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Model 50 Diaphragm Valve Specifications

Product Data Sheet

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Basic Description

The Model 50 is an air actuated diaphragm valve specifically designed for use in the Siemens line of Process Gas Chromatographs (PGCs) as part of sample introduction and column switching technology. The valve can inject vapor samples and switch columns simultaneously. It is designed to operate for over 10 million cycle on clean sample before maintenance may be needed.

Function

The Model 50 valve is a 10-port valve which uses pressure-on-diaphragm activation with no other mechanical moving parts. it is a double-acting valve that utilizes two actuation gas signals for operation. The valve is normally activated by clean instrument air, but can be activated by carrier gas, if desired. The flow path design does not introduce appreciable dead volume to the chromatographic system as indicated by the symmetrical peak shape even at very low flow rates. The valve switching time with 20 milliseconds is very quick. It is capable of switching gasses up to 75 psig (515 kPa) pressure.

Model 50 Valve Specifications

Configuration	
Valve Type	Double-acting, pneumatically operated
Number of Ports	10
Flow Paths	On state: flow between ports 1 & 10, 2 & 3, 4 & 5, 8 & 9 Off state: flow between ports 1 & 2, 3 & 4, 5 & 6, 7 & 8, 9 & 10 Note: flow between ports 6 & 7 is always blocked
Performance	
Sample Types	Vapor samples only, free of particulates
Actuation Gas	Inert gas, particulate free
Switching Time	20 ms (Typical in Maxum gas chromatographs.) In other uses, actual switching time is dependent on the type of solenoids used to deliver the pneumatic signal to the valve and the size of the pneumatic tubing to the valve.
Sample Filtration	5 micron
Maximum Actuation Pressure	100 psig (690 kPa); must be 20-25 psig (140-175 kPa) higher than maximum carrier gas or sample gas pressure
Maximum Port Pressure (Carrier or Sample)	75 psig (515 kPa); contact factory for higher pressure options
Minimum Port Pressure (Carrier or Sample)	5 psi (35 kPa)
Pressure Drop	< 5 psi (35 kPa) for 200 scc/min (air) Pressure drop was measured in air at room temperature with flow from port to port. Actual pressure drop will vary with temperature and gas type. Pressure drop through the sample loop is dependent on the inside diameter and length of the sample loop.
Maximum Temperature	300 °F (150 °C); contact factory for higher temperature options
Carrier Gas Flow	0.3 ml/min to 40 ml/min; contact factory for higher flow options
Mean Time Between Failures	>10,000,000 cycles at 140 °F (60 °C) >4,000,000 cycles at 300 °F (150 °C) Valve failure is typically caused by particulates preventing the diaphragms from sealing against the center plate or long term wear resulting in deformation of the diaphragms.
Installation	
Mounting	2 clearance holes for mounting screws (mounting brackets available as separate spare part if desired)
Actuation & Sample Connections	1/16" (1.6 mm) OD tubing with Valco® or Swagelok® fittings
Dimensions	Height: 1 5/16" (33 mm) Body Diameter: 1 1/2" (38 mm) Outside Diameter: 2" (50 mm)
Weight	0.5 lb (0.25 kg)
Materials of Construction	Body: 316 stainless steel Diaphragms: Teflon® coated stainless steel

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