



## Actuator Maintenance Manual, C-Type 90° size 2 to 55



### Precautions - Warning

- Always take care to follow this manual in order to correctly maintain the TruTorq actuators.
- Before removing the actuator, insure that you follow the correct procedure to properly isolate the valve in the piping system.
- Never disassemble a unit that is pressurized.
- Always isolate the actuator pneumatically and electrically.
- Always remove all accessories and mounting hardware prior to maintenance.
- Check if it is a Spring Return (SR) or Double Acting (DA) actuator that you shall disassemble. If it is an SR actuator you must consider the power from the springs.

Please contact your nearest TruTorq representative if you have any questions regarding this manual.

### Other information

- The End Cap bolts on all TruTorq actuators are long enough in order to fully relax the springs. The bolts are the same at Double Acting (DA) and Spring Return (SR) actuators.
- Larger actuators may require more than one person to perform maintenance.
- TruTorq supplied Repair Kits include all soft components and bearings. We recommend that all parts, of the Repair Kit, are replaced when the actuator is disassembled.
- It is highly recommended that springs are to be replaced in complete sets only.
- Always use the type of lubricant we have recommended.
- Always use the correct safety equipment that is stipulated by your local organizations, applicable laws and SHE guidelines.



## Actuator Disassembly



- A1. Check/note the shaft position, when the actuator is in a unpressurized state, in relation to the actuator before the dismantling. The intention is to ensure that the actuator has the same function after reassembly (Fail Closed, Fail Open or Crossmount).



- A2. Spring Return (SR) actuators: Unscrew the End Cap screws diagonally (opposite pair) one full turn at a time until fully relaxed. The End Cap screws are long enough to fully relax springs.
- A3. Double Acting (DA) actuators: Once loosen, unscrew at will.
- A4. Remove the End Caps.



- A5. Check/note the position of the pistons before you take these out of the actuator. The intention is to ensure that the actuator has the same function after reassembly.



- A6. Remove the pistons out of the body by turning the top of the shaft, anti-clockwise\*, by using an appropriate tool.



- A7. Remove the Circlip at the top of the driveshaft by using external drop nose Circlip pliers. Then remove the washer.



- A8. Gently loosen the shaft by tapping the top of it with a rubber or wooden mallet. Turn the actuator upside down and remove the driveshaft from the bottom.
- A9. After all soft parts have been removed; use cleanser to thoroughly clean all the parts prior to reassembly.

\* Fail Open (FO), clockwise



## Actuator Assembly

- B1. Ensure that all parts are cleaned and free from dirt prior to assembling.
- B2. Lubricate all soft parts, driveshaft “pinions” and rack “teeth” prior to assembling. For Spring Return (SR) actuators; insure springs are generously lubricated prior to assembly/insertion. Use the grease we recommend (different to soft and hard parts).
- B3. Check that driveshaft and piston rack teeth/gears do not have excessive wear. If worn, replace driveshaft, pistons and guidebars.
- B4. Check that the piston wearpads, shaft bearings and piston backup bearings do not have excessive wear. If worn, replace the relevant bearings.
- B5. For Spring Return (SR) actuators; check that the springs not are damaged. If damage, replace springs. Do not mix old and new springs, shall be replaced as a complete Spring Kit.
- B6. Check that internal bore of the actuator body is not scored/scratched. If there is any damage, replace the body.
- B7. Place lower washer on shaft, followed by lower “O” seal. Grease well.
- B8. Place upper “O” seal on shaft, followed by upper bearing. Grease well.



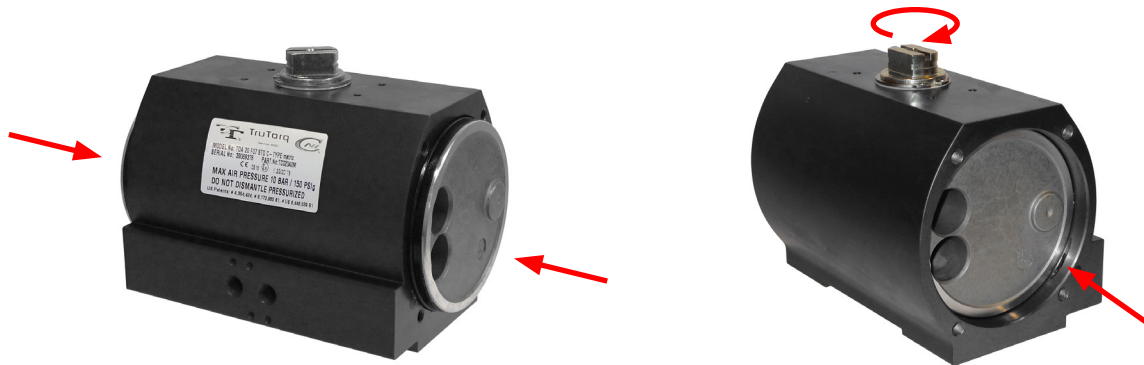
- B9. Insert the driveshaft into the bottom of the body (bigger hole than at the top). Be careful not to “pinch” the “O” seals on insertion.



- B10. Place the washer over the top of the driveshaft. Place and fasten the upper Circlip around the top of the driveshaft by using external drop nose Circlip pliers.



- B11. Insert the piston wearpads into the grooves on the back of the piston rack. Place the “O” seals into the piston circumference groove, followed by the backup bearing, insuring that it is placed to the back of the piston with the “O” seal nestled inside the groove of the backup bearing.
- B12. Turn the top of the shaft until the position of the top of the shaft are align (parallel) with the body of the actuator.

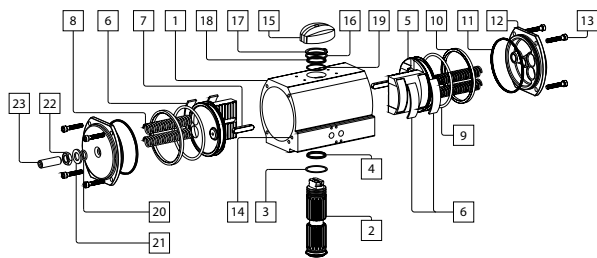


- B13. Insert the pistons into the body (same position as when disassembly). Turn the top of the shaft anti-clockwise \*\*, with an appropriate tool, until the teeth of the shaft have “jumped over” the pistons three (3) times. After that, turn the top of the shaft so that the pistons are drawn into the body.
- B14. Check that the position of the top of the shaft is 90° vs. the body of the actuator when the pistons are fully retracted into the body.
- B15. Check the position of the pistons, when they are in the extended position, that the shaft is in line with the body. The pistons must be just behind the first groove in the house.
- B16. If it is a Spring Return (SR) actuator, turn the shaft clockwise until the pistons are fully retracted into the body. Then, mount the springs.
- B17. Assembly the End Caps. To avoid damage of the O-rings when fitting the end caps; screw the end cap bolts diagonally (opposite pair) one full turn at a time until these are fully screwed.

\*\* Fail Open (FO), clockwise. Driveshaft top 90° vs. actuator.



## Part List



Ref.no.	Description	Quantity
1	Body	1
2	Driveshaft	1
3	Washer	1
4	O-ring	1
5	Pistons	2
6	Wear Pads	4
7	Guide Bar	2
8	Spring	4
9	O-ring	2
10	Back-up Bearing	2
11	O-ring	2
12	End Cap	2
13	End Cap Bolt	8
14	Ball Seal	2
15	Position Indicator	1
16	Washer	1
17	Circlip	1
18	Bearing	1
19	O-ring	1
20	Stop Adjustment O-ring	1
21	Stop Adjustment Washer	1
22	Stop Adjustment Nut	1
23	Stop Adjustment Screw	1