actuator.
- 7.2 Assembly SR Cartridge following the reverse of the procedure explained in Section 6.

## 8 Recommended tightening torque values

### 8.1

Item	No	Torque lbs ft ( <i>upper</i> ), Nm ( <i>lower</i> )			
		250	325	500	700
Body Cover Bolt	17	10 13	35 47	87 118	87 118
Yoke Cover Bolt	18	7 9	27 36	67 91	67 91
Adaptor Bolt	268	108 147	210 286	866 1178	866 1178
Piston Bolt	260	210 286	866 1178	1750 2380	1750 2380
Cylinder Bolt 5/8 UNC Grade 5	270	150 204	150 204	- -	- -
Cylinder Bolt 3/4 UNC Grade 5	270	- -	- -	250 340	250 340
Piston Rod Cover Bolt 1/2" UNC Grade 5	202	87 118	- -	- -	- -
Piston Rod Cover Bolt 5/8" UNC Grade 5	202	- -	150 204	- -	- -
Piston Rod Cover Bolt 1" UNC Grade 5	202	- -	- -	583 794	583 794
Hydraulic Rod Cover Bolt 1/2" UNC Grade 5	270	87 118	- -	- -	- -
Hydraulic Rod Cover Bolt 5/8 UNC Grade 5	270	- -	150 204	- -	- -
Hydraulic Rod Cover Bolt 1" UNC Grade 5	270	- -	- -	583 794	583 794
Spring can Adpt. Plate Bolt 1/2" UNC Grade 5	162	87 118	- -	- -	- -
Spring can Adpt. Plate Bolt 5/8" UNC Grade 5	162	- -	150 204	- -	- -
Spring can Adpt. Plate Bolt 1" UNC Grade 5	162	- -	- -	583 794	583 794
Spring Can Bolt 1/2" UNC Grade 5	159	87 118	- -	- -	- -
Spring Can Bolt 5/8" UNC Grade 5	159	- -	150 204	- -	- -
Spring Can Bolt 1" UNC Grade 5	159	- -	- -	583 794	583 794