

DIAPHRAGM VALVES

DV Series



GENTEC
316L AEA
DV84MM-VMP-KL
820079



100% Helium Leak Test



■ DV51 Series



Handgrip



Handwheel

Features

- ▶ Suitable for high purity applications
- ▶ Face seal fittings (FSR), NPT or GENLOK connections
- ▶ Internally springless
- ▶ Metal-to-metal diaphragm seals
- ▶ High-cycle life
- ▶ 100% Helium-leak tested

Materials

- ▶ Body: 316L stainless steel
- ▶ Seat: PCTFE
- ▶ Diaphragm: Elgiloy®

Functional Performance

- ▶ Flow capacity: $C_v=0.2$
- ▶ Maximum leak rate:
 - Body leak rate: 1×10^{-9} atm cc/sec He
 - Valve seat leak rate: 4×10^{-9} atm cc/sec He
- ▶ Proof pressure: 150% of maximum working pressure
- ▶ Burst pressure: 400% of maximum working pressure

Operating Conditions

- ▶ Maximum operating pressure: 300 psi (20 bar)
- ▶ Minimum operating pressure: vacuum
- ▶ Temperature: -40°F to 150°F (-40°C to 65°C)

Pneumatic Actuator

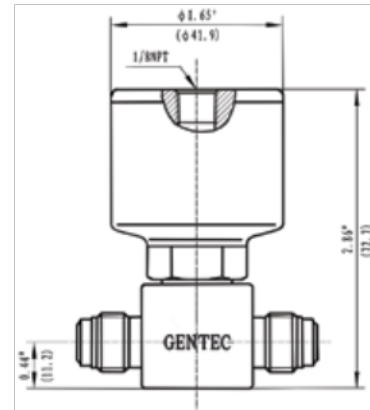
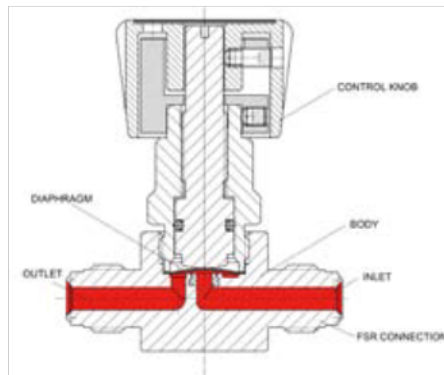
- ▶ Operating pressure: 70 - 125 psi
- ▶ Inlet connection: 1/8"NPT (Female)
- ▶ Normally: closed, open

Surface Finish

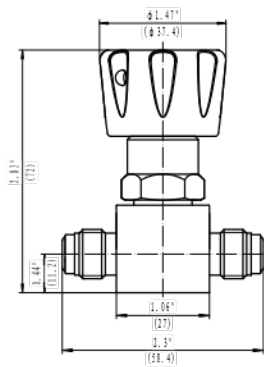
- ▶ Standard Ra: 20µin

DV51 Series

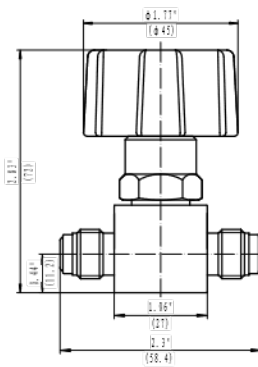
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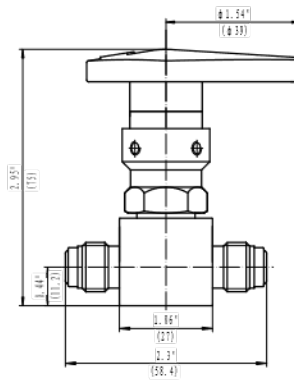
Pneumatic (Low Pressure)



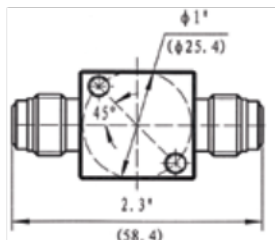
Handwheel (With Display)



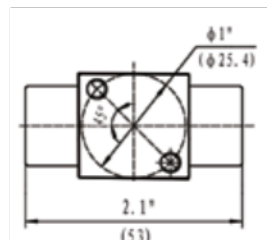
Handwheel (Without Display)



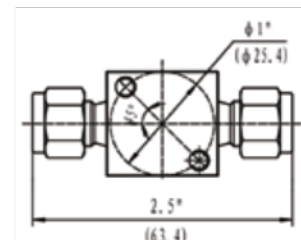
Handgrip (Low Pressure)



Face Seal Male Fittings



NPT Fittings



GENLOK Fittings

Ordering Information

EX:	SL	- DV51	M	L	- VM4 - NT4	- NO
	Body	Valve Series	Valve Type	Working Pressure	Inlet / Outlet Connection	Options
	SL: 316L	DV51	B: handgrip N: Handwheel (Without display) M: Handwheel (With display), 90° switch P: Pneumatic actuator (Normally closed)	L: 300 psi	NT4, FNT4, TF4, VM4	Blank: Standard (N/C) NO: Normally open (Pneumatic)

■ DV54 Series



Manual
(Low Pressure)



Manual
(High Pressure)

Features

- ▶ Suitable for ultra high purity applications
- ▶ 316L stainless steel enhances weldability and resistance to corrosion
- ▶ Manual or pneumatic actuation are available
- ▶ Face seal fittings (FSR) or butt weld connections
- ▶ Internally springless
- ▶ Metal-to-metal diaphragm design creates a leak resistant seal
- ▶ Control knob includes a window indicating working status (i.e. open or closed)
- ▶ 100% helium leak tested
- ▶ Multiple port configurations available

Materials

- ▶ Body: 316L stainless steel
- ▶ Seat: PCTFE, Vespel®
- ▶ Diaphragm: Elgiloy®

Functional Performance

- ▶ Flow capacity: $C_v=0.3$
- ▶ Maximum leak rate:
 - Body leak rate: 1×10^{-9} atm cc/sec He
 - Valve seat leak rate: 4×10^{-9} atm cc/sec He
- ▶ Proof pressure: 150% of maximum working pressure
- ▶ Burst pressure: 400% of maximum working pressure

Operating Conditions

- ▶ Maximum operating pressure:
 - 300 psi (20 bar), 3500 psi (240 bar)
- ▶ Minimum operating pressure: vacuum
- ▶ Temperature: -40°F to 150°F (-40°C to 65°C)

Pneumatic Actuator

- ▶ Operating pressure: 70 - 125 psi
- ▶ Inlet connection: 1/8"NPT (Female)
- ▶ Normally: closed, open

Surface Finish

- ▶ Standard Ra: 10 - 15µin

Internal Volume

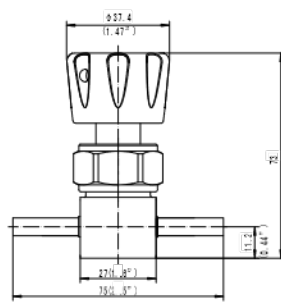
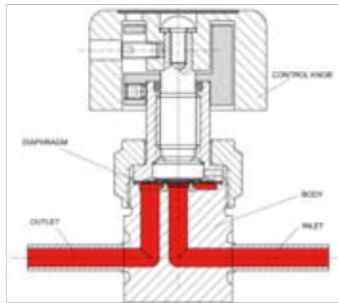
- ▶ 1.6 cc

* Standard Material

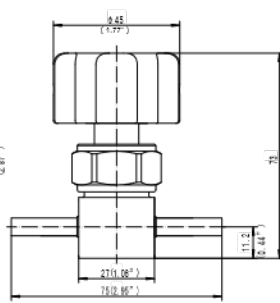
** Vespel® seat is recommended for Nitrous Oxide (N₂O) service but is not available for low pressure pneumatic actuation.

DV54 Series

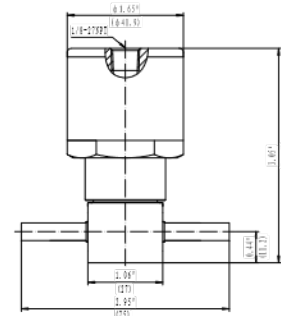
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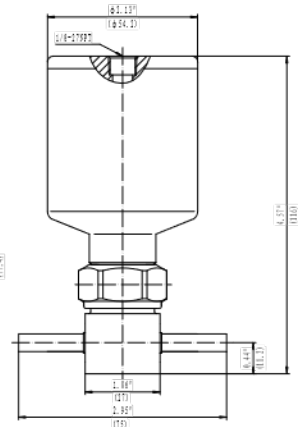
Manual (Low Pressure)



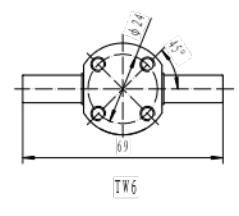
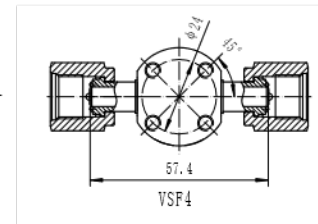
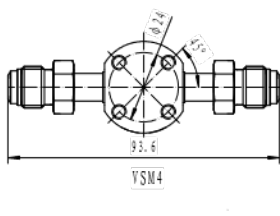
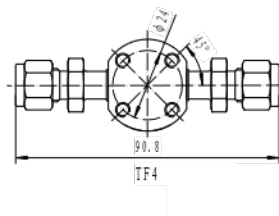
Manual (High Pressure)



Pneumatic (Low Pressure)



Pneumatic (High Pressure)



Flow

Types	Bypass	Three-way			Four-way		Rear-entry	
Flow schematic	P	B	C	D	I	J	A	T
Red arrow indicates inlet, Blue arrow indicates outlet*								
Flow schematic	Q	E	F	H	K	L	R	
Red arrow indicates inlet, Blue arrow indicates outlet*								

*All schematics are from top view

Ordering Information

EX:	SL	- DV54	M	H	B	- VSM4 *	- NO
	Body	Valve Series	Valve Type	Working Pressure	Flow Path	Inlet / Outlet Connection	Options
	SL: 316L	DV54	M: Handwheel (With display) P: Pneumatic actuator (Normally closed)	H: 3500 psi L: 300 psi	Blank: In-line Type Elbow Type P: East in/ North out Q: East in/South out Three-way valve B: Right inlet, left/top outlet C: Right inlet, left/bottom outlet D: Right/top inlet, left outlet E: Right inlet, top/bottom outlet F: Top/bottom inlet, left outlet H: Left/right inlet, top outlet Four-way valve I: two inlet/ two outlet J: one inlet/ three outlet K: One inlet/one outlet (elbow) L: Three inlet/one outlet Rear-entry valve A: Rear inlet/ one outlet T: Rear inlet/ two outlet R: Rear inlet/ four outlet	TW4, TW6, TF4, VSM4, VSF4	Blank: Standard (N/C) NO: Normally open (Pneumatic)

*: For standard models, if the high pressure (inlet) connections and low pressure (outlet) connections are same, only one is listed. If different, the prior represents inlet connection, and the latter represents outlet connection.

■ DV74 Series



Manual
(Low Pressure)



Pneumatic
(High Pressure)

Features

- ▶ Suitable for ultra high purity applications
- ▶ 316L stainless steel enhances weldability and resistance to corrosion
- ▶ Manual or pneumatic actuation are available
- ▶ Face seal fittings (FSR) or butt weld connections
- ▶ Internally springless
- ▶ Metal-to-metal diaphragm design creates a leak resistant seal
- ▶ Control knob includes a window indicating working status (i.e. open or closed)
- ▶ 100% helium leak tested
- ▶ Multiple port configurations available

Materials

- ▶ Body: 316L stainless steel
- ▶ Seat: PCTFE, Vespel®
- ▶ Diaphragm: Elgiloy®

Functional Performance

- ▶ Flow capacity: $C_v=0.3$
- ▶ Maximum leak rate:
 - Body leak rate: 1×10^{-9} atm cc/sec He
 - Valve seat leak rate: 4×10^{-9} atm cc/sec He
- ▶ Proof pressure: 150% of maximum working pressure
- ▶ Burst pressure: 400% of maximum working pressure

Operating Conditions

- ▶ Maximum operating pressure:
 - 300 psi (20 bar), 3500 psi (240 bar)
- ▶ Minimum operating pressure: vacuum
- ▶ Temperature: -40°F to 150°F (-40°C to 65°C)

Pneumatic Actuator

- ▶ Operating pressure: 70 - 125 psi
- ▶ Inlet connection: 1/8"NPT (Female)
- ▶ Normally: Closed, Open

Surface Finish

- ▶ Standard Ra: 7µin

Internal Volume

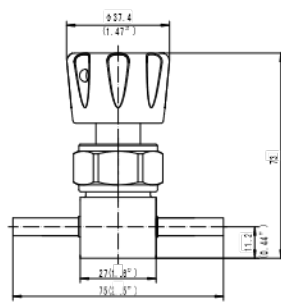
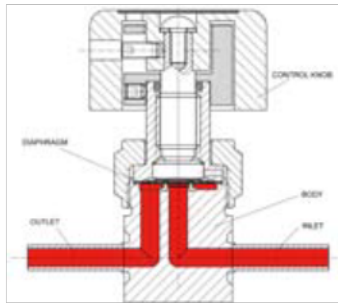
- ▶ 1.6 cc

* Standard Material

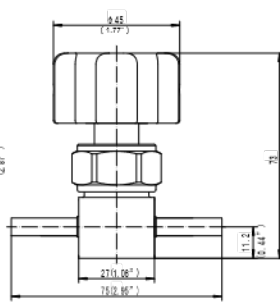
** Vespel® seat is recommended for Nitrous Oxide (N₂O) service but is not available for low pressure pneumatic actuation.

DV74 Series

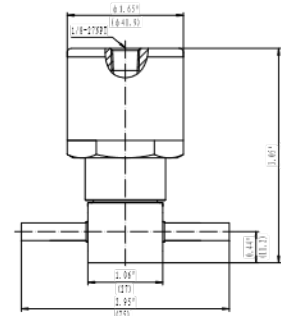
Dimensions



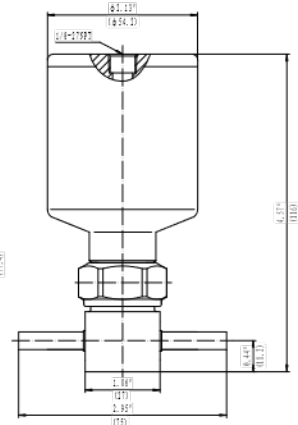
Manual (Low Pressure)



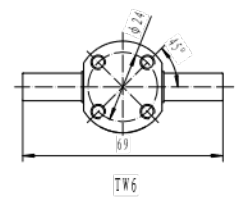
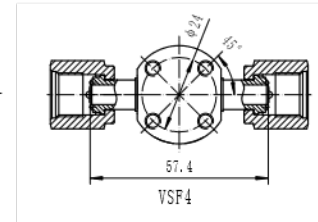
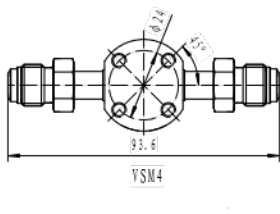
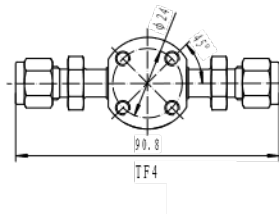
Manual (High Pressure)



Pneumatic (Low Pressure)



Pneumatic (High Pressure)



Flow

Types	Bypass	Three-way				Four-way		Rear-entry	
Flow schematic	P	B	C	D		I	J	A	T
Red arrow indicates inlet, Blue arrow indicates outlet*									
Flow schematic	Q	E	F	H		K	L	R	
Red arrow indicates inlet, Blue arrow indicates outlet*									

*All schematics are from top view

Ordering Information

EX:	SL	- DV74	M	H	B	- VSM4 *	- NO
	Body	Valve Series	Valve Type	Working Pressure	Flow Path	Inlet / Outlet Connection	Options
	SL: 316L	DV74	M: Handwheel (With Display) P: Pneumatic actuator (Normally closed)	H: 3500 psi L: 300 psi	Blank: In-line Type Elbow Type P: East in/ North out Q: East in/South out Three-way valve B: Right inlet, left/top outlet C: Right inlet, left/bottom outlet D: Right/top inlet, left outlet E: Right inlet, top/bottom outlet F: Top/bottom inlet, left outlet H: Left/right inlet, top outlet Four-way valve I: two inlet/ two outlet J: one inlet/ three outlet K: One inlet/one outlet (elbow) L: Three inlet/one outlet Rear-entry valve A: Rear inlet/ one outlet T: Rear inlet/ two outlet R: Rear inlet/ four outlet	TW4, TW6, TF4, VSM4, VSF4	Blank: Standard (N/C) NO: Normally open (Pneumatic)

*: For standard models, if the high pressure (inlet) connections and low pressure (outlet) connections are same, only one is listed. If different, the prior represents inlet connection, and the latter represents outlet connection.

DV82 Series



Handwheel



Pneumatic

Features

- ▶ Suitable for high purity applications
- ▶ 316L Stainless Steel enhances weldability and resistance to corrosion
- ▶ Both manual and pneumatic actuation are available
- ▶ Face seal fittings (FSR), compression tube fittings or butt weld connections
- ▶ Internally springless
- ▶ Metal-to-metal diaphragm seals
- ▶ High-cycle life
- ▶ 100% Helium-leak tested

Materials

- ▶ Body: 316L stainless steel
- ▶ Seat: PCTFE*, Vespel®**
- ▶ Diaphragm: Elgiloy®

Operating Conditions

- ▶ Maximum operating pressure: 3500 psi (240 bar):
Pneumatic and manual actuation
- ▶ Minimum operating pressure: vacuum
- ▶ Temperature: -40°F to 150°F (-40°C to 65°C)
- ▶ Pneumatic actuator
Operating pressure: 70 - 125 psi
Inlet connection: 1/8"NPT (Female)
Normally: closed

Functional Performance

- ▶ Flow capacity: $C_v=0.16$
- ▶ Maximum leak rate:
Inboard leakage: 1×10^{-9} atm cc/sec He
Outboard leakage: 1×10^{-9} atm cc/sec He
Across seat leakage: 4×10^{-9} atm cc/sec He
- ▶ Proof pressure: 150% of maximum rated pressure
- ▶ Burst pressure: 400% of maximum rated pressure

Surface Finish

- ▶ Standard Ra: 15-20µin

Internal Volume

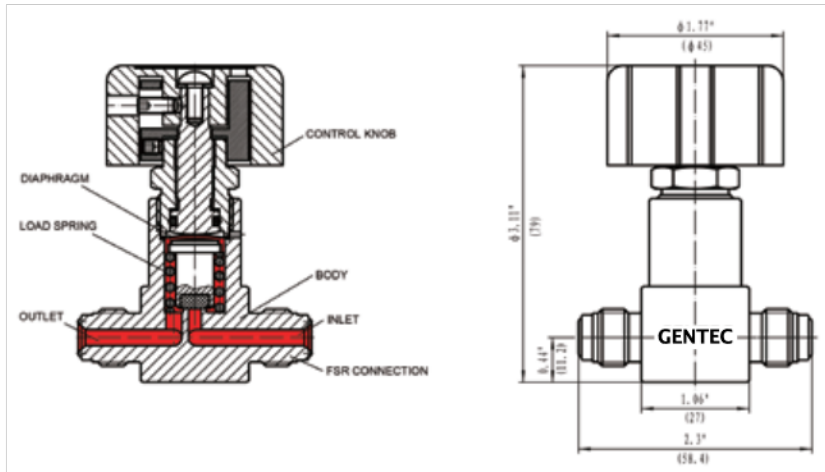
- ▶ 0.8 cc

* Standard Material

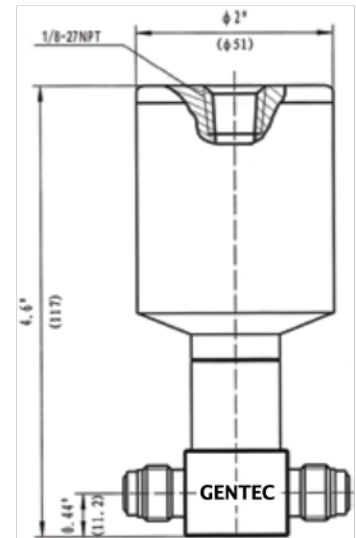
** Vespel® seat is recommended for Nitrous Oxide (N₂O) service but is not available for low pressure pneumatic actuation.

DV82 Series

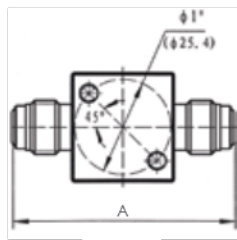
Dimensions



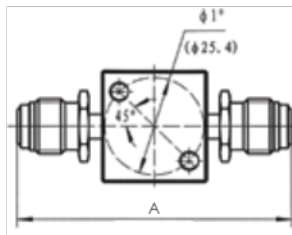
Handwheel



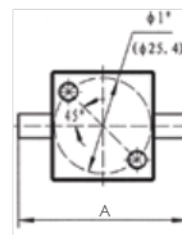
Pneumatic



Face Seal Male Fittings



Face Seal Swivel Male Fittings



Tube Weld Stub

Connections*	A (mm)
VM4	58.4
VM8	67.6
VSM4	70.8
VSF4	70.6
TW4	44.2
TW8	44.2
TF4	47.6

*: Applies to both inlet & outlet connections

Ordering Information

EX:	SL	- DV82	M	H	- VM4 - VM8	- K	IS
	Body	Series	Actuator	Working Pressure	Inlet / Outlet Connection	Seat	Options
	SL: 316L	DV82	M: Manual (Handwheel) P: Pneumatic actuator	H: 3500 psi	VM4, VM8, VSM4, VSM8, VSF4, VSF8 TW4, TW8	K: PCTFE* V: Vespel®	IS: Indicator switch

IS: Electrical Indicator Switch for high pressure Pneumatic Actuator

* Standard Material

Inlet & Outlet Connections		
Type	Size	
VM: Face seal male (FSR fittings)	4, 8	4=1/4" 8=1/2"
VSM: Face seal swivel male (FSR fittings)	4, 8	
VSF: Face seal swivel female (FSR fittings)	4, 8	
TW: Tube weld	4, 8	

■ DV84 Series



Handwheel



Pneumatic

Features

- ▶ Suitable for high purity applications
- ▶ 316L Stainless Steel enhances weldability and resistance to corrosion
- ▶ Both manual and pneumatic actuation are available
- ▶ Face seal fittings (FSR) or butt weld connections
- ▶ Internally springless
- ▶ Designed for very low particle generation
- ▶ Metal-to-metal diaphragm seals
- ▶ High-cycle life
- ▶ 100% Helium-leak tested

Materials

- ▶ Body: 316L stainless steel
- ▶ Seat: PCTFE*, Vespel®**
- ▶ Diaphragm: Elgiloy®

Functional Performance

- ▶ Flow capacity: $C_v=0.17$
- ▶ Maximum leak rate:
 - Inboard leakage: 1×10^{-9} atm cc/sec He
 - Outboard leakage: 1×10^{-9} atm cc/sec He
 - Across seat leakage: 4×10^{-9} atm cc/sec He
- ▶ Proof pressure: 150% of maximum rated pressure
- ▶ Burst pressure: 400% of maximum rated pressure

Operating Conditions

- ▶ Maximum operating pressure:
 - 300 psi (17 bar), 3500 psi (240 bar)
- ▶ Minimum operating pressure: vacuum
- ▶ Temperature: -40°F to 150°F (-40°C to 65°C)
- ▶ Pneumatic actuator
 - Operating pressure: 70 - 125 psi
 - Inlet connection: 1/8"NPT (Female)
 - Normally: closed

Surface Finish

- ▶ Standard Ra: 10~15 μ m
- ▶ Optional Ra (EP): 7 μ m

Internal Volume

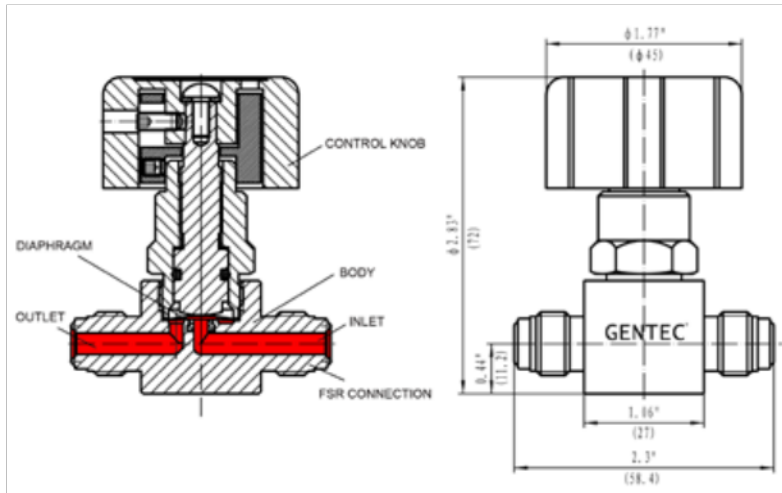
- ▶ 0.8 cc

* Standard Material

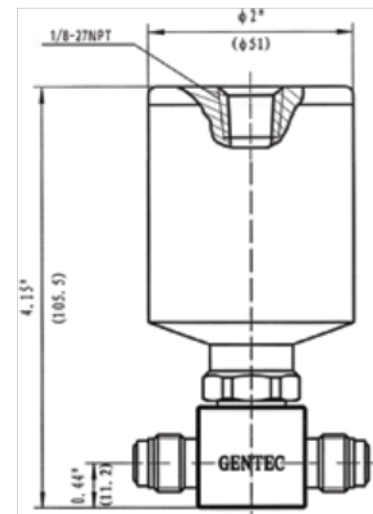
** Vespel® seat is recommended for Nitrous Oxide (N₂O) service but is not available for low pressure pneumatic actuation.

DV84 Series

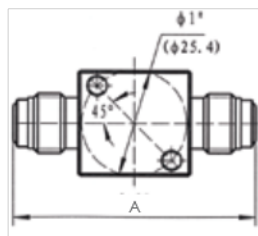
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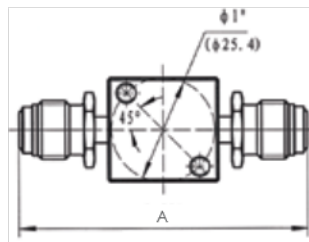
Handwheel



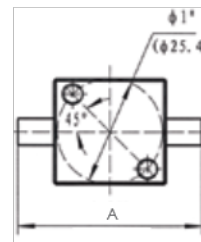
Pneumatic (HP)



Face Seal Male Fittings



Face Seal Swivel Male Fittings



Tube Weld Stub

Connection*	A (mm)
VM4	58.4
VM8	67.6
VSM4	70.8
VSF4	70.6
TW4	44.2
TW8	44.2

*: Applies to both inlet & outlet connections

Ordering Information

EX:	SL	- DV84	M	H	- VM4 - VM8	- K	E	IS
	Body	Series	Actuator	Working Pressure	Inlet / Outlet Connection	Seat	Options	Options
	SL: 316L	DV84	M: Manual (Handwheel) P: Pneumatic actuator (Normally closed)	H: 3500 psi L: 300 psi	VM4, VM8, VSM4, VSM8, VSF4, VSF8 TW4, TW6, TW8	K: PCTFE* V: Vespel®	None: 10~15 µin E: 5 µin (EP)	IS: Indicator switch NO: Normally open (Pneumatic)

IS: Electrical Indicator Switch for high pressure Pneumatic Actuator

* Standard Material

Inlet & Outlet Connections		
Type	Size	
VM: Face seal male (FSR fittings)	4, 8	4=1/4"
VSM: Face seal swivel male (FSR fittings)	4, 8	6=3/8"
VSF: Face seal swivel female (FSR fittings)	4, 8	8=1/2"
TW: Tube weld	4, 6, 8	

DV86 Series



Handwheel



Pneumatic

Features

- ▶ Suitable for high ultra purity applications
- ▶ 316L Stainless Steel enhances weldability and resistance to corrosion
- ▶ Both manual and pneumatic actuation are available
- ▶ Face seal fittings (FSR) or butt weld connections
- ▶ Internally springless
- ▶ Designed for very low particle generation
- ▶ Metal-to-metal diaphragm seals
- ▶ High-cycle life
- ▶ 1/4 turn of the handle to operate from fully open to closed / Indicator Window
- ▶ Closed and open indication window
- ▶ 100% Helium-leak tested

Materials

- ▶ Body: 316L stainless steel
- ▶ Seat: PCTFE*, Vespel***
- ▶ Diaphragm: Elgiloy®

Functional Performance

- ▶ Flow capacity: $C_v=0.3$
- ▶ Maximum leak rate:
 - Inboard leakage: 1×10^{-9} atm cc/sec He
 - Outboard leakage: 1×10^{-9} atm cc/sec He
 - Across seat leakage: 4×10^{-9} atm cc/sec He
- ▶ Proof pressure: 150% of maximum rated pressure
- ▶ Burst pressure: 400% of maximum rated pressure

Operating Conditions

- ▶ Maximum operating pressure:
 - 300 psi (20 bar), 3500 psi (240 bar)
- ▶ Minimum operating pressure: vacuum
- ▶ Temperature: -40°F to 150°F (-40°C to 65°C)
- ▶ Pneumatic actuator
 - Operating pressure: 70 - 125 psi
 - Inlet connection: 1/8"NPT (Female)
 - Normally: Closed

Surface Finish

- ▶ Standard Ra: 10~15 μ in
- ▶ Optional Ra (EP): 7 μ in

Internal Volume

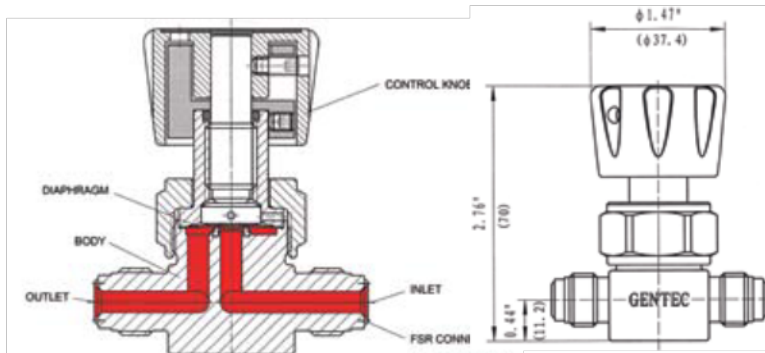
- ▶ 1.6 cc

* Standard Material

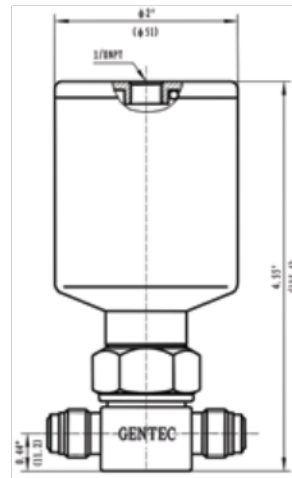
** Vespel® seat is recommended for Nitrous Oxide (N₂O) service but is not available for low pressure pneumatic actuation.

DV86 Series

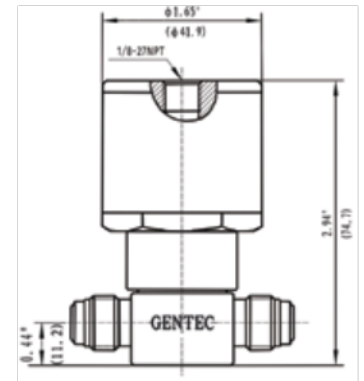
Dimensions



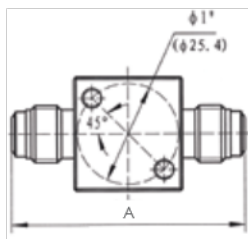
Handwheel (LP)



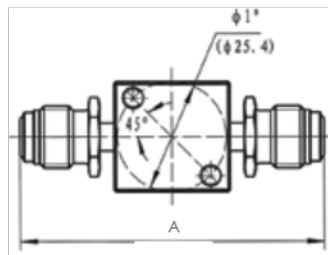
Pneumatic (HP)



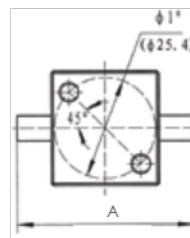
Pneumatic (LP)



Face Seal Male Fittings



Face Seal Swivel Male Fittings



Tube Weld Stub

Connection*	A (mm)
VM4	58.4
VM8	67.6
VSM4	70.8
VSF4	70.6
TW4	44.2
TW8	44.2

*: Applies to both inlet & outlet connections

Ordering Information

EX:	SL	- DV86	M	H	- VM4 - VM8	- K	IS
	Body	Series	Actuator	Working Pressure	Inlet / Outlet Connection	Seat	Options
	SL: 316L	DV86	M: Manual (Handwheel) P: Pneumatic actuator (Normally closed)	H: 3500 psi L: 300 psi	VM4, VM8, VSM4, VSM8, VSF4, VSF8 TW4, TW6, TW8	K: PCTFE* V: Vespel®	IS: Indicator switch NO: Normally open (Pneumatic)

IS: Electrical Indicator Switch for high pressure Pneumatic Actuator

* Standard Material

Inlet & Outlet Connections		
Type	Size	
VM: Face seal male (FSR fittings)	4, 8	4=1/4"
VSM: Face seal swivel male (FSR fittings)	4, 8	6=3/8"
VSF: Face seal swivel female (FSR fittings)	4, 8	8=1/2"
TW: Tube weld	4, 6, 8	

■ DV88 Series



Features

- ▶ Suitable for high purity applications
- ▶ 316L Stainless Steel enhances weldability and resistance to corrosion
- ▶ Face seal fittings (FSR) or butt weld connections, compression tube fittings
- ▶ Designed for very low particle generation
- ▶ Metal-to-metal diaphragm seals
- ▶ High-cycle life
- ▶ 100% Helium-leak tested

Materials

- ▶ Body: 316L stainless steel
- ▶ Seat: PCTFE
- ▶ Diaphragm: Elgiloy®

Surface Finish

- ▶ Standard Ra: 20µin

Internal Volume

- ▶ 20 cc

Operating Conditions

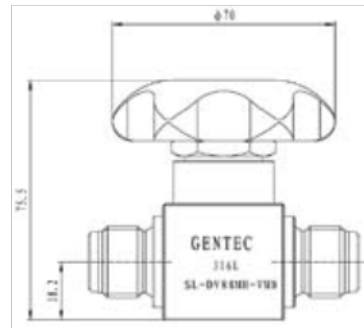
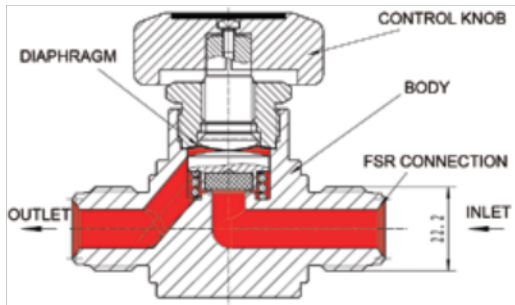
- ▶ Maximum operating pressure: 3500 psi (240 bar), 1000 psi (69 bar)
- ▶ Minimum operating pressure: vacuum
- ▶ Temperature: -40°F to 150°F (-40°C to 65°C)

Functional Performance

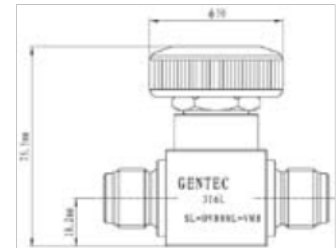
- ▶ Flow capacity: Cv=1.0 (3500 psi)
Cv=1.7 (1000psi)
- ▶ Maximum leak rate:
 - Inboard leakage: 1×10^{-9} atm cc/sec He
 - Outboard leakage: 1×10^{-9} atm cc/sec He
 - Across seat leakage: 4×10^{-9} atm cc/sec He
- ▶ Proof pressure: 150% of maximum rated pressure
- ▶ Burst pressure: 400% of maximum rated pressure

DV88 Series

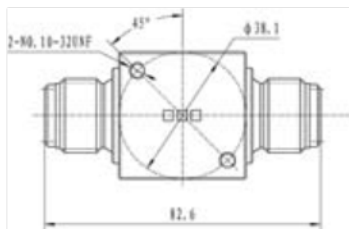
Dimensions



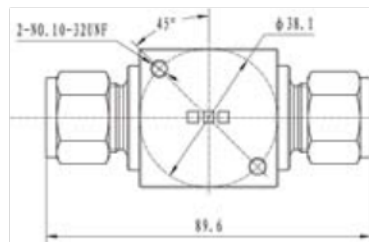
Handwheel (HP)



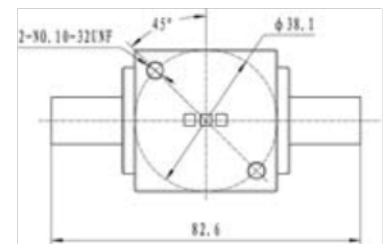
Handwheel (LP)



Face Seal Male Fittings



Compression Tube Fittings



Tube Weld Stub

Ordering Information

EX:	SL	- DV88	M	H	- VM8
	Body	Series	Actuator	Working Pressure	Inlet / Outlet Connection
	SL: 316L	DV88	M: Manual	H: 3500 psi M: 1000 psi	VM8: 1/2" Face seal male (FSR fittings) TF8: 1/2" Tube fitting TW8: 1/2" Tube weld

■ DV90 Series



Features

- ▶ Suitable for high purity applications
- ▶ 316L Stainless Steel enhances welding and corrosion resistance
- ▶ Face seal fitting(FSR), compression tube connections
- ▶ Design for very low particle generation
- ▶ Metal-to-metal diaphragm seals
- ▶ High-cycle life
- ▶ 100% Helium-leak tested

Materials

- ▶ Body: 316L stainless steel
- ▶ Seat: PCTFE
- ▶ Diaphragm: Elgiloy®

Functional Performance

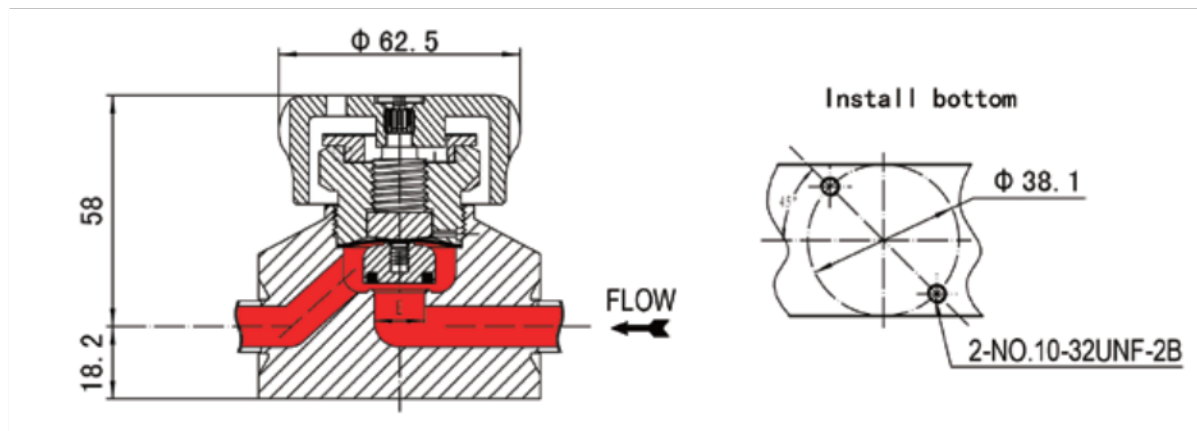
- ▶ Flow capacity: Cv=2.8

Surface Finish

- ▶ Standard Ra: 20 μ in
- ▶ Optional Ra (EP): 7 μ in

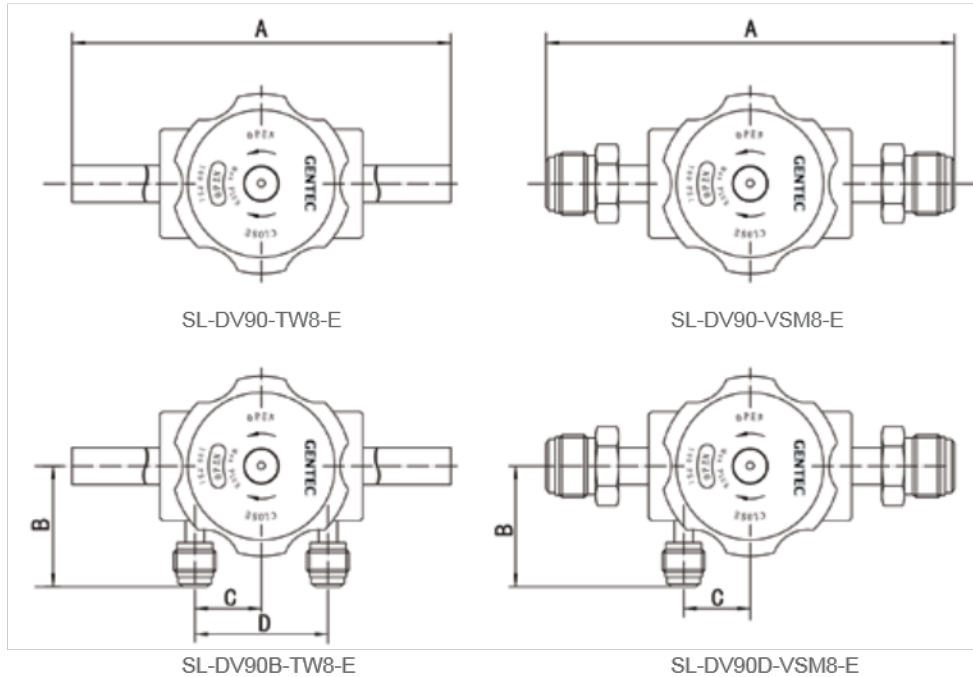
Operating Conditions

- ▶ Maximum operating pressure: 300 psi (20 bar)
- ▶ Temperature: -40°F to 150°F (-40°C to 65°C)



DV90 Series

Dimensions



Model Number	Inlet / Outlet Connections	Orifice (in.)	CV	Dimensions (in.)			
				A	B	C	D
SL-DV90B-VSM8-E	1/2" Face seal swivel male	0.50	2.8	5.61	1.67	0.92	1.83
SL-DV90-VSM8-E	1/2" Face seal swivel male	0.50	2.8	5.61	/	/	/
SL-DV90B-VSF8-E	1/2" Face seal swivel female	0.50	2.8	5.61	1.67	0.92	1.83
SL-DV90-VSF8-E	1/2" Face seal swivel female	0.50	2.8	5.61	/	/	/
SL-DV90B-TW8-E	1/2" Tube weld	0.50	2.8	8.78	1.67	0.92	1.83
SL-DV90-TW8-E	1/2" Tube weld	0.50	2.8	8.78	/	/	/
SL-DV90B-TW12-E	3/4" Tube weld	0.50	2.8	8.78	1.67	0.92	1.83
SL-DV90-TW12-E	3/4" Tube weld	0.50	2.8	8.78	/	/	/

Ordering Information

EX:	SL	- DV90	B	VSM8	- E
	Body	Valve Series	Options	Inlet / Outlet Connections	Surface Finish
	SL: 316L	DV90	(Purge ports, 1/4" male FSR fitting) None: No purge ports U: With inlet purge ports D: With outlet purge ports B: With inlet and outlet purge ports	VSM8 VSF8 TW8 TW12 Please contact GENTEC for more information	E: 7 µin

Inlet & Outlet Connections		
Type	Size	
VSM: Face seal swivel male (FSR fittings)	8	8=1/2"
VSF: Face seal swivel female (FSR fittings)	8	12=3/4"
TW: Tube weld	8, 12	