

Diaphragm Valves

Two-Step Pneumatic Diaphragm Valves

DPT Series

Introduction

Two-Step pneumatic diaphragm valves provide rapid switching between low-flow and high-flow modes to relieve pressure rise in the cavity and prevent fluid from flowing rapidly into the cavity and other internal areas of the semiconductor processing machine, thus keeping particles from flying around and contaminating the cavity.

Features

- ⦿ Fast switching between low and high flow rates
- ⦿ Minimum particle generation and dead space
- ⦿ Cobalt alloy diaphragm with high strength and corrosion resistance to ensure long cycle life
- ⦿ Internally threadless and springless



Technical Data

Port Size	1/4"	
Flow Coefficient (Cv)	High-Flow (HF) Port: 0.27 Low-Flow (LF) Port: 0.02 ~ 0.12 ^①	
Orifice Size	0.16 in. (4.1 mm)	
Working Pressure	Vacuum to 145 psig (10 bar)	
Pneumatic Actuator Working Pressure	79.75 ~ 94.25 psig (5.5 ~ 6.5 bar)	
Working Temperature	PFA: 14 ~ 302 °F (-10 ~ 150 °C) PCTFE: 14 ~ 176 °F (-10 ~ 80 °C)	
Leak Rate (Helium)	Internal	≤1x10 ⁻⁹ std cm ³ /s
	External	≤1x10 ⁻⁹ std cm ³ /s

① Note: Cv is continuously adjustable in low-flow mode, and please refer to **dimensions and ordering information** for adjustment instruction.

Flow Data

Air @ 70 °F (21 °C)

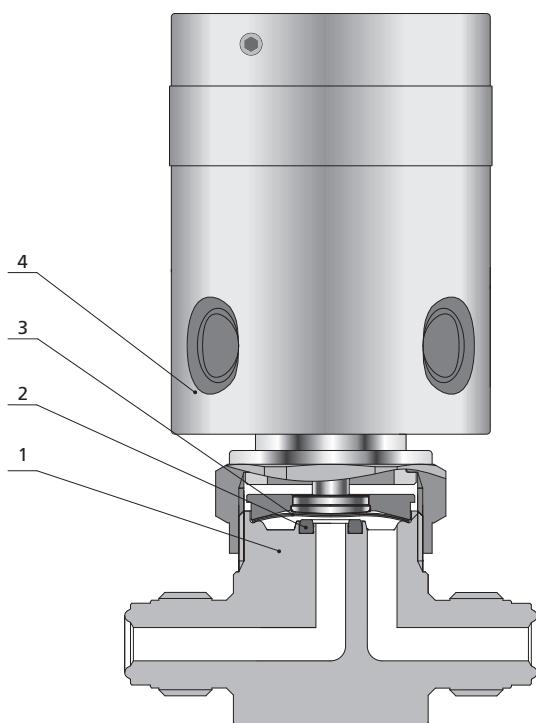
Water @ 60 °F (16 °C)

Orifice in. (mm)	Pressure Drop to Atmosphere psig (bar)	Air (l/min)	Water (l/min)
0.16 (4.1)	10 (0.68)	86	3.2
	50 (3.4)	230	7.2
	100 (6.8)	410	10.2

Process Specification

Technology	Process Specification
	Ultra High Purity (F3)
Material/Specification	316L SS/SEMI F20 316L VAR/SEMI F20 316L VIM-VAR/SEMI F20
Wetted Surface Roughness	Ra 5 µin. (0.13 µm)
Polishing Process	Electropolished
Assembly Environment	Cleanroom
Packaging	Double bagged, inner bag packaged in the cleanroom

Standard Materials of Construction

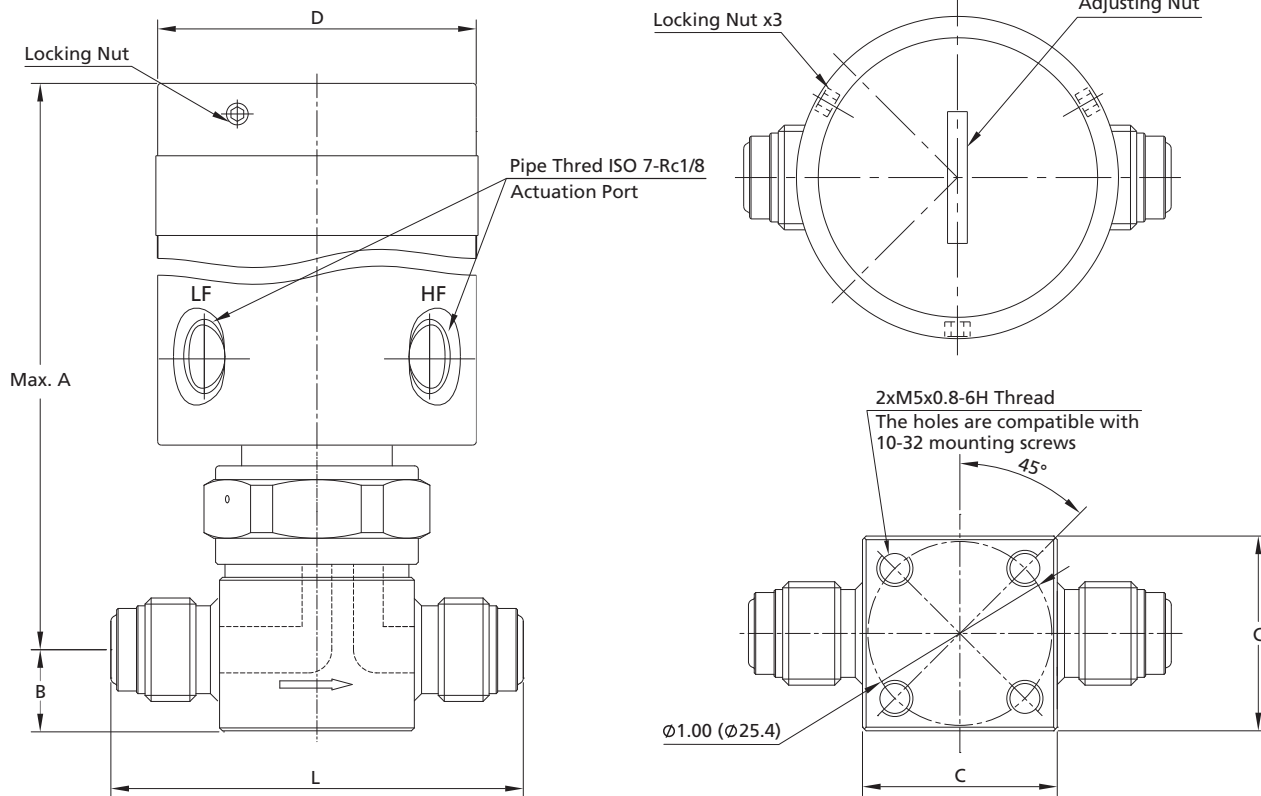


Nomally Closed Pneumatic Actuator

Item	Component	Material/Specification
1	Body	316L SS/SEMI F20 316L VAR/SEMI F20 316L VIM-VAR/SEMI F20
2	Seat	PCTFE/ASTM D1430
3	Diaphragm	Cobalt Alloy/AMS 5876
4	Actuator	Aluminium

Dimensions and Ordering Information

Dimensions, in inches (millimeters), are for reference only.



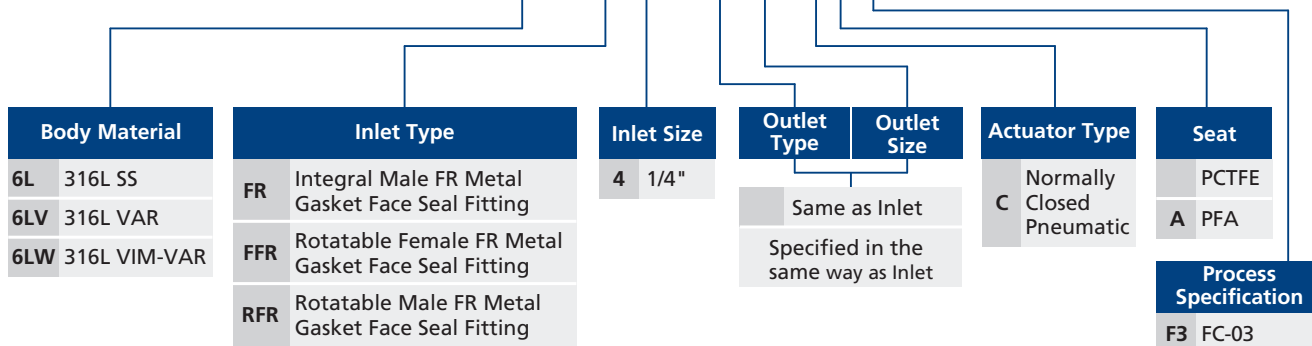
Low-flow adjustment instruction:

Loosen three locking nuts and reach the groove of the adjusting nut on the top with the tool to turn the adjusting nut (increase Cv in counterclockwise direction and decrease Cv in clockwise direction). Tighten locking nuts after desired Cv is reached.

Basic Ordering Number	Connection Type and Size	Dimensions, in. (mm)				
		A	B	C	D	L
DPT6L-FR4-CAF3	1/4" Integral Male FR Metal Gasket Face Seal Fitting	3.54 (90.0)	0.44 (11.2)	1.06 (26.9)	1.73 (44.0)	2.24 (57.0)
DPT6L-FFR4-CAF3	1/4" Rotatable Female FR Metal Gasket Face Seal Fitting	3.54 (90.0)	0.44 (11.2)	1.06 (26.9)	1.73 (44.0)	2.78 (70.6)

Ordering Number Description

DPT6L - FFR4 - RFR4 - CAF3



Note: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available.