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## Installation, Operation and Maintenance Manual



### **S360 Actuated Valves**

# S360 Actuator Installation, Operation & Maintenance

**IMPORTANT:**

Before removing the valve/actuator fastenings, note the following:

- For normally closed (NC) valves, apply air to activate the actuator to the open position.
- For normally open (NO) valves, no air is required for this step.

Ensure that the line pressure has been removed and the system is drained and flushed. Please ensure that you have the correct tools and safety equipment to disassemble valves correctly and ensure you follow recommended safe working practices.

WEIGHTS TABLE	
Model	Weight Kg (lbs)
DN8 (0.25 in.)	0.6 kg (1.3 lbs)
DN15 (0.5 in.)	1.2 kg (2.7 lbs)
DN20 (0.75 in.)	2.1 kg (4.6 lbs)
DN25 (1 in.)	2.3 kg (5.1 lbs)
DN40 (1.5 in.)	3.5 kg (7.7 lbs)
DN50 (2 in.)	7.7 kg (17.0 lbs)
DN65 (2.5 in.)	17.5Kg (38.6 lbs)
DN80 (3.0 in.)	32.0 Kg (70.6 lbs)
DN100 (4.0 in.)	35.8 Kg (78.9lbs)

**IMPORTANT INFORMATION**

To assist with installation of DN65-DN100 actuators, please use the lifting eye as supplied to support the actuator during the installation and maintenance process.

1. Remove polycarbonate cover



2. Remove indicator



3. Add lifting eye



1. Start to loosen the fastenings

**Important** – Do not remove the fastenings completely as there may be pressure remaining in the system. Wait for any excess pressure to finish venting.



2. Remove the fasteners and the valve actuator.

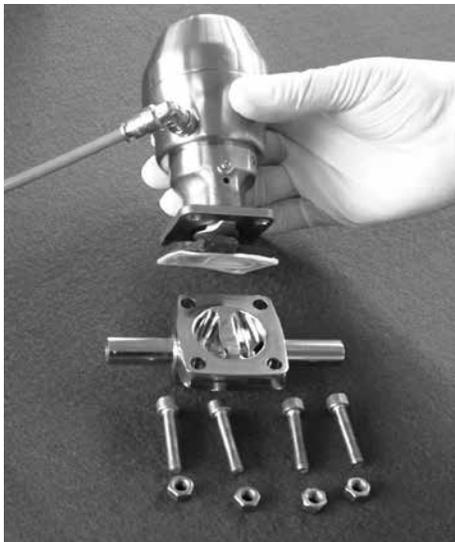


3. Inspect the valve body sealing surfaces for damage.

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4. Set actuator in its closed position:
  - For normally closed (NC) valves, release air to activate the actuator to the closed position.
  - For normally open (NO) valves, apply air to activate the actuator to the closed position.

*Compressor face must be exposed. This will provide better access to the diaphragm compressor and fixing.*



5. Remove diaphragm from actuator by turning through 90° (PTFE Diaphragm). For rubber diaphragm unscrew in anti-clockwise direction.



## ATTACH NEW DIAPHRAGM

6. Set actuator in its fully open position:
  - Release air pressure on 'NO' actuators.
  - Apply air pressure to 'NC' actuators.

**Moulded closed diaphragms should be opened until diaphragm backing is flush with actuator base.**



7. For PTFE diaphragm please engage diaphragm bayonet into the compressor slot by applying pressure to the center of the diaphragm. Ensure correct engagement. Continue to apply pressure to the center of the diaphragm and turn through 90°. For rubber diaphragm screw in clockwise direction and avoid over-tightening

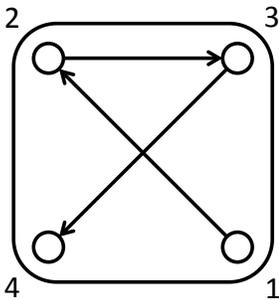


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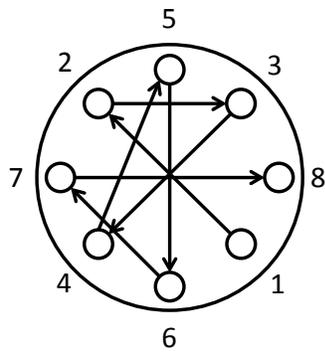
8. Attach the actuator to the valve body; insert the retaining fasteners. Hand tighten fasteners as shown below.

DN8 - DN80 Actuators have a 4-hole mounting pattern. DN100 Actuators have an 8-hole mounting pattern. Use the sequence as shown in the following steps.

**Figure 1**  
4 hole mounting



**Figure 2**  
8 hole mounting



9. Set actuator in its closed position:
- Release air pressure to 'NC' actuators.
  - Apply air pressure to 'NO' actuators.
10. Gradually tighten the fasteners as per Figure 1, to 3/4 of full torque (see torque spec. table).



*This ensures that the diaphragm seats correctly before further tightening.*

11. Set actuator in its open position:
- Release air pressure to 'NO' actuators.
  - Apply air pressure to 'NC' actuators.
12. Fully tighten all fasteners to the specified torque setting (see torque spec. table), using sequence shown in Figure 1.
13. Remove air pressure from actuator (only applicable to spring closing mode).



## TORQUE SPEC. TABLE

Valve Size	Maximum Torque Nm (lbf-in)
DN8 (0.25 in.)	3 Nm (26.6 lbf-in.)
DN15 (0.5 in.)	6.6 Nm (58.4 lbf-in.)
DN20 (0.75 in.)	6.6 Nm (58.4 lbf-in.)
DN25 (1 in.)	8.0 Nm (70.8 lbf-in.)
DN40 (1.5 in.)	17.0 Nm (150 lbf-in.)
DN50 (2 in.)	33.0 Nm (292 lbf-in.)
DN65 (2.5 in)	47.0 Nm (416 lbf-in.)
DN80 (3.0 in)	67.0 Nm (593 lbf-in.)
DN100 (4.0 in)	53.0 Nm (469 lbf-in.)

## Important

14. Re-tighten fastenings to the maximum torque after 24 hours or first heat cycle. The retightening operation should ideally be carried out with the valve in the open position and the valve temperature 40°C (104° F) or below.

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## COMPRESSOR CHANGE (DN8 - DN50 only)

*Before a compressor change can take place, steps 1 to 5 need to be completed.*

15. Gradually undo the rotation grub screw until the actuator bonnet is free to rotate. Do not remove the grub screw fully from the bonnet. This feature is not available on the DN8 and DN65-DN100 range.



16. Rotate actuator bonnet until breather hole lines up with the spindle adaptor locking screw.

17. Insert Allen key into actuator bonnet breather hole and undo spindle adaptor locking screw.

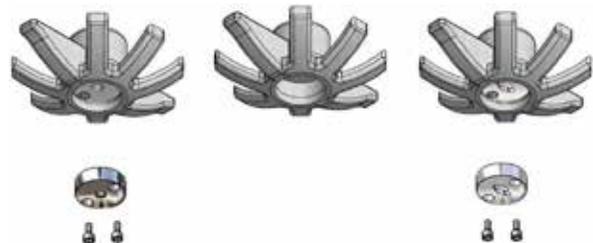


18. Once the spindle adaptor locking screw is undone, remove the spindle adaptor and compressor assembly from actuator bonnet.



## COMPRESSOR CHANGE DN65 - DN100

Replace compressor insert by undoing the cap-head screws (M4x2 DN65-DN80), (M5x2 DN100), fit the new adaptor plate and re-Torque to 5Nm (44.2 lbf-in).



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19. Remove the spindle adaptor from compressor and insert into the new PTFE/ Rubber compressor as required.



20. Apply Loctite 222 to spindle adaptor locking screw. Insert spindle adaptor and new compressor assembly into actuator bonnet until fully located.



21. Insert Allen Key into actuator bonnet hole and tighten spindle adaptor locking screw fully using table one below.

TABLE ONE		
Valve Size	Allen Key Size	Torque
DN15 (0.5 in.)	M4 2mm A/Flats	1 Nm (8.9 lbf-in.)
DN20 (0.75 in.)	M6 3mm A/Flats	2 Nm (17.7 lbf-in.)
DN25 (1.00 in.)	M6 3mm A/Flats	2 Nm (17.7 lbf-in.)
DN40 (1.50 in.)	M8 4mm A/Flats	4 Nm (35 lbf-in.)
DN50 (2.00 in.)	M8 4mm A/Flats	4 Nm (35 lbf-in.)



22. Gradually tighten rotation grub screw until actuator bonnet is secure using table two below.

TABLE TWO		
Valve Size	Allen Key Size	Torque
DN15 (0.5 in.)	M5 2.5mm A/Flats	2 Nm (17.7 lbf-in.)
DN20 (0.75 in.)	M5 2.5mm A/Flats	2 Nm (17.7 lbf-in.)
DN25 (1.00 in.)	M5 2.5mm A/Flats	2 Nm (17.7 lbf-in.)
DN40 (1.50 in.)	M8 4mm A/Flats	4 Nm (35 lbf-in.)
DN50 (2.00 in.)	M8 4mm A/Flats	4 Nm (35 lbf-in.)

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23. Re-attach the actuator to the valve body. Repeat steps 6 to 14.

### AIR PORT ROTATION

24. Gradually undo rotation grub screw until actuator cylinder is free to rotate. Do not remove grub screw fully from bonnet. This feature is not available on the DN8 and DN65-DN100 size range.



25. Rotate actuator cylinder while actuator is attached to the body, until inlet port is in the required orientation. Rotation feature available on sizes DN15 (0.5 in.) - DN50 (2.00 in.). To facilitate rotation please ensure air supply is "on" for spring closing mode and "off" for spring opening mode.

26. Gradually tighten rotation grub screw until actuator bonnet is secure using table two (previous page).





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