

Springless Diaphragm Valves for high performance



SP SERIES

- Suitable for ultrahigh-purity applications
- 316L Single Melt, Double Melt stainless steel body
- Low-pressure and high-pressure models
- Metal Seal, tube butt weld, Lok end connections
- Manual or Pneumatic actuation



Actuator Options

Pneumatic Actuators



Low-Pressure Models

- Pressure rating : 250 psig (17 bar)
- Temperature rating : -10 to 150°F (-23 to 65°C)
- Flow coefficient : 0.27



High-Pressure Models

- Pressure rating : 3045 psig (210 bar)
- Temperature rating : -10 to 150°F (-23 to 65°C)
- Flow coefficient : 0.20

Manual Actuators

Low-pressure valves have blue handle as standard.
High-pressure valves have white handle as standard.



Directional

- Quick, quarter-turn actuation
- Handle shape provides visual indication of OPEN and CLOSED position
- Available on high- and low-pressure models



Toggle

- Spring-loaded toggle design for quick actuation
- Lockable in the CLOSED position for safety
- Handle position provides visual indication of OPEN and CLOSED positions
- Available on low-pressure models



Locking

- Quick, quarter-turn actuation
- Lockable in the CLOSED position for safety
- Handle shape and window indicator provides visual indication of OPEN and CLOSED position.
- Available on high- and low-pressure models



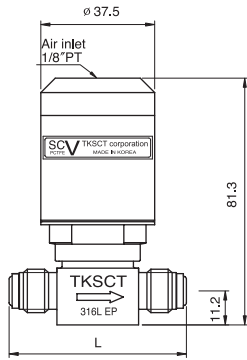
Round

- Quick, quarter-turn actuation
- Handle with window provides visual indication of OPEN and CLOSED positions
- Available on high and low-pressure models

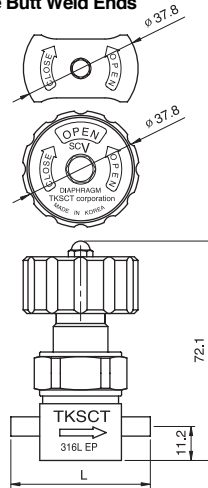
Dimensions

Low - Pressure Valves

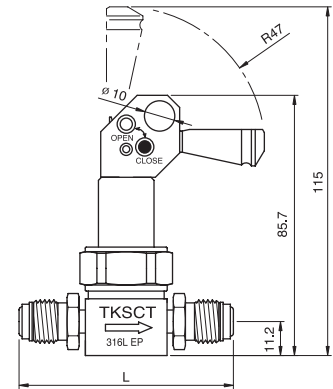
Pneumatic Actuator
Male Integral MFS Fittings



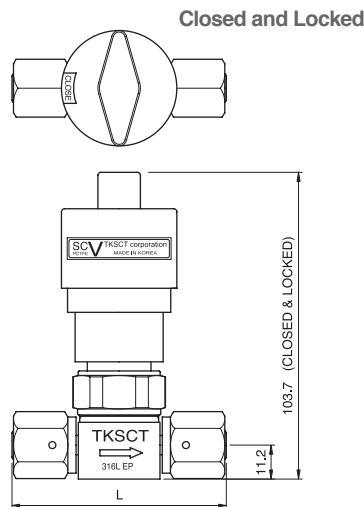
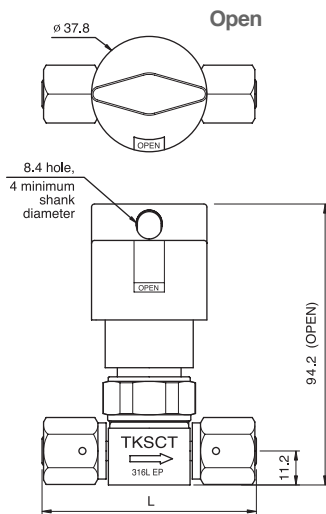
Directional and Round Handle
Tube Butt Weld Ends



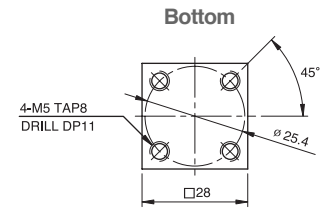
Toggle Handle
Male Rotatable MFS Fittings



Locking Handle
Female MFS Fittings



* Dimensions, in millimeters, are for reference only and are subject to change.
* Dimensions L - page 5



Material

Body :	SUS316L Single Melt SUS316L Double Melt
Seat :	PCTFE
Diaphragm :	Ni-Co Alloy
O-Ring :	Viton

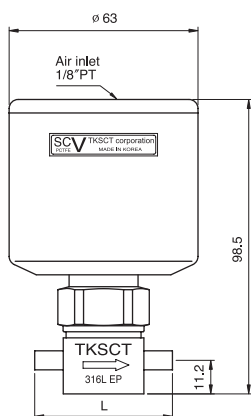
Major Specifications

	Low - Pressure Models	
	Manual Actuators	Pneumatic Actuators
Cv Value	0.27	0.27
Orifice Size	4.0mm	4.0mm
Max. Working Pressure (G.)	Vacuum to 250 psig (17 bar)	
Operating Pressure (G.)	-	60~120psig (4.1~8.2bar)
Burst Pressure (G.)	3,200 psig (220bar)	
Max. Working Temp.	-10 ~ 150°F (-23 ~ 65°C)	
Internal Leakage Allowance (He) Test Pressure $\leq 1 \times 10^2$ Torr	$\leq 1 \times 10^{-9}$ atm · cc/sec	
External Leakage Allowance (He) Test Pressure $\leq 1 \times 10^2$ Torr	$\leq 1 \times 10^{-9}$ atm · cc/sec	
Particle Inspection (BA, EP) Pressure : 60~80psi N ₂ Gas Sample Volume : 1CFM 0.1 μm and Larger	No count	

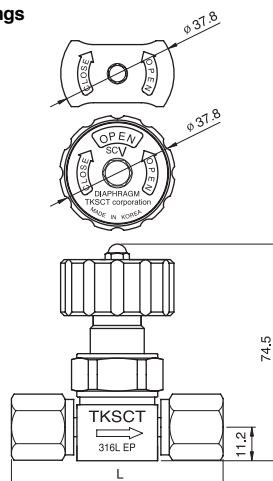
Dimensions

High - Pressure Valves

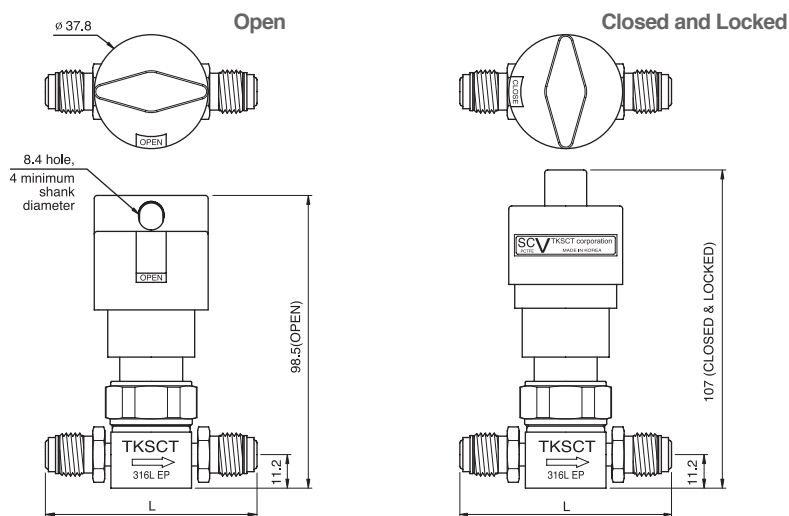
Pneumatic Actuator
Tube Butt Weld Ends



Directional and Round Handle
Female MFS Fittings



Locking Handle
Male Rotatable MFS Fittings



* Dimensions, in millimeters, are for reference only and are subject to change.
* Dimensions L - page 5

Material

Body :	SUS316L Single Melt SUS316L Double Melt
Seat :	PCTFE
Diaphragm :	Ni-Co Alloy
O-Ring :	Viton

Major Specifications

	High - Pressure Models	
	Manual Actuators	Pneumatic Actuators
Cv Value	0.2	0.2
Orifice Size	4.0mm	4.0mm
Max. Working Pressure (G.)	Vacuum to 3,045 psig (210 bar)	
Operating Pressure (G.)	-	70~120psig (4.8~8.2bar)
Burst Pressure (G.)	12,200 psig (840bar)	
Max. Working Temp.	-10 ~ 150°F (-23 ~ 65°C)	
Internal Leakage Allowance (He) Test Pressure $\leq 1 \times 10^2$ Torr	$\leq 1 \times 10^{-9}$ atm · cc/sec	
External Leakage Allowance (He) Test Pressure $\leq 1 \times 10^2$ Torr	$\leq 1 \times 10^{-9}$ atm · cc/sec	
Particle Inspection (BA, EP) Pressure : 60~80psi N ₂ Gas Sample Volume : 1CFM 0.1 μm and Larger	No count	

Ordering Number

Number	Series	End Connection	Flow	Manual Handle	Handle	Pneumatic	Option	Grade
SUS316L Single Melt : S	Low - Pressure Diaphragm Valve • 4SP(Manual) • 4PSP(Pneumatic)	TL	1	D(Directional Handle)	BK - Black	C - Normally Closed	X**	BLANK - BA Grade P - EP Grade
SUS316L Double Melt : D		TS	2	L(Locking Handle)	RD - Red	O - Normally Open		
	High- Pressure Diaphragm Valve • 4HSP(Manual) • 4HPSP(Pneumatic)	TJ	3	R(Round Handle)	BL - Blue			
		VF	4	T(Toggle Handle)	SBL - Sky Blue			
		RM	5		WH - White			
		VM	6		GR - Green			
		SW	7		YW - Yellow			
			8		OR - Orange			
			9					
			10					
			BLANK : Straight Type					

GRADE	BA	EP
Inner Surface Roughness	Ry ≤ 3.0 μ m 10 μ inch Ra(Avg.) Cut Off Length : 0.8mm Measuring Length : 4mm	Ry ≤ 0.7 μ m 5 μ inch Ra(Avg.) Cut Off Length : 0.25mm Measuring Length : 1.25mm
Polishing	Machining Finish	Electro Polishing Finish

Example Part Numbers

Ordering	S4SP-VM-L-GR-P	D4HPSP-VFVFVF-7-C
Material	SUS316L Single Melt	SUS316L Double Melt
Series	Low - pressure Manual diaphragm valve	High - pressure Pneumatic diaphragm valve
End Connection	1/4" Male integral MFS fitting	1/4" Female integral MFS fitting
Flow	Straight Type	3-port
Manual Handle	Locking Handle	-
Handle Color	Green	-
Pneumatic	-	Normally Closed
Grade	EP Grade	BA Grade

Color Coded Handles



- BL - SBL - OR - YW GR - RD - BK - WH
Blue Sky Blue Orange Yellow Green Red Black White

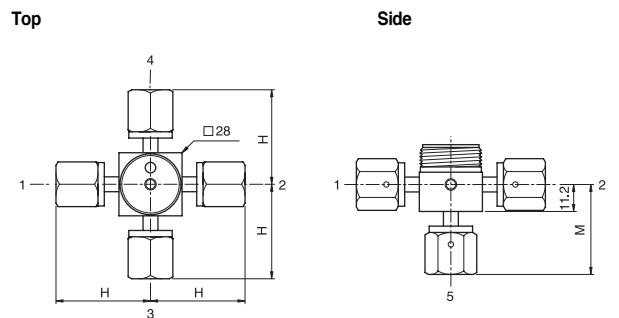
- * Eight handle colors are available
- * Low-pressure valves have blue handles as standard
- * High-pressure valves have white handles as standard

Flow Path

Ports	Schematic	Flow Path		Designator
		Closed	Open	
4 Port				4
				5
3 Port				1
				2
				3
				6
				7
				8
2 Port				8
				9
				10

End Connections

Designator	Diagram	Dimensions, mm(inch)			
		L	H	M	
1/4 in. tube butt weld		TW	44.2 (1.74)	22.1 (0.87)	19.3 (0.76)
1/4 in. female MFS fitting		VF	70.6 (2.78)	35.3 (1.39)	41.4 (1.63)
1/4 in. male Integral MFS fitting		VM	58.4 (2.30)	29.2 (1.15)	-
1/4 in. Lok Tube Fittings		SW	62.5 (2.46)	31.2 (1.23)	-



Springless Diaphragm Valves

for high performance



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