

High Temperature Diaphragm Valves

DK Series

Introduction

DK series diaphragm valves are designed and manufactured to Ultra-High Purity (UHP) standards, ensuring the complete absence of non-metallic materials, such as resins, in gas wetted areas. These valves represent the pinnacle of metal diaphragm valve technology and can operate at temperatures up to 250°C. This makes them ideal for applications such as Metal-Organic Chemical Vapor Deposition (MOCVD) systems and corrosive media delivery systems.

Features

- Thermal immersion design for use in high temperature up to 482 °F (250 °C)
- Metal seat to provide excellent resistance to swelling and contamination
- Cobalt alloy diaphragm with high strength and corrosion resistance to ensure long cycle life
- All-Metal wetted parts with broad chemical compatibility
- Minimal particle generation and minimal dead space, easy to purge

Technical Data

Port Size	1/4" to 3/8" or 6 mm to 8 mm	
Flow Coefficient (Cv)	0.27	
Orifice Size	0.16 in. (4.1 mm)	
Working Pressure	Vacuum to 145 psig (10 bar)	
Pneumatic Actuator Operating Pressure	72 ~ 101 psig (5 ~ 7 bar)	
Working Temperature	Body	14 ~ 482 °F (-10 ~ 250 °C)
	Actuator	14 ~ 482 °F (-10 ~ 250 °C)
Leak Rate (helium)	Internal	$\leq 3 \times 10^{-9}$ std·cm ³ /s
	External	$\leq 3 \times 10^{-9}$ std·cm ³ /s

Flow Data

Air @ 70 °F (21 °C)

Water @ 60 °F (16 °C)

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

Process Specification

Process Specification	Standard Cleaning and Packaging Process (FC-01) Special Cleaning and Packaging Process (FC-02)		Ultra High Purity Process (FC-03)
Item			
Material	316L SS		316L SS, 316L SS VAR
Wetted Surface Roughness	Ra 10 μin. (0.25 μm)	Ra 5 μin. (0.13 μm) ^①	Ra 5 μin. (0.13 μm)
Polishing Process	Machine finished	Electropolished	Electropolished

Notes: Refer to page P-01 for a detailed description of Process Specification.

① Wetted surface roughness of valves with FR Series metal gasket face seal connections and tube butt weld connections.



Fittings

Valves

Regulators

Filters

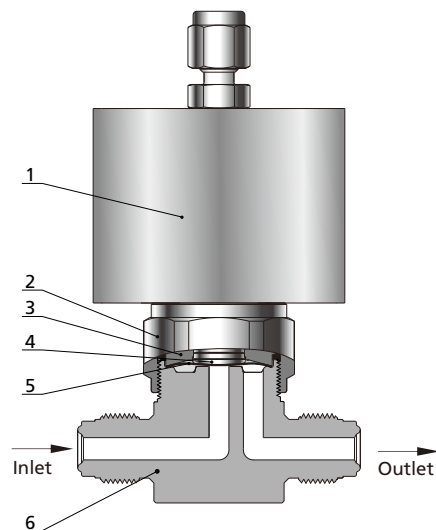
Tubing

Integrated Systems

Other Products

Technical Information

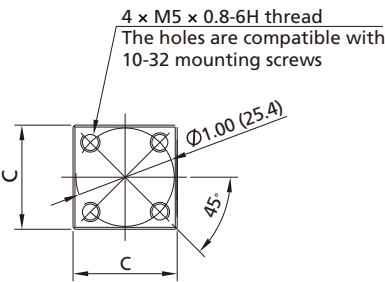
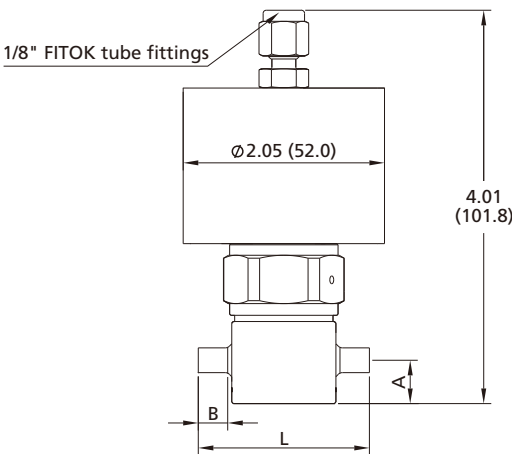
Major Materials of Construction



Item	Component	Material/Specification
1	Actuator	316 SS/ASTM A479
2	Bonnet Nut	316 SS/ASTM A479
3	Bonnet	S17400/ASTM A564
4	Button	316 SS/ASTM A479
5	Diaphragm (2)	Cobalt Alloy/AMS 5876
6	Body	316L SS or 316L SS VAR

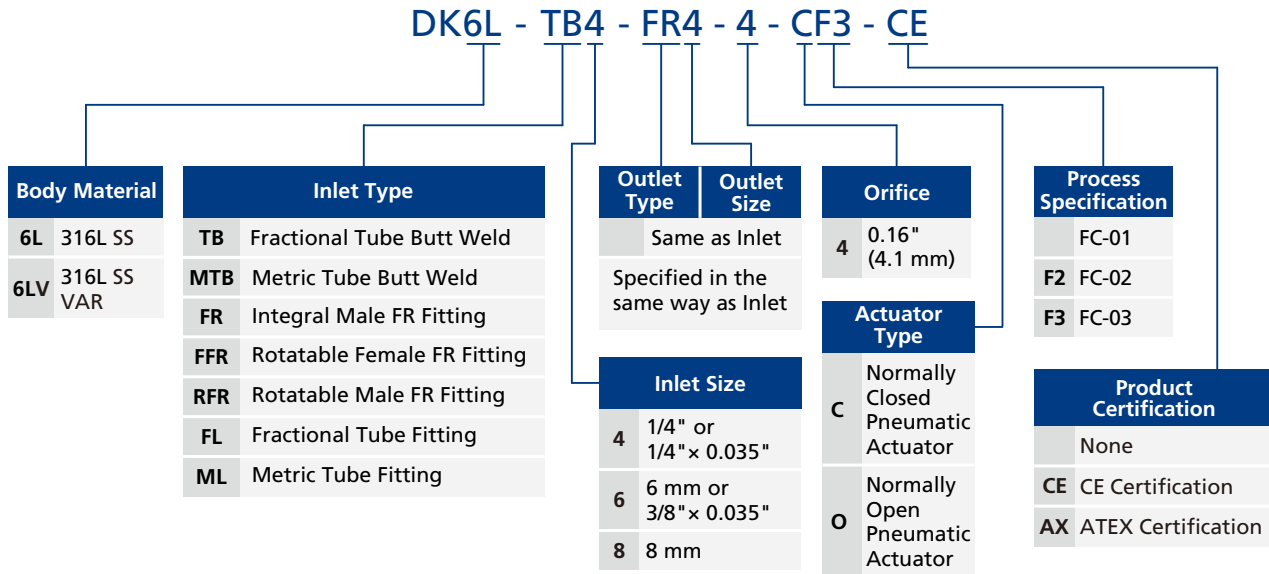
Dimensions and Ordering Information

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



Basic Ordering Number	Connection Type and Size	Dimensions, in. (mm)			
		A	B	C	L
DK□□-TB4-4-	1/4" × 0.035" Tube Butt Weld	0.44 (11.2)	0.30 (7.6)	1.06 (26.9)	1.74 (44.2)
DK□□-TB6-4-	3/8" × 0.035" Tube Butt Weld		0.26 (6.6)		
DK□□-FFR4-4-	1/4" Rotatable Female FR Fitting		0.86 (21.8)		2.78 (70.6)
DK□□-RFR4-4-	1/4" Rotatable Male FR Fitting				
DK□□-FR4-4-	1/4" Integral Male FR Fitting		0.62 (15.7)		2.30 (58.4)

Ordering Number Description



Notes:

- "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number. Not all combinations are available; Should you have any questions, please contact FITOK or our authorized distributors.
- For the -CE or AX options, the valve conforms to ATEX certification, with "CE" marking and explosion protection "EX" marking. For position sensor selections, the -CE option includes a 3-wire position sensor compliant with CE certification, while the -AX option includes a 2-wire explosion-proof position sensor compliant with ATEX certification. The 2-wire explosion-proof position sensor requires use with an isolating switch amplifier.