

RANGER Gas Over Oil Actuator

Installation & Operation Manual

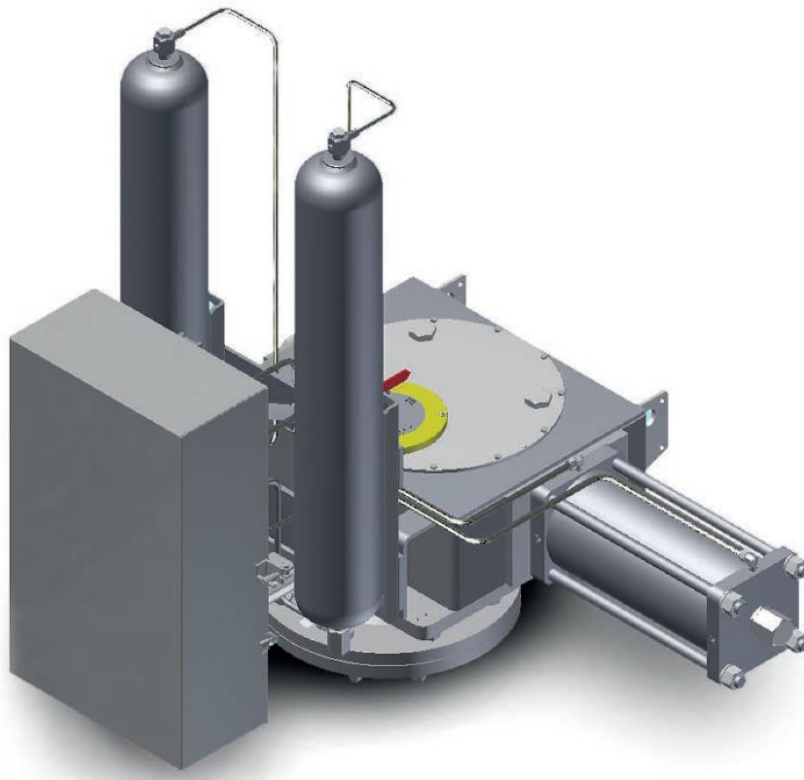


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1 Introduction

1.1 General Notes

The Ranger actuator is manufactured by Valvitalia Automation Division. Contact Quarter Turn Automation(QTA) for North American sales, distribution and service.

1.2 Terms and Conditions

Valvitalia /QTA certifies that all its goods are free from defects in material and are designed and manufactured in accordance with the current specifications.


All the products when properly installed, operated and maintained are warranted for one (1) year from the date of installation by the first user of the goods or eighteen (18) months from the date of effective delivery to the first user of the goods.

If a defect has been caused by improper installation, misuse or improper maintenance, repairs will be billed at the normal rates.

1.3 Actuator Nameplate

All actuators are supplied with nameplate. Please refer to the serial number listed on the nameplate for all inquiries.

Nameplate example:

 VALVITALIA S.P.A. Via Tortona 69 27055 Rivanazzano Pavia - Italy			
		AUTOMATION • DIVISION	
CSA el. des. class.	<input type="text"/>	ITEM No.	<input type="text"/>
MODEL No.	<input type="text"/>	Design pressure [barg]	<input type="text"/>
SERIAL No.	<input type="text"/>	Max working P [barg]	<input type="text"/>
YEAR-MONTH	<input type="text"/>	T min [°C]	<input type="text"/>
TAG No.	<input type="text"/>	Weight [kg]	<input type="text"/>
ORDER No.	<input type="text"/>		<input type="text"/>

1.4 Typical Operating Conditions:

Operating Medium:	Natural Gas
Supply Pressures:	300 psig – 1500 psig
Working Temperatures:	-50°F to 175°F *Optional -76°F to 175°F

2 Installation of Ranger Actuator

2.1 Checks to Be Performed Upon Actuator Receipt

- Verify the serial number/tag number.
- Schematic and other documentation is attached inside the control cabinet.
- Check for external damage due to transportation.
- If the actuator and the valve are shipped already assembled, setting of the mechanical end stop screws and setting of the micro-switches (end of stroke) have already been carried out.
- If the actuator is shipped loose, the setting of the mechanical end stop screws and setting of the micro-switches must be performed after the actuator is assembled to the valve.

2.2 Actuator Handling

All handling operations should be performed by qualified personnel according to industry standards. The actuator lift points are designed for the actuator weight only. Do NOT use the actuator to lift the valve's weight! The actuator weight is indicated on the actuator nameplate.

2.3 Actuator Storage

For actuator storage

- Keep the actuator off the ground (on a wood pallet) in order to preserve the actuator mounting part from any damage.
- Verify that the electrical connections (if any) and that the pneumatic connections are well protected by the appropriate caps.
- Keep the enclosure cover closed.

If the actuator is stored outside or in excess of one (1) year, please proceed as follows:

- Protect the electrical connections (if any) and pneumatic connections using metal sealed caps instead of plastic ones.
- Protect the stem coupling part of the actuator with oil or grease.
- Operate (stroke) the actuator periodically using the hand pump.

2.4 Assembly of the Actuator onto the Valve.

2.4.1 Coupling the actuator to the Valve – Orientation

The Ranger gas over oil actuator is designed to be installed on valves with vertical stems (stem up). For stem horizontal applications consult factory.

The Ranger actuator can be placed on the valve in four (4) different configurations each at 90 degree internals depending on client requirements without the any additional parts.

The actuator is provided with a yoke which has four (4) keyways placed at 90° intervals. A Stem Adapter Bushing is provided and installed. The yoke is connect to the stem adapter bushing using two (2) external keyways on the bushing outer diameter. The stem adapter bushing is bored and keyed to match the valve stem. By varying the keyway locations between the stem adapter bushing and the yoke, the actuator can be mounted to the valve in up to four different positions each at 90° intervals.

Note:

The stem adapter bushing will already be installed in the actuator when received.

2.4.2 Procedure for Assembly of the Actuator onto the Valve

It is recommended that the assembly procedure described below is followed. If the procedure is not followed, the warranty may be compromised.

It is recommended that the actuator installation, use, maintenance and eventual repair be performed by qualified personnel.

Incorrect assembly can have negative repercussions.

For assembly of the actuator onto the valve, please proceed as follows:

- Check that the desired actuator mounting position does not strike the valve or other surrounding equipment. Verify that control cabinet door will open fully.
- Check and clean both the valve and actuator mounting flanges, stem adapter bushing, and valve stem.
- Check that the actuator is in the same position as the valve (open or closed). If not, use handpump to move actuator into same position as the valve.
- Lubricate the coupling parts with oil or lightly grease. (any NLGI 2 general-purpose grease)
- Lift the actuator using the holes provided on the main tank bracket and lifting points on the actuator housing.
- Align the valve shaft inside the stem adapter bushing and install the actuator onto the valve.
- Align the holes of the actuator mounting flange to match the bolt holes/pins of the valve mounting flange. Use handpump to align mounting holes as needed.
- Install the mounting bolts.
- Tighten the nuts to the required torque (see Table 2.4.2.1).
- If a spool and connector is required, place the connector on the valve stem and tighten the set screw in the connector. The spool may be attached to either the valve or the actuator first with the studs and nuts provided. Proceed with mounting the actuator per above instructions.

THREAD NOMINAL DIAMETER	Tightening Torque [Nm]/[lbf*ft]
M8	20 / 15
M10	40 / 30
M12	70 / 52
M14	110 / 81
M16	160 / 118
M20	320 / 236
M22	420 / 310
M24	550 / 406
M27	800 / 590
M30	1100 / 811
M33	1400 / 1033
M36	1700 / 1254

Table 2.4.2.1 - Nut tightening torques.

Note:

The torque values indicated in Table 2.4.2.1 are relevant to ASTM A 193 B7 material for studs and to ASTM A194 gr.2H material for nuts.

2.5 Supply Connection

Verify that the pressure available from the supply line complies with the pressure value indicated on the actuator nameplate. All the pneumatic connections must be carried out by qualified personnel using fittings and pipe of suitable material for the pressure rating.

Please proceed as follows:

- Connect pneumatic supply as shown in the applicable schematic. Typical connection point is 1/2FNPT located on the bottom of the Gas Control Block.

If a volume tank (power gas storage bottle) is supplied, it is equipped with an inlet check valve. Supply connection should be made to the inlet check in this case.

End user/installer should confirm that the tank is rated and / or protected against any possible supply overpressure or thermal expansion overpressure.

- Secure all pipes, fittings and tubing to prevent loosening of threaded connections.
- Verify that there is no leakage from the pneumatic connections.

2.6 Operations

It is recommended to follow the standards and rules applicable to safety against pressurized gas and high noise levels.

Follow all applicable safety procedures when working with pressurized gas. Hearing protection should be worn when working in close proximity to high pressure gas exhaust.

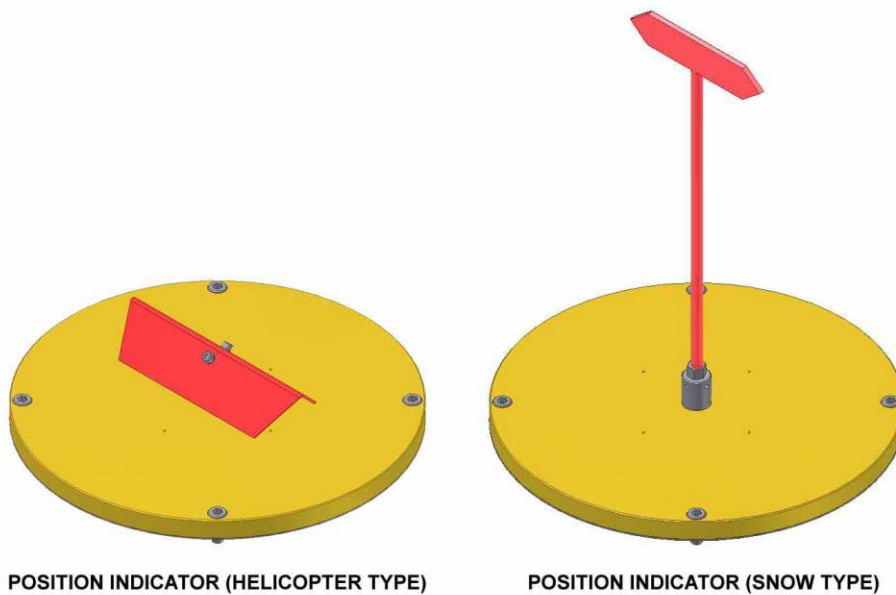
2.6.1 Local Pneumatic Operation

In order to perform local closing or opening operation with pneumatic pressure (line gas), please proceed as follows:

- Pull the lever on the Gas Control Block relevant to the required operation (Open or Close).
- Keep the lever engaged until the actuator has completed the stroke.
- Local Position Indicator can be viewed to verify valve position. [Figure 2.6.1.2].
- At the end of the operation, release the pressure on the lever



Figure 2.6.1.1 – Gas Control Block



POSITION INDICATOR (HELICOPTER TYPE)

POSITION INDICATOR (SNOW TYPE)

Figure 2.6.1.2 – Position Indicator

2.6.2 Manual Override

In order to perform local closing or opening operation with the hydraulic hand pump, please proceed as follows:

Confirm the auto/maintenance valve (if applicable) is in the maintenance position.

Confirm the supply gas pressure has been isolated from the actuator. Once isolated, vent or bleed off all remaining pressure in the actuator controls.

2.6.2.1 Operating Hand Pump to Open Valve

- To open the valve push in the left knob (as shown on Fig. 2.6.2.1) to engage the pump.
- Using the pump arm (as shown in Fig. 2.6.2.4) operate the hand pump until the position indicator/limit switch indicates that the valve is fully in the open position
- Once the valve is in the open position disengage the handpump by pushing the relief knob on the front on the distributor (as shown on Fig. 2.6.2.3)
- After pushing the relief knob the pump arm can now be lowered into its nominal position.



Figure 2.6.2.1 – Hand Knob to Engage Pump For Opening Valve.



Figure 2.6.2.2 – Hand Knob to Engage Pump For Closing Valve.

2.6.2.2 Operating Hand Pump to Close Valve

- To close the valve push in the right knob (as shown on Fig. 2.6.2.2) to engage the pump.
- Using the pump arm (as shown in Fig. 2.6.2.4) operate the hand pump until the position indicator/limit switch indicates that the valve is fully in the closed position
- Once the valve is in the closed position disengage the handpump by pushing the relief knob on the front on the distributor (as shown on Fig. 2.6.2.3)
- After pushing the relief knob the pump arm can now be lowered into its nominal position.

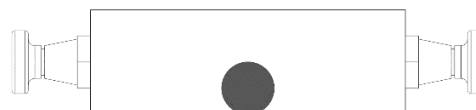


Figure 2.6.2.3 – Relief Knob to Disengage Pump.



Figure 2.6.2.4 – Hand Pump with Pump Arm

2.7 Setting of the End Stop Screws

Adjustment of the end stop screws is provided for both Open and Closed position:

- For actuator models GOM-05 through GOM-16 the rotational stroke is $90^{\circ} \pm 5^{\circ}$.
- For actuator models GOM-20 and GOM-24, the rotational stroke is $90^{\circ} \pm 3^{\circ}$.

The end stop screws are located on the cylinder end flange [Figure 2.7.2] and on the actuator [Figure 2.7.1].

For setting of the end stop screws please proceed as follows:

- Unscrew and remove the protecting cap of the end stop screw using the applicable metric hexagonal wrench. It is normal for a small amount of hydraulic fluid to leak from the end stop bolt during adjustment.
- Loosen the jam nut.
- Insert a metric hex key into the end stop screw.
- Rotate the end stop screw counter clockwise to increase the stroke or rotate in the clockwise direction to reduce the stroke.
- Once the setting has been performed, replace the protecting cap on the end stop screw.

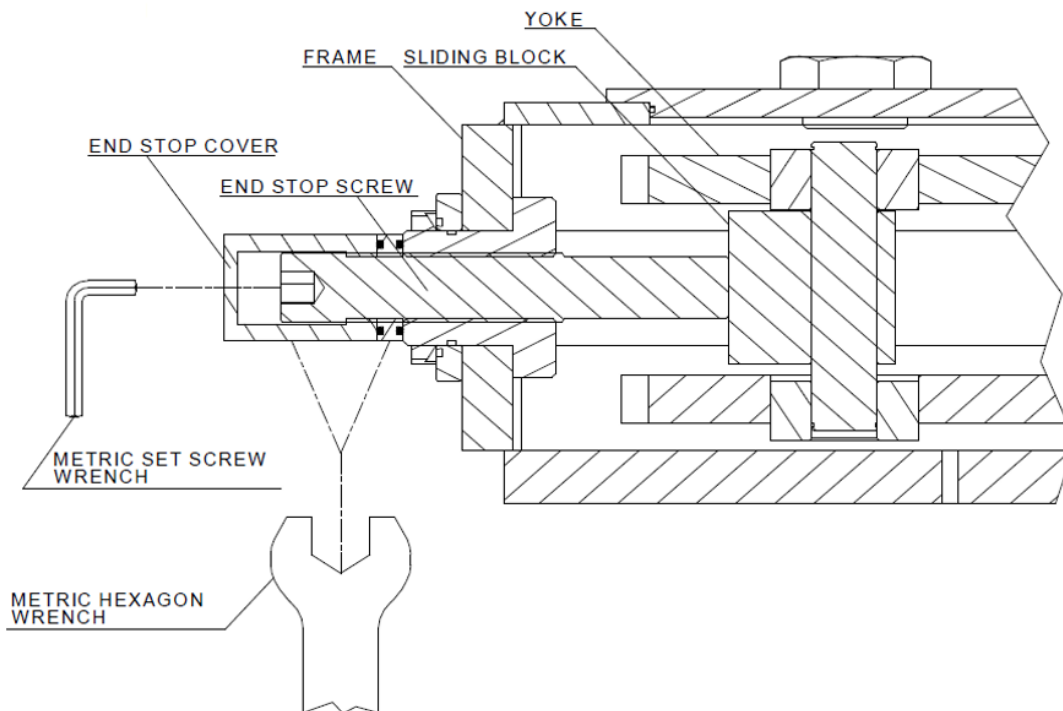


Figure 2.7.1 – Setting of The Frame End Stop Screw.

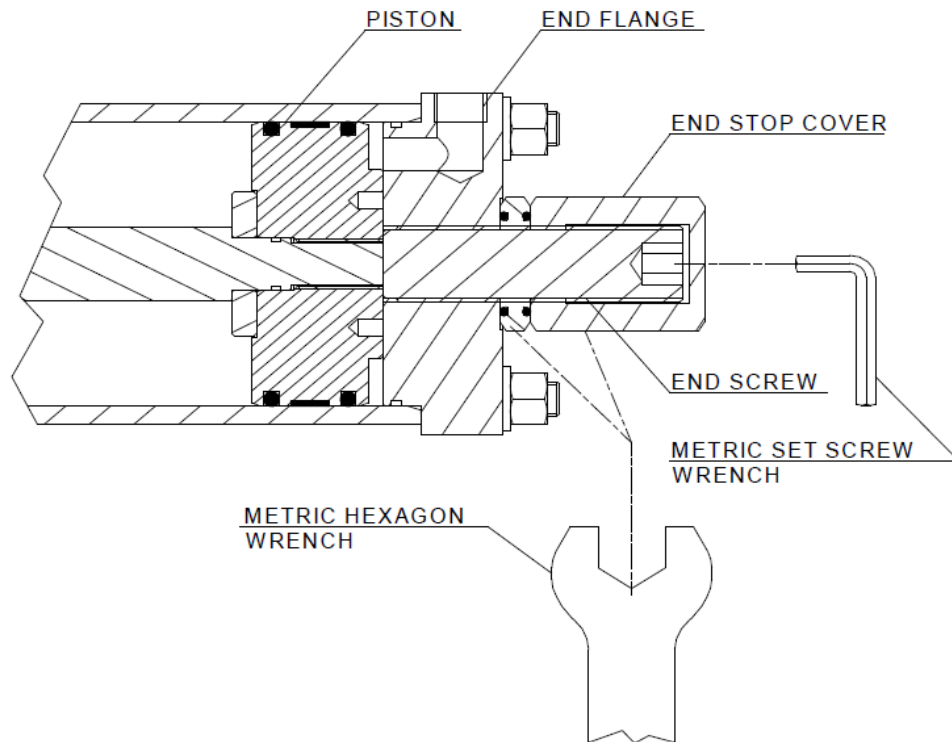


Figure 2.7.2 – Setting of the Cylinder End Stop Screw

3 Maintenance

Before performing any maintenance operation, please isolate the pneumatic pressure supplied by the line or by the emergency tank (if any) from the actuator and release the pressure present in the control circuits and in the actuator cylinder.

To discharge the gas pull either the open or close lever on the gas control block.

Actuator maintenance and repair must be carried out by qualified personnel.

3.1 Routine Maintenance

The Ranger actuator is designed and manufactured in order to minimize maintenance. The frequency and the intensity of this maintenance is linked to the working conditions.

At a minimum every two (2) years verify the following elements:

- Verify the oil level in each gas-oil tank using the included dipstick inside each tank.
- Stroke the valve one full cycle if possible. At a minimum stroke partially.
- Verify that there is no hydraulic and pneumatic leakage.
- Verify that all exhaust ports are open/muffler installed.
- Verify that the actuator is free of damage.