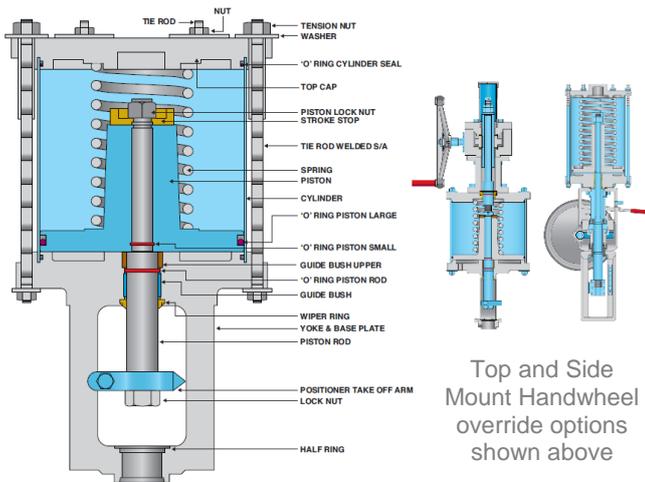


Installation, Operation, Maintenance Instructions for Severn Glocon Piston Actuators – P Series



Typical Piston Actuator –List of Parts



Top and Side
Mount Handwheel
override options
shown above

General Inspection of parts

General inspection is for visual actuator condition only and a test to confirm smooth movement of the piston in operation.

Advanced maintenance items:

Actuator 'O' ring seals, wiper ring and Piston rod guides
(Soft parts are available as an actuator repair kit)

Advanced Inspection – (to be carried out by trained / experienced personnel only)

ACTUATOR 'O'RING SEAL'S - Not re-useable
ACTUATOR SPRING – If damaged contact Severn Glocon for advice on repair or whether replacement is needed
PISTON ROD GUIDES - Examine general condition; renew if necessary

USE OF THIS MANUAL, LEGAL DIRECTIVES, ENVIRONMENTAL AND OTHER SAFETY NOTICES

This manual to be read in conjunction with Severn Glocon "Supplementary Installation, Erection, Maintenance and Operating Procedures" document number SGG-IOM-5000, DS610 and any other related O & M instructions relating to any accessories fitted to the Control Valve. All notices, warnings and guidance given in that manual are also applicable to this document.

INTENDED USE

Reference is to be made to the Control Valve Specification Sheet, Installation and Operation Instructions, nameplate to check product is suitable for the intended use / application.

See Installation, Operation and Maintenance Instructions for Severn Glocon Control and Choke valves SGG-IOM-5000-M01-REV02 for information on the following (Latest Ed.'s):

- MACHINERY DIRECTIVE INCORPORATED INTO A MACHINE
- ATEX DIRECTIVE
- PRESSURE EQUIPMENT DIRECTIVE PED
- ENVIRONMENTAL and OTHER LEGISLATION & IPPC DIRECTIVE
- RETURNING PRODUCTS

DISPOSAL

Unless otherwise stated in the Instructions, this product is recyclable and no ecological hazard is anticipated with its disposal providing due care is taken

If any doubts exist, contact SEVERN GLOCON LTD quoting the valve serial number

Safety: Always ensure safe working practices are followed:



Always wear appropriate PPE and ensure that the local lifting plan is followed



Always ensure a safe working environment when lifting



Always isolate valve before maintenance.
Always use lockout methods to ensure safety



Caution: Do not put hands inside yoke area



Always use correct tools. Do not over tighten.
Do not use extension bars to force movement



Poison risk: Do not incinerate PTFE. Do not smoke whilst handling PTFE.



Always read the manual. If any doubts exist, contact SEVERN GLOCON LTD quoting the valve serial number.

WARNING: When ordered, the actuator and or control valve configuration and materials of construction are selected to meet particular pressure, temperature, pressure drop and controlled fluid conditions. Personal injury, property damage, equipment damage, or leakage due to escaping gas or bursting of pressure containing parts may result if the actuator and or control valve or its ancillaries are over pressured or installed where service conditions exceed the actuator and control valve design limits. To avoid such injury or damage, provide a relief valve for overpressure protection as required by accepted industry or local codes and good engineering practice. Do not apply other conditions to the valve without written approval from Severn Glocon.

WARNING: Before performing any maintenance operation: Isolate the actuator and or control valve from process pressure. Relieve process pressure from both sides of the control valve. Drain the process media from both sides of the valve. If the control valve is to be removed from the line decontaminate any process fluid remaining in the valve to make safe. Disconnect and isolate any operating lines providing air pressure, electric power, or a control signal to the actuator. Vent the air pressure from the actuator. Be sure that the actuator cannot suddenly open or close the valve (Note by disconnecting the air and or power lines the actuator will move the valve to its power failure position). Ensure persons are a suitable distance from moving parts.

Use lock out procedures to be certain that the above measures stay in effect whilst work is carried out on the actuator or control valve.

Scope of this Manual - Installation - General

This manual includes installation, operating and maintenance information for Severn Glocon P Series actuators only. Please refer to separate manuals for

instructions covering the valve, positioner and any accessories. Where the valve is operated by electric, hydraulic or electro hydraulic actuation, follow the IOM instructions provided with the actuator manufacturer.

Only persons qualified through training and or experience should install, operate and maintain this product. In case of questions about these instructions or the valves please contact the nearest Severn Glocon office before proceeding.

Instructions in the following paragraphs describe the installation procedures for the actuator. Instructions not included are to be performed in accordance with standard industry acceptable practises as may be required by local codes, specifications and or regulations. Users should refer to BS 6683 "Guide to installation and use of valves".

Storage

Unless specifically specified by the contract, the actuator (or valve and actuator) are packed for indoor storage at job site.

For short term storage the actuator or valve and actuator, should be installed in a fire resistant weather tight and well ventilated building. The equipment should be kept at a temperature of -20F (-29deg.C) to +120F (48deg.C). The area should be constructed and situated so that it will not be subjected to flooding; the floor should be similarly level, firm, protected and well drained. Actuators and valves should be on pallets or shoring to permit air circulation.

For longer storage, a corrosion preventative should be considered that is compatible with the process fluids. Further advice should be sought from Severn Glocon.

Handling

Applicable codes regulations and industry practices must be followed when handling or lifting valves. Care should be exercised to protect instrumentation / ancillary equipment. Severn Glocon lifting guidelines are available on request.

Installation

Make sure adequate overhead clearance exists when installing the actuator. Minimum clearance is 150mm. It is usual to use the actuator with a suitable valve positioner. If this is the case, the air supply and instrument signal connections must be connected as per the positioner manufacturer's instructions.

WARNING: Do not exceed the recommended air supply pressure as shown on the Severn Glocon specification sheet as injury to personnel or damage to equipment may occur.

The use of an air filter regulator on the air supply line is recommended. Instrument quality air is required for operation of the actuator and any ancillaries fitted.

The weight of the actuator valve assembly should be taken into consideration when mounting on to a valve. Supports may be required depending on the actuator orientation.

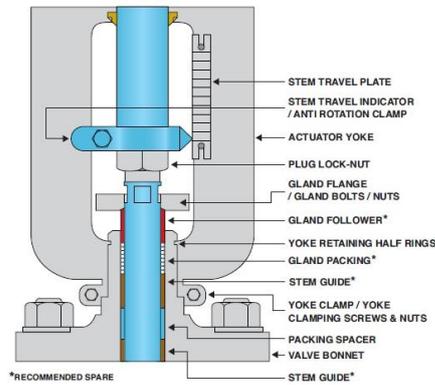
Actuator Removal and Fitting to Valve

Actuator removal is described as follows, which is more complicated than initial installation. **If unsure, please contact an approved SEVERN GLOCON service centre for a quotation**

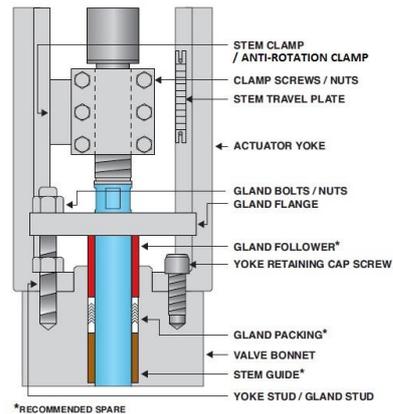
IMPORTANT: See warnings on page 1 in regard to isolation of items to be worked on and carry out safe isolation before beginning work.

WARNING: Escaping air can cause personal injury, avoid skin contact and wear eye protection.

Half Ring Design



Bolted Bonnet Design



NOTE Yoke Fixings and Gland Flange Studs shown 90 degrees out of position for clarity on Bolted bonnet design

Actuator Removal (Actuator size 25, 50 and 100 with standard Half ring fixing method).

Before starting any dismantling sequence, the valve plug should be located approximately 50% off its seat. For control valves fitted with air fail open spring actuators the natural fail open position is sufficient.

For fail closed / double acting actuators, with the valve in its 50 percent open position the plug locknut can be loosened and the valve plug screwed up into the actuator stem by about 6 mm. Any air supply can then be turned off and the system vented from the actuator to release any pressure.

Having supported the weight of the actuator by use of suitable slings, remove the gland bolts and gland bolt nuts. Then remove the yoke clamp screws, yoke clamp nuts, and the yoke clamps.

Push the actuator downwards towards the control valve body to allow removal of the two yoke retaining half rings from the groove in the top of the control valve bonnet.

Ensure that the control valve plug is held in position, rotate the actuator on the valve plug to unscrew and separate the valve plug from the actuator piston rod.

Remove the plug lock-nut from the valve plug and the gland flange. The actuator can now be removed from the valve taking care not to damage the valve plug.

NOTE: When installing new or re-fitting the actuator, refer to the valve IOM for detail on appropriate tightening of packing gland.

If any doubts exist, contact SEVERN GLOCON LTD quoting the valve serial number



Actuator Removal (Actuator size 100L and 200 with bolted bonnet & split clamp actuator stem connection)

Before starting any dismantling sequence, the valve plug should be located approximately 2mm off its seat. Remove the stem split clamp. Take care not to trap any fingers as the valve plug may fall to the closed position as the split clamp is removed. Remove the gland studs and gland bolt nuts. Then remove the yoke retaining cap screws.

Disconnect any air from the actuator cylinder port to release air pressure from both sides of the actuator. Having supported the weight of the actuator by use of suitable slings, it can now be removed from the valve taking care not to damage the valve plug.

Pre-Operation

The actuator and control valve positioner must be set to correctly close and seat the valve so as to not give rise to premature trim degradation. If a manual handwheel override is provided in the actuation system, ensure this is in the disengaged or neutral position. Clean the actuator shaft of any foreign matter. Always use correct tools including the use of torque wrenches to assure bolts are not over tightened during any checks carried out.

Operation

In operation, ensure that the actuator operates smoothly and that there is no juddering or unusual motion. If the actuator exhibits any strange behaviour, please contact your nearest Severn Glocon representative immediately.

IMPORTANT: For all valve adjustments refer to relative IOM instructions. If any doubts exist, contact SEVERN GLOCON LTD quoting the actuator/valve serial number.

Maintenance

Actuator parts are subject to normal wear and tear and must be inspected and replaced as necessary. Inspection and maintenance frequency depends upon the severity and importance of the service.

WARNING: The actuator may be spring loaded. Use care to follow normal safety procedures when removing actuator casings and end caps. When turning off the air supply the actuator will move to its fail-safe position. Keep personnel away from the moving parts of the valve and actuator during this process to avoid personnel injury. The actuator may move very quickly during this process.

Spare Parts

Whenever an actuator is disassembled, it is recommended that all rubber parts are replaced. Consumable parts are considered as all soft parts.

Troubleshooting

Jerking or sticky stem travel – Possible Cause and Solution

1.	Insufficient air supply	Check air supply and any filters for blockage
2.	Unlubricated piston cylinder wall	Lubricate the cylinder and 'O' ring seals.
3.	Worn or damaged piston rod guide bushing	Check moving parts for damage. Replace if worn
4.	Incorrectly located air fail spring	Check actuator spring locations, re fit if needed.
5.	Internal valve problem	Check the valve. Repair as required

High air consumption – Possible Cause and Solution

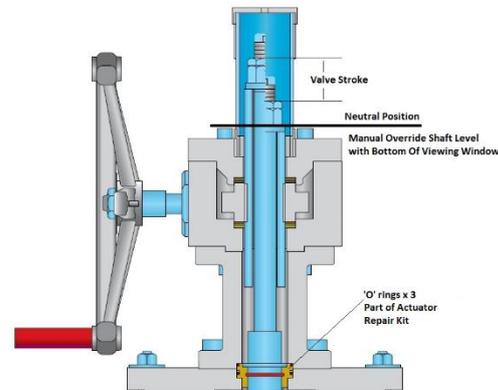
1.	Leaks in the air supply	Check air connections. Tighten fittings and refit any leaking tube lines.
2.	Positioner Malfunction	Check and refer to positioner manufacturer's instructions
3.	Leaks through actuator 'O' rings	Use actuator repair kit to replace all 'O' rings and wiper rings
4.	Damaged Cylinder	Replace with New Cylinder

Actuator does not move to its fail safe position – Possible Cause and Solution

1.	Air pressure is not venting due to faulty positioner or ancillaries	Check and refer to positioner or ancillary manufacturer's instructions as needed
2.	Spring failure	Check and replace if needed
3.	Internal valve problem	Check the valve, repair as required.

AUXILIARY HANDWHEELS AND LIMIT STOPS

TOP-MOUNTED, CONTINUOUSLY CONNECTED HANDWHEELS Size 25,50 and 100



ADVANCED MAINTENANCE

The top-mounted, continuously connected hand-wheel is totally, enclosed, so only checking for general condition is required. However, disassembly may be necessary if the mechanism fails. When reassembling the handwheel, be sure to clean and lubricate the screw and drive nut with a multi-purpose grease and replace 'O' rings with new.

IMPORTANT: After operation of the override it must be returned to the neutral position for automatic operation (shown by manual override shaft level with the bottom of the viewing window in the hand-wheel end cover tube (6)).

Operation

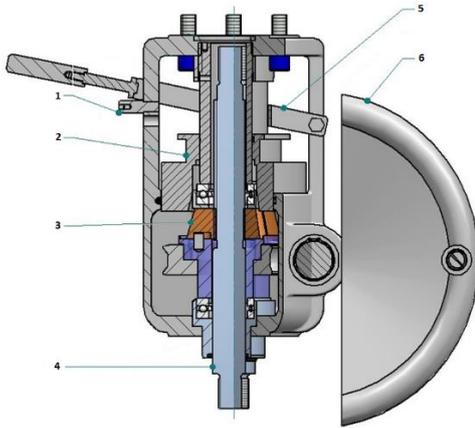
If a pneumatic failure occurs, or if manual control of the valve is desired, the top-mounted continuously connected hand-wheel can be operated as follows:

1. Set the three-way bypass valve (located on the pneumatic supply line to the positioner) to "Hand" to vent the air pressure from the actuator. NOTE: a three-way valve is installed in the supply line only when there is no lock-up system or volume tank. On volume tank or lock-in place systems, the bypass valve is located between the top and bottom cylinder ports. However, on some pneumatic circuits the single three-way bypass valve may be substituted by two two-way manual valves. Consult the pneumatic circuit supplied with the actuator documentation.

WARNING: By venting the air, the actuator will move to the fail safe position, this may be fast. Please keep away from moving parts including the positioner linkage to avoid injury.

2. To open the valve, turn the hand-wheel counter-clockwise to retract the plug.
3. To close the valve, turn the hand-wheel clockwise to extend the plug.
4. To return the valve to automatic control, return the hand-wheel nut to the 'neutral' as shown by the handwheel position indicator and set the three-way bypass valve (see previous NOTE) to 'auto'. The neutral position is indicated when the top of the screw aligns with the marked line on the cap liner (see diagram).
5. Adjusting the hand-wheel nut to a position other than neutral provides a limit stop function, either limiting opening or closing.

DECLUTCHABLE HANDWHEELS Size 100, and 200



ADVANCED MAINTENANCE

The Declutchable side-mounted hand-wheel is an enclosed unit. For long life of the unit, it is important to maintain a coating of multi-purpose grease on the acme threads and engaging collets at all times. A grease point is provided and from time to time multi-purpose grease should be pumped into the unit. Oil can be applied to the hinge pins and the operating lever and the bearings on handle mechanism.

WARNING: If the mechanism has been operated incorrectly it is possible to strip the acme threads on the actuator piston rod and replacements parts will be required.

Operation

If an air failure occurs, or if manual control of the valve is desired, the handwheel override can be operated as follows:

1. Turn off the pneumatic supply. This is carried out by operating the three-way bypass valve (located on the air supply line to the positioner) to "Hand" to vent the air pressure from the actuator. NOTE: three-way valves are installed in the supply line only when there is no lock-up system or volume tank. On volume tank or lock-in place systems, the bypass valve(s) is located between the top and bottom cylinder ports. However, on some pneumatic circuits the single three-way bypass valve may be substituted by two two-way manual valves. Consult the pneumatic circuit supplied with the actuator documentation.

WARNING: By venting the air, the actuator will move to the fail safe position, this may be fast so personnel must be keep away from moving parts including the positioner linkage to avoid injury.

2. After isolating the pneumatic supply remove the operating lever locking pin (1), from its hole beneath the operating lever assembly (5). Do not lose this pin (it is normally held to the body of the unit by a chain). It is now possible to move the operating lever (5) down towards the valve body. This in turn moves the internal engaging piston (2) and pushes the split segments of a spring loaded operating nut (3), which will engage onto the connecting rod (4) with its acme thread. It may be required to rotate the hand-wheel (6) at the same time to ease this process. Once the operating handle has moved and the operating nut fully engaged on the acme thread the locking pin (1) is used to hold the operating lever in position by inserting this locking pin in the lower of the two holes.

3. With the hand-wheel unit now fully engaged on the actuator piston rod thread, by rotating the hand-wheel clockwise the actuator will close the valve and by rotating the hand-wheel counter-clockwise, the valve will open.

4. To return the valve to automatic control, using the hand-wheel mechanism, firstly position the valve fully to the air fail position.

WARNING: Control valves must only ever be put back into automatic control mode once the user has confirmed that the valve is fully in its Fail Safe mode position. Failure to do so can cause significant damage to the equipment and severe injury to personnel.

5. Pull out the operating lever locking pin (1) from its locating hole above the operating lever assembly (5). To declutch the hand-wheel assembly move the operating lever (5) up away from the valve body. This moves the engaging piston (2) away from the operating nut and allows the operating nut (3) springs to disengage the operating nut from the connecting rod (4). It may be necessary to rotate the hand-wheel (6) slightly to allow the acme threads to disengage. Confirm disengagement by checking the handwheel moves freely.

WARNING: At this point, just in case there is still a load on the actuating stem from the valve, meaning the actuator piston rod will move to the no load position, it is advised to keep personnel away from any moving parts.

6. When the acme thread is fully disengaged the operating lever will be in its fully up position and the locking pin (1) is used to hold the lever assembly in position by inserting this locking pin in the upper of the two holes.



Pin and lever in auto position (Lever Up)

7. Turn on the pneumatic supply by operating the three-way bypass valve (see previous NOTE) to 'auto'. This will then reconnect the air supply to the positioner and the valve can be operated by automatic control.

Disclaimer: Neither Severn Glocon Ltd, or any of its affiliated entities assumes responsibility for the selection, use or maintenance of any product. Responsibility for proper selection, use, and maintenance of any product remains solely with the purchaser and the end user.

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