

VALTORC HEAVY DUTY PNEUMATIC ACTUATORS INSTALLATION, OPERATION AND MAINTENANCE MANUAL

INTRODUCTION

Valtorc International heavy duty actuators have been designed and engineered to provide high cycle-life to meet the demands of our customers. The actuators are equipped with dual travel stops and accessory mounting.

!!!WARNING!!!

FOR YOUR SAFETY, IT IS IMPORTANT THAT BEFORE REMOVING ANY COMPONENTS OF THE ACTUATOR, ENSURE THAT ALL PNEUMATIC AND ELECTRICAL SUPPLIES ARE DISCONNECTED AND LOCKOUT AND TAGOUT PROCEDURES ARE IMPLEMENTED. PLEASE CONSULT FACTORY IF YOU HAVE ANY QUESTIONS ON ANY OF THE PROCEDURES LISTED BELOW.

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1. Installation of Actuator

Valtorc actuators are adapted to the valve by means of an intermediate bracket and coupler. The coupler adapts the output of the actuator to the valve shaft. Standard mounting kits provide for mounting the actuator in the direction of the pipe. If different orientations are required please consult the factory when the order is placed.

2. Air Supply

Pneumatic piping to the actuator and associated accessories should follow the best practices for instrument pneumatic piping systems, I.E. lines free of water, oil, pipe sealant or other contaminants. The operating medium is to be filtered dry air or inert gas which is filtered to 50 micron particles size or less. It is extremely important that the actuator be powered with the proper air pressure and air volume. Maximum working pressure is 125 PSI.

Spring return actuators will breath to the atmosphere through the front flange. It's important that it not be exposed to a corrosive atmosphere. Please contact Valtorc International for Possible solutions if this condition exists.

3. Lubrication

Valtorc actuators are factory lubricated for life and additional lubrication is not normally required. However, for actuators performing 100,000 cycles or more, an oil mist lubricator is recommended. Oil mist lubrication requires a mineral oil type ISO VG32 Class 1 for usage in temperature range 15 to 158 Deg. F. Oil mist lubricator must be set to the lowest setting. Once begun, the oil mist lubrication cannot be discontinued.

CAUTION

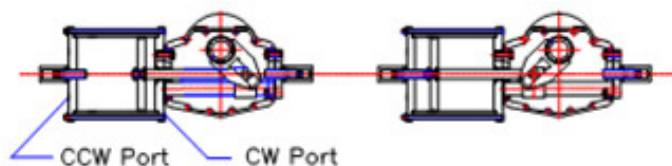
If the actuator is equipped with a pneumatic positioner or pneumatic controller, oil mist lubricated air cannot be used unless the instrument manufacturer indicates that the instrument is compatible with lubricated air.

4. Actuators in Storage or Infrequently cycled.

Actuators in storage should be kept dry and protected from adverse conditions until installed. Original port protectors must be kept in the ports during storage. Actuators must be cycled every 90 days in storage or in operation. Actuators that do not cycle in 90 days should have a provision to jog the actuator to check for operation if a full cycle cannot be achieved.

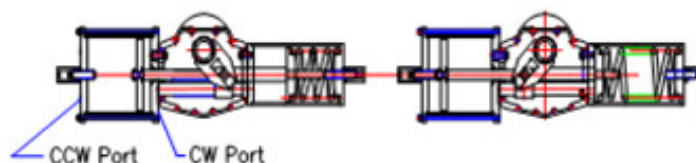
5. Double Acting Operation

Applying air pressure to the CCW Port drives the piston toward the front flange which turns the yoke counterclockwise when viewed from the accessory side of the actuator. When pressure is applied to the CW Port the piston is driven towards the end cap which turns the yoke clockwise. This is shown in the illustration below



6. Spring Return Operation

Applying air pressure to the CCW Port drives the piston toward the front flange as the spring is compressed. This rotates the yoke counterclockwise when viewed from the accessory side of the actuator. When pressure is relieved at the CCW Port the spring drives the piston towards the end cap which turns the yoke clockwise. This is shown in the illustration below. To reverse the failure mode the spring and pressure cylinder are swapped end for end.



7. Travel Adjustment

The Valtorc actuators have + or - 8 degree adjustment of the end of travel stops in both the open and close directions. The stop bolt on the end cap is for Closed (clockwise rotation) and the stop bolt on the spring cylinder / end plate is the Open (counterclockwise) rotation. Loosen and remove the stop bolt cap first. The air supply must be removed before the stop bolt can be turned. Next loosen the hex nut and then position the stop bolt in or out to the correct position. Use care not to damage the o-ring seal. Retighten lock nut and replace stop bolt cap.

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8. Replacement of Cylinder Seals

1. Disconnect electrical supplies and shut off pneumatic supply and vent actuator.
2. **For spring return actuators the spring tension must be relieved before starting. Apply air pressure until the piston moves off the stop bolt. Remove the stop bolt cap (item 24) then loosen the hex nut (item 22) then back out the stop bolt (item 23) until the preload is relieved. Do not remove the stop bolt with air pressure in the cylinder. For double acting units the actuator should be in the clockwise position with the piston next to the rear flange.**
3. Vent all air pressure from the cylinder (item 19).
4. Remove the stop bolt, flat washer and seal (item 22, 34, 35).
5. Remove the tie rod nuts (item 32) from the tie rods (item 21).
6. Remove the rear flange (item 20) from the cylinder (item 19).
7. Remove the cylinder from the front flange (item 11) by pulling over the piston (item 16). Use caution not to scratch the cylinder bore when sliding over piston.
8. Remove the hex nut (item 31) holding the piston on the piston rod (item 8).
9. Remove the piston, rod washer (item 14) and o-ring (item 15).
10. Remove 2 each flat head screws in the front flange and remove the cover plate (item 30).
11. Remove the o-ring seal assembly (item 12) from the counter-bore.
12. Remove the o-rings from the piston and both flanges.
13. Clean all parts with a mild solvent that will not attack the coating on the parts.
14. The center body assembly should be inspected before the pressure group is rebuilt.
15. Remove the indicator plate bolts and remove indicator plate (item 29).
16. Remove the cover bolts and clean out the jacking screw holes. Install a bolt into each jacking screw hole and alternately tighten the screws to bring the cover plate up so that it can be removed from the yoke bearing.
17. Inspect the bronze slider (item 4) for wear along with the slot in the yoke arm.
18. Inspect the upper yoke bearing (item 3) for wear.
19. Wipe out old grease and replace with new grease on all sliding surfaces.
20. Lightly grease new o-ring seal assembly (item 12) and install in front flange. Replace cover plate and install 2 each flat head socket cap screws.
21. Lightly grease the o-ring for the front flange and install in the groove.

22. Place rod washer (item 15) on piston rod with countersink facing out toward the rear flange. Lightly grease o-ring (item 15) and slide over piston rod. Slide piston over piston rod and install hex nut.
23. Lightly grease piston grooves and install o-ring and back-up strip.
24. Lightly grease cylinder completely on the inside surface and carefully slide over the piston until seated on the front flange.
25. Lightly grease the o-ring for the rear flange and install in the groove. Place rear flange over the tie rods and seat on the cylinder.
26. Reinstall the tie rod nuts and tighten in a criss-cross pattern.
27. Reinstall the stop bolt, o-ring, flat washer and hex nut in the rear flange. Screw in to the approximate position for 90 degree operation.
28. To pressure test a double acting actuator proceed to the next step for a spring return go the step 33.
29. Connect 10 psig air to the front flange and cycle the actuator then connect to the rear flange and cycle the actuator several times.
30. Apply 125 psig air to the front flange and check for leakage at the front flange/cylinder connection. Also check for rod seal leakage in the center body cavity. Place a flexible tube in the rear flange NPT port and check for leakage across the piston. Relieve air pressure on cylinder.
31. Place a light coating of permantex blue on cover gasket and install. Place cover over the alignment pins and install bolts and tighten. Remove any excess gasket sealer after it is dry.
32. Apply 125 psig air to the rear flange and check for leakage at the rear flange/cylinder connection. Place a flexible tube in the front flange NPT port and check for leakage across the piston. Relieve air pressure on cylinder.
33. To pressure test a Spring Return unit the cover must be installed before any air pressure is applied to the unit. Refer to step 31 for information on applying cover.
34. After cover is installed apply supply pressure to the rear flange and check for leakage at the rear flange/cylinder connection and check for leakage across the piston by using the method in step 32 above.
35. Make any final adjustments on the rear flange stop bolt and check for leakage. Install the stop bolt cover and tighten.
36. The actuator is now ready to return to service.

9. Converting from Double Acting to Spring Return

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1. Disconnect electrical supplies and shut off pneumatic supply and vent actuator.
2. Remove the stop bolt cap on the rear flange of the air cylinder and loosen the hex nut and back out the stop bolt. The stop bolt must be backed off so that when 10 psig of air is applied to the front flange there is no load on the stop bolt.
3. Remove the cover bolts and clean out the jacking screw holes. Install a bolt into each jacking screw hole and alternately tighten the screws to bring the cover plate up so that it can be removed from the yoke bearing. 4. Remove the end plate (item 7) also remove the stop bolt cover, hex nut and stop bolt as these will be used in the spring cartridge.
5. Remove the set screw holding the stop screw pad in the sliding block.
6. Remove the stop screw pad.
7. Install the spring pusher rod into the spring cartridge.
8. Place a light coat of blue permantex on the flange gasket and apply to the actuator.
9. Lift Spring Cartridge and slide spring pusher rod into access hole and into hole in the sliding block.
10. Install the 4 socket head cap screws and lockwashers provided with the spring cartridge.
37. Place a light coating of permantex blue on cover gasket and install. Place cover over the alignment pins and install bolts and tighten. Remove any excess gasket sealer after it is dry.
11. Install indicator plate and tighten bolts.
12. Install stop bolt and hex nut in rear of spring cartridge.
13. Apply air pressure and check for smooth operation.
14. Adjust both stop bolts as necessary for proper travel and check for leakage before installing stop bolt covers.

10. Changing from “Spring Closed” to “Spring Open”

To convert from spring closed to spring open requires that the air cylinder be removed and the spring cartridge removed and placed on the opposite side of the actuator. Complete instructions for rebuilding the air cylinder are listed above along with instructions for installing the spring

11. Seal kits and Repair Parts

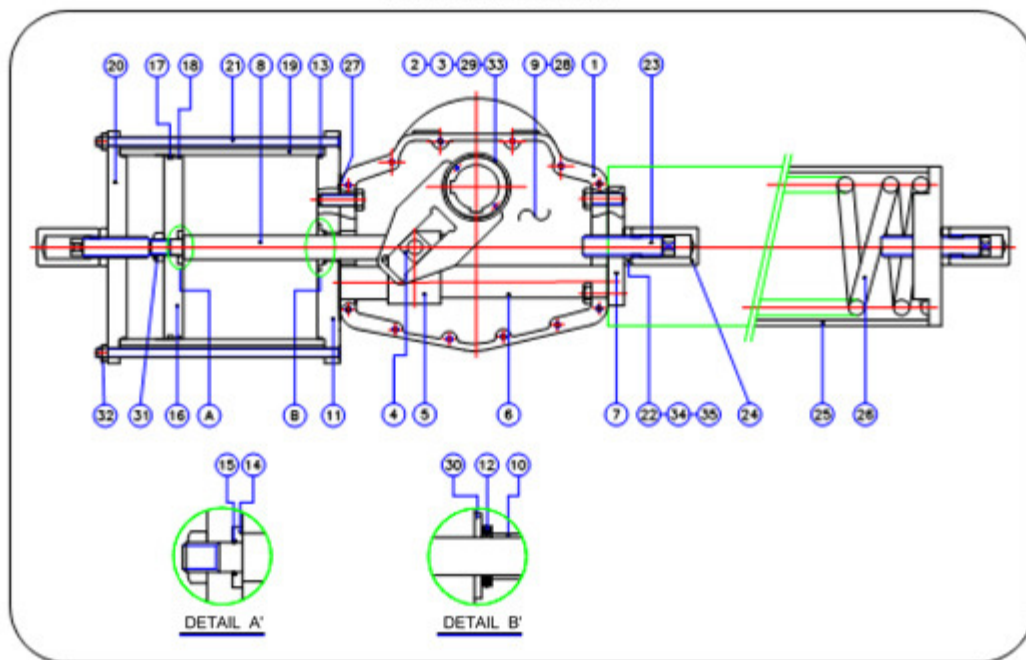
To order replacement seal kits or spare parts please provide the following information:

Actuator Model Number

Serial Number

Type of seal kit (Nitrile standard, low temperature , Viton
Item Number, Description and quantity for repair parts.

Bill of Material



NO.	DESCRIPTION	MATERIAL
1	Housing	Ductile Iron
2	Yoke	Carbon Steel
3	Yoke Bushing	Bronze
4	Sliding Bearing	Bronze
5	Sliding Block	Carbon Steel
6	Guide Bar	Alloy Steel (Chrome Plated)
7	End Plate	Carbon Steel
8	Piston Rod	Alloy Steel (Chrome Plated)
9	Housing Cover	Carbon Steel
10	Bushing	PTFE Lined Steel
11	Front Flange	Carbon Steel
12	O-Ring	Nitrile Buna
13	O-Ring	Nitrile Buna
14	Rod Washer	Carbon Steel
15	O-Ring	Nitrile Buna
16	Piston	Carbon Steel
17	Backup Ring	RTFE

NO.	DESCRIPTION	MATERIAL
18	O-Ring	Nitrile Buna
19	Cylinder Tube	Carbon Steel (Chrome Plated)
20	End Flange	Carbon Steel
21	Tie Rod	Carbon Steel
22	Stop Nut	Carbon Steel
23	Stop Bolt	Carbon Steel
24	Stop Bolt Cap	Carbon Steel
25	Spring Cartridge	Carbon Steel
26	Spring	Alloy Steel
27	Gasket	Treated Paper Fiber
28	Gasket	Treated Paper Fiber
29	Indicator Plate	Carbon Steel
30	Cover Plate	Carbon Steel
31	Hex Nut	Alloy Steel
32	Hex Nut	Alloy Steel
33	O-Ring	Nitrile Buna
34	O-Ring	Nitrile Buna
35	Flat Washer	Carbon Steel