

# Actuators

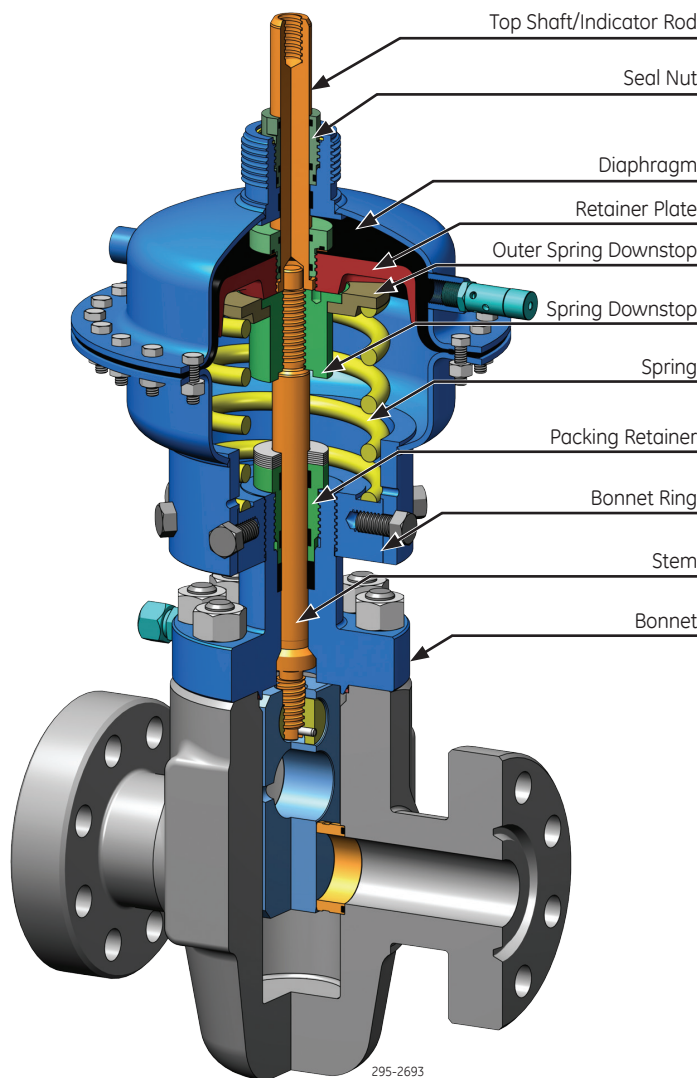
## Pressure Control Model D Pneumatic Diaphragm Actuator

The Model D Pneumatic Diaphragm Actuator is designed for use on reverse-acting or direct-acting gate valves. The actuator functions as a fail-safe closed device when mounted on a reverse-acting gate valve and as a fail-safe open device when mounted on a direct-acting gate valve. Suitable for use in onshore and offshore applications, Model D diaphragm actuators deliver reliable open/close performance for control of wellbore or pipeline fluids and hydrocarbons.

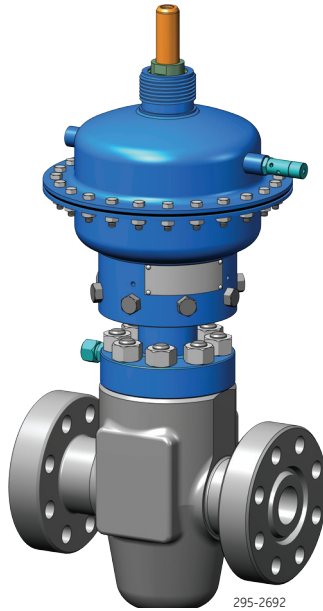
When used as a fail-safe closed shutdown valve (SDV), the actuator will require sufficient supply pressure to open the valve. Refer to the actuator sizing chart on the reverse side to determine applicable actuator opening pressure. Supply pressure is applied to the actuator supply port onto an internal flexible diaphragm where it forces a downward movement, compressing a coil spring and generating sufficient actuator forces to open the valve. Valve closure is obtained when the supply pressure is vented from the actuator. Tandem or stacked diaphragm actuators are used to increase actuator opening forces to open high pressure valves, while requiring a minimum amount of actuator supply pressure.

### Features —

- Simplicity
  - Lightweight
  - Compact
  - Easy to install and maintain
  - Seal nut elastomers can be replaced without removal of actuator indicator rod or upper/lower case disassembly
  - Shims allow for permanent drift adjustment
  - No special tools required
- Long service life
  - Non-stainless components are coated with Xylan to provide corrosion resistance in harsh environments
  - Aluminum bronze material used for seal and diaphragm nut to minimize wear
  - Wear bearings in bonnet packing retainer eliminate metal-to-metal contact with bonnet stem
  - Actuator top shaft/indicator rod is free-floating, thus eliminating torque transfer when using manual hold open device
- Designed for safety
  - Actuator external relief valve protects equipment and personnel from overpressurization
  - Heavy-duty actuator compression spring ensures engagement of metal-to-metal fire-safe bonnet stem backseat and valve closure
  - Design of actuator seal nut allows for venting of internal actuator pressure during removal and alerts service technician of an unsafe condition that pressure remains in actuator
  - Actuator seal nut elastomers accessed and easily replaced without removal of actuator top shaft/indicator rod or upper/lower case disassembly
  - Bonnet communication port is located above bonnet stem metal-to-metal fire seal and below stem packing



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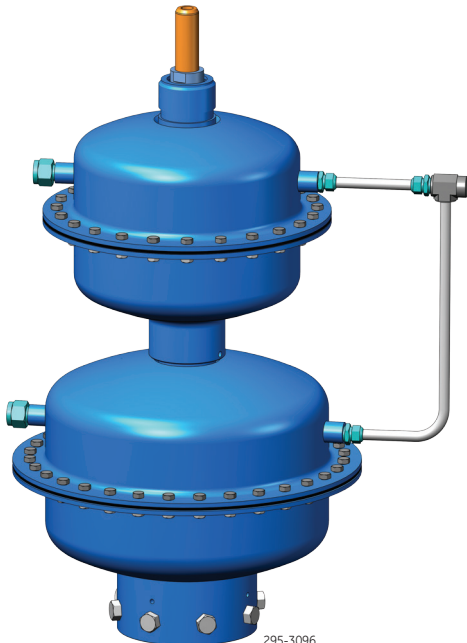


## Diaphragm Actuator Sizing Chart –

Valve		Actuator			
Bore	psi	Model	Size	Operating Pressure	Volume Displacement
1-13/16"	10,000	D15	1502	.012 x WP (120 psi/8 bars)	800 in <sup>3</sup>
	15,000	D18	1802	.008 x WP (120 psi/8 bars)	1,050 in <sup>3</sup>
2-1/16"	2,000	D10	10C2	.027 x WP (54 psi/4 bars)	365 in <sup>3</sup>
		D12	1202	.024 x WP (48 psi/3 bars)	425 in <sup>3</sup>
	3,000	D10	10C2	.027 x WP (81 psi/6 bars)	365 in <sup>3</sup>
		D12	1202	.024 x WP (72 psi/5 bars)	425 in <sup>3</sup>
	5,000	D10	10C2	.027 x WP (135 psi/9 bars)	365 in <sup>3</sup>
		D12	1202	.024 x WP (120 psi/8 bars)	425 in <sup>3</sup>
2-9/16"	10,000	D15	1502	.013 x WP (130 psi/9 bars)	800 in <sup>3</sup>
		D18	1802	.009 x WP (90 psi/6 bars)	1,050 in <sup>3</sup>
	15,000	D18	1802	.009 x WP (135 psi/9 bars)	1,050 in <sup>3</sup>
		D12	1202	.025 x WP (50 psi/3 bars)	425 in <sup>3</sup>
	3,000	D12	1202	.025 x WP (75 psi/5 bars)	425 in <sup>3</sup>
		D12	1202	.025 x WP (125 psi/9 bars)	425 in <sup>3</sup>
3-1/8"	2,000	D12	1203	.037 x WP (74 psi/5 bars)	450 in <sup>3</sup>
		D15	1503	.021 x WP (42 psi/3 bars)	900 in <sup>3</sup>
	3,000	D12	1203	.037 x WP (111 psi/8 bars)	450 in <sup>3</sup>
		D15	1503	.021 x WP (63 psi/4 bars)	900 in <sup>3</sup>
	5,000	D15	1503	.021 x WP (105 psi/7 bars)	900 in <sup>3</sup>
		D18	1803	.014 x WP (140 psi/10 bars)	1,150 in <sup>3</sup>
4-1/16"	2,000	D15	1504	.033 x WP (66 psi/5 bars)	1,000 in <sup>3</sup>
	3,000	D15	1504	.033 x WP (99 psi/7 bars)	1,000 in <sup>3</sup>
	5,000	D18	1804	.023 x WP (115 psi/8 bars)	1,250 in <sup>3</sup>
5-1/8"	2,000	D15	1505	.046 x WP (92 psi/6 bars)	1,100 in <sup>3</sup>
		D18	1805	.033 x WP (66 psi/5 bars)	1,350 in <sup>3</sup>
	3,000	D18	1805	.033 x WP (99 psi/7 bars)	1,350 in <sup>3</sup>

## Specifications –

Model D	
Models	D10, D12, D15, D18
Applicable Valve Sizing	1-13/16" thru 5-1/8"
API Specification	API 6A
Pneumatic Actuator	Standard Service
PR2	Annex F
Temperature	-20°F to +180°F (-29°C to +82°C)
Maximum Working Pressure	150 psi (10 bars)
Maximum Test Pressure	225 psi (16 bars)



Tandem Diaphragm Actuator

## Tandem Diaphragm Actuator Sizing Chart –

Valve		Actuator		
Bore	psi	Size	Operating Pressure	Volume Displacement
1-13/16"	15,000	D 1512-2	.007 x WP (105 psi/7 bars)	1,225 in <sup>3</sup>
2-1/16"	15,000	D 1512-2	.008 x WP (120 psi/8 bars)	1,336 in <sup>3</sup>
		D 1512-2	.011 x WP (110 psi/8 bars)	1,225 in <sup>3</sup>
2-9/16"	15,000	D 1515-2	.008 x WP (120 psi/8 bars)	1,600 in <sup>3</sup>
		D 1818-2	.006 x WP (90 psi/6 bars)	2,300 in <sup>3</sup>
3-1/8"	10,000	D 1512-3	.012 x WP (120 psi/8 bars)	1,350 in <sup>3</sup>
		D 1818-3	.007 x WP (105 psi/7 bars)	2,300 in <sup>3</sup>
4-1/16"	10,000	D 1818-4	.012 x WP (120 psi/8 bars)	2,500 in <sup>3</sup>
5-1/8"	5,000	D 1515-5	.024 x WP (120 psi/8 bars)	2,200 in <sup>3</sup>
		D 1815-5	.020 x WP (100 psi/7 bars)	2,450 in <sup>3</sup>



GE imagination at work

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