



## CYNERGY® VALVE

*Diaphragm replacement instructions*

This instruction sheet provides general guidelines for Cynergy® valve diaphragm replacement. Only genuine Saunders® PTFE/EPDM diaphragms are recommended for replacement in Cynergy valves. Genuine Saunders diaphragms are available from Entegris.

**CAUTION:** Make sure system pressure has been removed and any hazardous chemicals flushed from the valve before beginning diaphragm replacement.

**DIAPHRAGM REPLACEMENT PROCEDURE**

Generally, the diaphragm can be replaced without removing the valve body from the system.

1. Determine the size and grade (steam or non-steam) diaphragm needed for replacement. Size and grade can be determined by looking at the top surface and tab of the old diaphragm, or by contacting your Entegris representative.
2. Remove the bonnet or actuator from the body by removing the four bolts, lock washers and flat washers using a diagonal sequence.
3. Close the valve:
  - a. For manual valves, turn the bonnet hand wheel clockwise to the full closed position so the compressor protrudes from the bonnet shell.
  - b. For normally open (spring-to-open) actuators, apply 90 psig air to the top pneumatic supply port to place the valve in the closed position. For normally-closed (spring-to-close) actuators, do not apply air.
4. Remove the diaphragm:
  - a. For 1", 1½" and 2" valves (bayonet-style compressors), turn the old diaphragm 90° and pull outward.
  - b. For ½" valves (BioSeal), pull and twist the old diaphragm to remove.
5. Check and clean the compressor recess.
6. Make sure the new diaphragm and the valve body contact areas are clean and dry. Clean using an IPA solution and a clean, lint-free wipe.
7. With the bonnet or actuator in the closed position (see steps 3a and 3b), install the diaphragm:
  - a. For 1", 1½" and 2" diaphragms, align the bayonet with the compressor groove and turn 90° until fastening holes are aligned. Pull outward on compressor to verify bayonet is locked into the compressor slot.
  - b. For ½" diaphragms, disassemble the diaphragm by separating the PTFE face from the elastomeric backing cushion. Engage one edge of the backing cushion button with the compressor recess. Press firmly in the center while turning the cushion to fully engage it with the compressor. Arrange the tags on the cushion so that each tag is at least 90° from the adjacent tag. Install PTFE diaphragm face by snapping stud into already installed backing cushion. Align fastening holes.
8. Fully open the valve:
  - a. For manual valves, turn the bonnet hand wheel counterclockwise to the full open position.
  - b. For normally-closed (spring-to-close) actuators, apply 90 psig air to the bottom pneumatic supply port to place the valve in the open position. For normally-open (spring-to-open) actuators, do not apply air.
9. Align the operator/diaphragm assembly to the valve body and install the bolts, lock washers and flat washers. Tighten the bolts until there is no gap between the body and diaphragm.
10. Actuate the valve to the closed position (see steps 3a and 3b) to set and align the diaphragm weir. Tighten the bolts in 10 in•lb increments, using a diagonal sequence, to the intermediate torque level specified in Table 1.
11. Actuate the valve to the open position (see steps 8a and 8b) and finish tightening the bolts in 10 in•lb (25 in•lb for 1½" and 2" valves) increments, using a diagonal sequence, to the final torque level specified in Table 1.

**TABLE 1: RECOMMENDED TORQUE SPECIFICATION**

Valve Size (Inch)	Intermediate Torque		Final Torque	
	in•lb	Nm	in•lb	Nm
½"	10	1.1	30	3.4
1"	40	4.6	100	11.5
1½"	40	4.6	275	31.6
2"	40	4.6	275	31.6

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