HIGH-PURITY AND ULTRA-HIGH-PURITY VALVES

Singapore's Trusted Partner in Fluid Control

Founded through persistent exploration and engineering practices in precision fluid control technology, ROCK Industrial Group was established to deliver core control technology solutions for global pharmaceutical manufacturing, electronics/ semiconductor, food & cosmetics, and beverage industries. With three decades of expertise in precision manufacturing and system design, ROCK Group launched its flagship brand SingTao®, dedicated to R&D and production of high value-added fluid control valves.

Leveraging the strategic layout of Singapore's global operations center and the efficient transportation network of the Strait of Malacca, we will continue to invest in integrating and establishing ISO 9001-certified production and marketing bases in Malaysia and China, progressively building a rapid-delivery supply chain covering Asia, Europe, the Americas, and other regions.

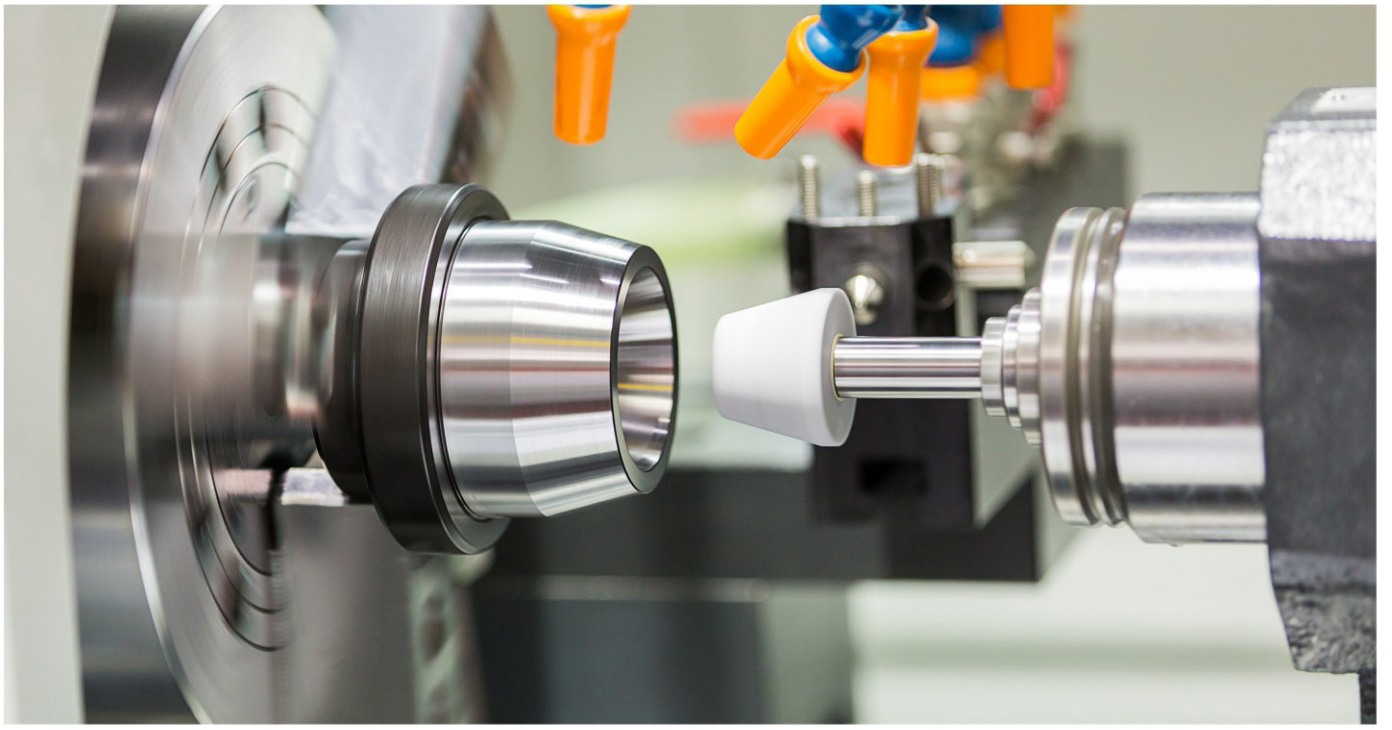
The SingTao® valve system serves critical sectors via dual technological pathways: Pharmaceutical-grade sterile valve assemblies compliant with 3A/SMSI and FDA 21 CFR Part 177 standards meet vaccine production requirements under EU GMP Annex 1 specifications; ASME BPE-compliant ultra-pure fluid valves for semiconductor applications achieve 0.1μm particle control in wafer fabrication cleanrooms. Utilizing SGS-compliant 316L stainless steel and Hastelloy® alloys, our product portfolio covers 18 valve configurations including steam traps, sanitary diaphragm valves, and vacuum control valves. Equipped with electric, pneumatic, and manual actuation modules, 300+ technical enhancements ensure cross-industry operational adaptability.

ROCK implements EHEDG/FPSA-compliant end-to-end traceability mechanisms covering raw materials to delivery, backed by 36-month warranty commitments. Currently serving 150+ high-end pharmaceutical and semiconductor manufacturers globally, we achieve 95% on-time delivery within 21 standarded working days through three regional centers (Singapore/ Malaysia/Suzhou) providing 24/7 emergency response and full-cycle services encompassing working condition analysis, valve selection, and technical support.

By drawing inspiration from the rigorous discipline of advanced manufacturing, the philosophy of continuous technological innovation, and optimized practices for order efficiency enhancement, ROCK engineers empower SingTao® valve systems to establish reliable barriers in stringent cleanliness environments and achieve molecular-level fluid control in semiconductor manufacturing processes. When the advancement of industrial civilization hinges on precision measured in microns, ROCK's accumulated expertise demonstrates that tackling industrial innovation challenges begins with an unwavering commitment to solving fundamental problems.

ENTERPRISE VISION

Singapore Precision, Global Leadership



TRACEABILITY OF PRODUCTS

Each SingTao® product carries permanent markings of the brand logo, material specification, dimensional data, and a unique traceability identifier. These critical data points, combined with customer procurement records, are systematically logged and monitored through ROCK's centralized digital platform, achieving end-to-end visibility from manufacturing to field operation.

CONTENTS

Long term goals

Advancing Fluid Control through Innovation: Customized Solutions for Every Stage of Your Operational Lifecycle.

一. SERIES OF MAIN PRODUCTS

HIGH-PURITY AND ULTRA-HIGH-PURITY VALVES

二. APPLICATION SCENARIO

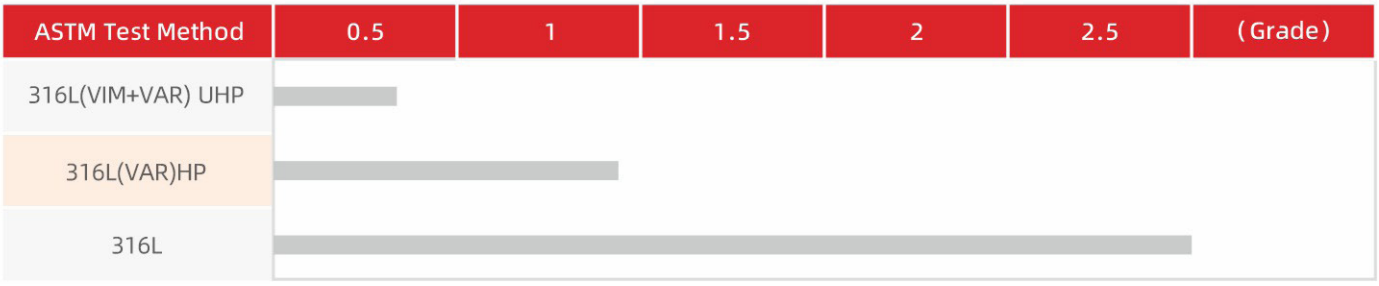
CORE COMPETITIVE ADVANTAGES

Material Superiority

Utilizing ultra-high-purity 316L stainless steel substrate that strictly complies with SEMI F20 international standard specifications, we implement a dual refining process combining Vacuum Induction Melting (VIM) and Vacuum Arc Remelting (VAR) to perform multidimensional purification treatment on materials. Through precisely controlled thermodynamic parameters during the melting process and specialized interface reaction technology, we effectively eliminate non-metallic inclusions (e.g., oxides, nitrides, sulfides) and interstitial gas components (hydrogen, oxygen, nitrogen), achieving semiconductor-grade cleanliness standards for critical impurity element control. This provides a stable and reliable core material foundation for advanced semiconductor device manufacturing, wafer processing equipment, and precision process components, ensuring enhanced production yield and process stability at the fundamental material level in semiconductor manufacturing.

Element	C	Si	S	Mn	P	Cu	Cr	Ni	Mo	O*	N*	H*
SEMI F20	0.02	0.42	0.008	0.7	0.02	/	16.61	12.28	2.13	/	/	/
316L(VIM+VAR) Ultra-High-Purity Measured Values	≤0.030	≤1.00	≤0.01	≤1.50	≤0.045	0.3	16.0-18.0	10.0-14.0	2.0-3.0	/	/	/
316L (VAR)High-Purity Measured Values	0.005	0.02	0.004	0.3	0.01	0.017	17.44	13.97	2.65	10	32	1.6
316L Standard Measured Values	0.008	0.03	0.005	0.3	0.015	0.02	17.2	13.63	2.52	20	60	2

Non-Metallic Inclusion Testing



Electropolishing (EP) Technology

The internal surfaces of products undergo Electropolishing (EP) treatment, utilizing electrochemical reactions to precisely refine surface microstructure. This process significantly enhances wall smoothness while promoting the formation of a uniform, dense chromium-enriched passive oxide layer on metal surfaces, thereby effectively improving corrosion resistance. Subsequent passivation processes eliminate residual free iron ions, further elevating chemical purity. Comprehensive analysis via Scanning Electron Microscopy (SEM), X-ray Photoelectron Spectroscopy (XPS), and Auger Electron Spectroscopy (AES), coupled with ASTM standard testing protocols for surface cleanliness (ASTM B912) and corrosion resistance (ASTM A967), confirms full compliance with Semiconductor Equipment and Materials International (SEMI) standards. These measures ensure reliable performance in high-purity semiconductor process environments.

Non-Metallic Inclusion Testing

	HP		UHP		Test Method
	SEMI F19	Control Limit	SEMI F19	Control Limit	
SurfaceRoughness	Ra ≤ 0.25μm	Ra ≤ 0.25μm	Ra ≤ 0.13μm	Ra ≤ 0.13μm	SEMI F37
SurfaceDefects (SEM-detectedDefectCounts)	≤ 30 Average ≤ 50 Max	≤ 30 Average ≤ 50 Max	≤ 10 Average ≤ 20 Max	≤ 10 Average ≤ 20 Max	SEMI F73
(Cr/Fe)	≥ 1.0	≥ 1.5	≥ 1.5	≥ 2	SEMI F60
(CrO/FeO)	≥ 1.0	≥ 3	≥ 2.0	≥ 3	
OxideLayerThickness	≥ 15Å	≥ 20Å	≥ 15Å	≥ 20Å	SEMI F72
ElectrochemicalCritical PittingTemperature(CPT)	≥ 10℃				SEMI G150

Electropolishing (EP) Technology

Process	Compliance Standard	
HeliumLeakTesting	SEMA-90120391B-STD	SEMI F1-96
ParticleContamination	ASTMF1394-92	
IonicCleanliness	ASTMF1374-92(2012)	
Cleaning	SEMIE49.6	
Assembly	SEMIE49.6	
Packaging	SEMIE49.1	

DVM SERIES MANUAL DIAPHRAGM VALVES

Featuring a diaphragm-type hard-sealed structure with metallic bellows and fully welded valve body design to achieve ultra-low leakage rates. Combined with an ergonomic manual operating mechanism that ensures smooth and reliable opening/closing operations. The valve body is constructed from 316L stainless steel, while the seat utilizes perfluoroelastomer sealing, enabling safe handling of ultra-high-purity gases and highly toxic/corrosive media in semiconductor applications. Specifically designed to meet precise process gas control requirements in ultra-large-scale integrated circuit (ULSIC) manufacturing.

Features:

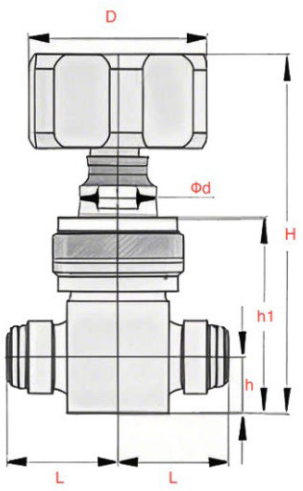
- Ideal for ultra-high-purity gas applications
- Ni-Cr-Mo alloy/UNS N06022 diaphragm material
- Individual helium mass spectrometer leak testing per valve

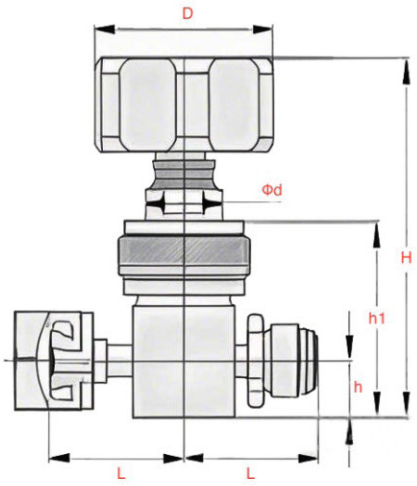
Technical Data

Operating Pressure: Vacuum to 300 psig (Low Pressure), Vacuum to 3000 psig (High Pressure)	Internal Leakage Rate:≤ 1×10^{-11} $Pa.m^3/sec.He$
Burst Pressure: 3000 psig (Low Pressure), 9000 psig (High Pressure)	External Leakage Rate:≤ 1×10^{-11} $Pa.m^3/sec.He$
Operating Temperature: -10 to 60℃ (Low Pressure), -10 to 40℃ (High Pressure)	Internal Surface Roughness:Ra ≤ 0.13μm
Flow Coefficient (Cv):0.25 (1/4"), 0.35 (1/2"), 0.7 (1/2"HF)	

Main Material Components	
Valve Body	316L /316L（VIM+VAR）
Diaphragm	Ni-Cr-Mo alloy/UNS N06022
Gasket	PCTFE
Handle	6063 Aluminum Alloy

Dimensions (mm)





Low-Pressure Connection Type	L		h	hl	H	A	B	C	D	d
74M	29	±0.2	11.1	27.3	71(77)	18	18	27	48	20.5
74MS/74F	35.3	±0.25	11.1	27.3	71(77)	18	18	27	48	20.5
78M	38.1	±0.25	11.2	32	75(81)	20.2	20.2	35	48	20.5
78MS/78F	41.5	±0.25	11.2	32	75(81)	20.2	20.2	35	48	20.5
78M(HF)	38.1	±0.25	16	-	90.6	20.2	20.2	36	48	-
78MS(HF)/78F(HF)	41.5	±0.25	16	-	90.6	20.2	20.2	36	48	-

High-Pressure Connection Type	L		h	hl	H	A	B	C	D	d
74M	29	±0.25	11.1	32.5	71(77)	18	18	27	48	20.5
74MS/74F	35.3	±0.25	11.1	32.5	71(77)	18	18	27	48	20.5
78M	38.1	±0.25	11.2	48	77.7	18	18	27	48	20.5
78MS/78F	41.5	±0.25	11.2	48	77.7	18	18	27	48	20.5

Note: Dimensions are for reference only， final specifications subject to physical product. Custom sizing available upon request.

Coding Rules

Tag Number		1	2	3、4、5	3、4、5	6	7	8
Code	DVM	I	0.1	74M	74M	V2	B	-
Property Definition	Model	Flow Path Type	Operating Pressure	Inlet Connection	Outlet Connection	Valve Body Material	Handle Color	Options

Tag Number	Code	Flow Path Type
1	I	Straight
	JL	Right-Angle (L)
	JR	Right-Angle (R)
	BI	Backside Inlet
	T	Three-Way
	L	Three-Way (L)
	R	Three-Way (R)
	TT	Three-Way (T)
	TL	Three-Way (TL)
	TR	Three-Way (TR)
	HH	Four-Way
	FS	Four-Way (FS)
2	Code	Operating Pressure
	01	0 ~ 300Psig
	02	0 ~ 3000Psig
3、4、5	Code	Inlet/ Outlet Connection
	7	UCR
	4	1/4"
	8	1/2"
	M	Integral Male
	F	Female
	MS	Male Swivel
6	Code	Valve Body Material
	SS	316L
	V2	316L(VIM+VAR)
7	Code	Handle Color
	R	Red
	B	Blue
8	Code	Options
	HF	High-Flow

DVP SERIES PNEUMATIC DIAPHRAGM VALVES

Featuring a diaphragm-type hard-sealed structure with metallic bellows and fully welded valve body design to achieve ultra-low leakage rates. Integrated with high-precision pneumatic actuators for rapid response performance. The valve body is constructed from 316L stainless steel, while the seat utilizes perfluoroelastomer sealing, enabling safe handling of ultra-high-purity gases and highly toxic/corrosive media in semiconductor applications. Specifically designed for stringent process gas requirements in ultra-large-scale integrated circuit (ULSIC) manufacturing.

Features:

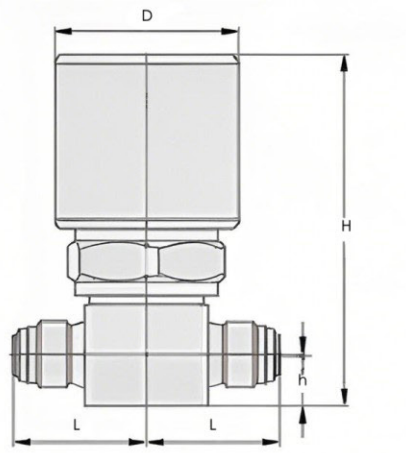
- Ideal for ultra-high-purity gas applications
- Diaphragm material: Ni-Cr-Mo alloy/UNS N06022
- Rapid, repeatable pneumatic actuator performance
- Individual helium mass spectrometer leak testing per valve

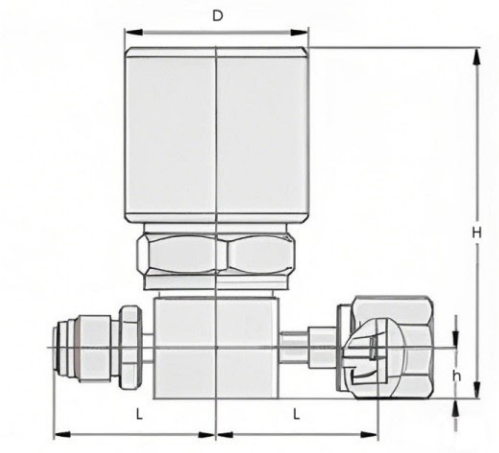
Technical Data

Operating Pressure: Vacuum to 150 psig (Low Pressure), Vacuum to 3000 psig (High Pressure)	Internal Leakage Rate:≤ 1×10^{-11} $Pa.m^3/sec.He$
Burst Pressure: 3000 psig (Low Pressure), 9000 psig (High Pressure)	External Leakage Rate:≤ 1×10^{-11} $Pa.m^3/sec.He$
Operating Temperature: -10 to 60℃ (Low Pressure), -10 to 40℃ (High Pressure)	Internal Surface Roughness:Ra ≤ 0.13 μm
Flow Coefficient (Cv):0.25 (1/4"), 0.7 (1/2"HF)	

Main Material Components	
Valve Body	316L /316L(VIM+VAR)
Diaphragm	Ni-Cr-Mo alloy/UNS N06022
Gasket	PCTFE

Dimensions (mm)





Low-Pressure Connection Type	L		h	H	A	B	C	D
74M	29	±0.25	11.1	71(77)	18	18	27	40
74MS/74F	35.3	±0.25	11.1	71(77)	18	18	27	40
78M(HF)	38.1	±0.25	16	97.6	20.2	20.2	36	55
78MS(HF)/78F(HF)	41.5	±0.25	16	97.6	20.2	20.2	36	55

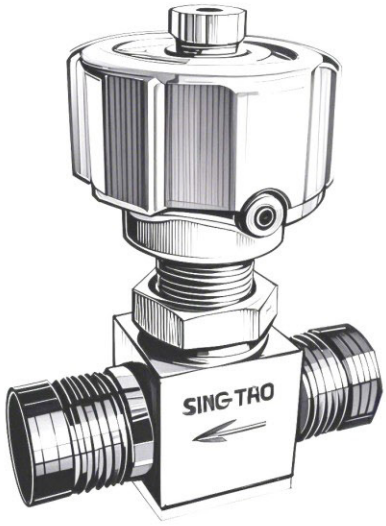
High-Pressure Connection Type	L		h	H	A	B	C	D
74M	29	±0.25	11.1	106.4	18	18	27	65
74MS/74F	35.3	±0.25	11.1	106.4	18	18	27	65
78M	38.1	±0.25	11.2	156.5	18	18	27	76
78MS/78F	41.5	±0.25	11.2	156.5	18	18	27	76

Coding Rules

Tag Number		1	2	3、4、5	3、4、5	6	7	8
Code	DVP	I	01	74M	74M	V2	NC	-
Property Definition	Model	Flow Path Type	Operating Pressure	Inlet Connection	Outlet Connection	Valve Body Material	Actuator	Options

Tag Number	Code	Flow Path Type
1	I	Straight
	JL	Right-Angle (L)
	JR	Right-Angle (R)
	BI	Backside Inlet
	T	Three-Way
	L	Three-Way (L)
	R	Three-Way (R)
	TT	Three-Way (T)
	TL	Three-Way (TL)
	TR	Three-Way (TR)
	HH	Four-Way
	FS	Four-Way (FS)
2	Code	Operating Pressure
	01	0 ~ 150Psig
	02	0 ~ 3000Psig
3、4、5	Code	Inlet/ Outlet Connection
	7	UCR
	4	1/4"
	8	1/2"
	M	Integral Male
	F	Female
	MS	Male Swivel
6	Code	Valve Body Material
	SS	316L
	V2	316L(VIM+VAR)
7	Code	Actuator
	NC	Normally closed
	NO	Normally open
8	Code	Options
	HF	High-Flow

DVMH SERIES MANUAL DIAPHRAGM VALVES



Incorporating a diaphragm-type hard-sealed structure with metallic bellows and fully welded valve body design to achieve ultra-low leakage rates. Paired with an ergonomic manual operating mechanism for smooth and reliable on/off operations. The valve body is constructed from 316L stainless steel, while the seat utilizes perfluoroelastomer sealing, enabling precise control of ultra-high-purity gases and highly toxic/corrosive media in semiconductor applications. Engineered for critical process gas management in ULSIC fabrication.

Features:

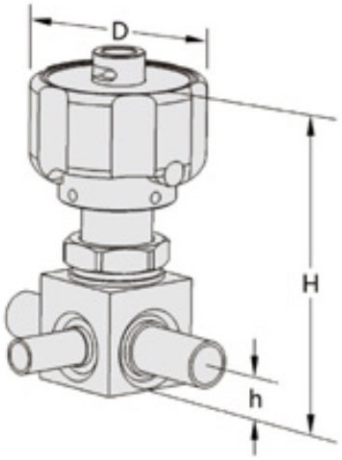
- Ideal for ultra-high-purity gas applications
- Handle with position indicator window
- Standard 180° rotation angle (90° optional)
- Individual helium mass spectrometer leak testing per valve
- Extended lifespan (500,000-cycle validated lifespan)
- Lockout-Tagout (LOTO) optional feature to prevent misuse

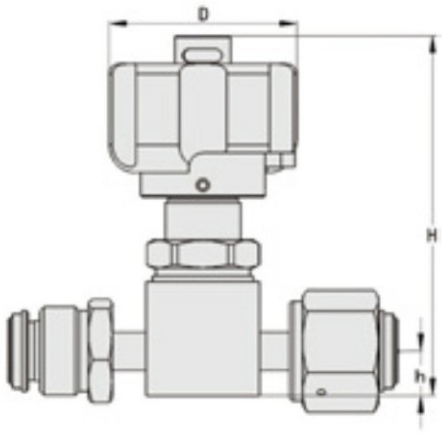
Technical Data

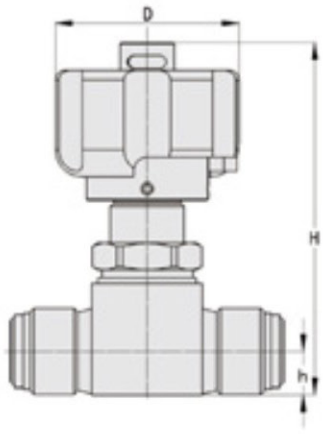
Operating Pressure: Vacuum to 300 psig	Internal Leakage Rate:≤ 1×10^{-11} $Pa.m^3/sec.He$
Burst Pressure:3000psig	External Leakage Rate:≤ 1×10^{-11} $Pa.m^3/sec.He$
Operating Temperature:-10 - 70℃	Internal Surface Roughness:Ra ≤ 0.13μm
Flow Coefficient (Cv):0.5	

Main Material Components	
Valve Body	316L /316L（VIM+VAR）
Diaphragm	Ni-Co alloy /UNS R30003
Gasket	PCTFE
Handle	6063 Aluminum Alloy

Dimensions (mm)







Connection Type	L		H	h	D
74M	29	±0.25	91	11.2	47.4
74MS	35.3	±0.25	91	11.2	47.4
74F	35.3	±0.25	91	11.2	47.4
T4	26.9	±0.25	91	11.2	47.4
T6	33.7	±0.25	91	11.2	47.4
T8	33.7	±0.25	91	11.2	47.4
78M	35.3	±0.25	91	11.2	47.4
78MS	49	±0.25	91	11.2	47.4
78F	49	±0.25	91	11.2	47.4

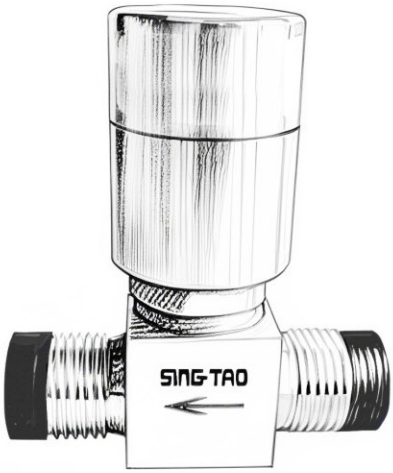
Note: Dimensions are for reference only， final specifications subject to physical product. Custom sizing available upon request.

Coding Rules

Tag Number		1	2	3、4、5	3、4、5	6	7	8
Code	DVM	I	0.1	74M	74M	V2	B	-
Property Definition	Model	Flow Path Type	Operating Pressure	Inlet Connection	Outlet Connection	Valve Body Material	Handle Color	Options

Tag Number	Code	Flow Path Type
1	I	Straight
	JL	Right-Angle (L)
	JR	Right-Angle (R)
	BI	Backside Inlet
	T	Three-Way
	L	Three-Way (L)
	R	Three-Way (R)
	TT	Three-Way (T)
	TL	Three-Way (TL)
	TR	Three-Way (TR)
	HH	Four-Way
	FS	Four-Way (FS)
2	Code	Operating Pressure
	01	0 ~ 300Psig
3、4、5	Code	Inlet/ Outlet Connection
	7	UCR
	T	Tube stubs
	4	1/4"
	6	3/8"
	8	1/2"
	M	Integral Male
	F	Female
	MS	Male Swivel
6	Code	Valve Body Material
	SS	316L
	V2	316L(VIM+VAR)
7	Code	Handle Color
	R	Red
	B	Blue
8	Code	Options
	HF	High-Flow

DVPH SERIES PNEUMATIC DIAPHRAGM VALVES



Utilizing a diaphragm-type hard-sealed structure with metallic bellows and fully welded valve body design to achieve ultra-low leakage rates. Integrated with high-precision pneumatic actuators for rapid response performance. The valve body is constructed from 316L stainless steel, while the seat utilizes perfluoroelastomer sealing, enabling safe handling of ultra-high-purity gases and highly toxic/corrosive media in semiconductor applications. Specifically designed for stringent process gas requirements in ULSIC manufacturing.

Features:

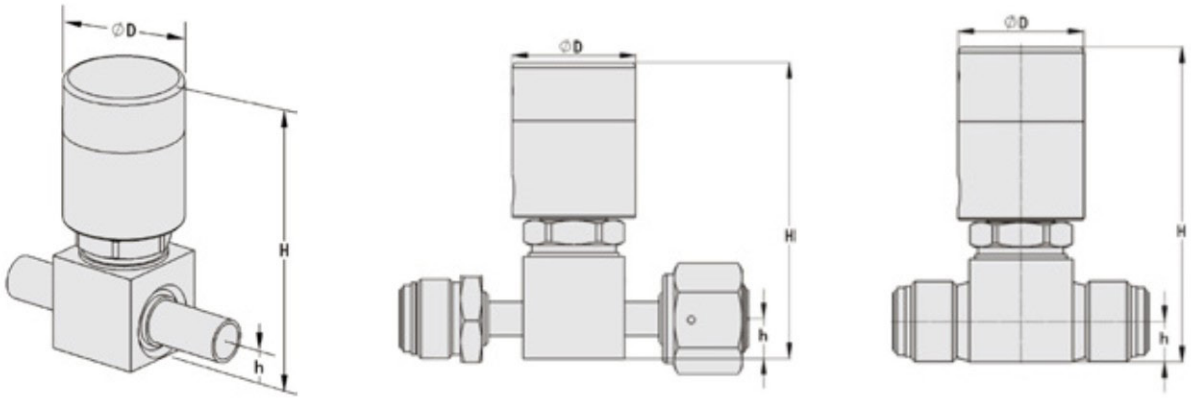
- Ideal for ultra-high-purity gas applications
- Individual helium mass spectrometer leak testing per valve
- Diaphragm material: Ni-Co alloy/UNS R30003
- Exceptional lifespan(4,000,000-cycle validated lifespan)
- Rapid, repeatable pneumatic actuator performance

Technical Data

Operating Pressure: Vacuum to 300 psig	Internal Leakage Rate:≤ 1×10^{-11} Pa.m^3/sec.He
Burst Pressure:3000psig	External Leakage Rate:≤ 1×10^{-11} Pa.m^3/sec.He
Operating Temperature:-10 - 70℃	Internal Surface Roughness:Ra ≤ 0.13μm
Flow Coefficient (Cv):0.5	

Main Material Components	
Valve Body	316L /316L(VIM+VAR)
Diaphragm	Ni-Co alloy /UNS R30003
Gasket	PCTFE

Dimensions (mm)



Connection Type	L		H	h	D
74M	29	±0.25	88	11.2	34.8
74MS	35.3	±0.25	88	11.2	34.8
74F	35.3	±0.25	88	11.2	34.8
T4	26.9	±0.25	88	11.2	34.8
T6	33.7	±0.25	88	11.2	34.8
T8	33.7	±0.25	88	11.2	34.8
78M	35.3	±0.25	88	11.2	34.8
78MS	49	±0.25	88	11.2	34.8
78F	49	±0.25	88	11.2	34.8

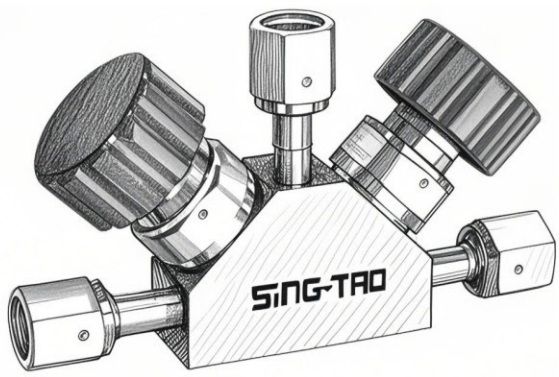
Note: Dimensions are for reference only， final specifications subject to physical product. Custom sizing available upon request.

Coding Rules

Tag Number		1	2	3、4、5	3、4、5	6	7	8
Code	DVPH	I	01	74M	74M	V2	NC	-
Property Definition	Model	Flow Path Type	Operating Pressure	Inlet Connection	Outlet Connection	Valve Body Material	Actuator	Options

Tag Number	Code	Flow Path Type
1	I	Straight
	JL	Right-Angle (L)
	JR	Right-Angle (R)
	BI	Backside Inlet
	T	Three-Way
	L	Three-Way (L)
	R	Three-Way (R)
	TT	Three-Way (T)
	TL	Three-Way (TL)
	TR	Three-Way (TR)
	HH	Four-Way
	FS	Four-Way (FS)
2	Code	Operating Pressure
	01	0~300Psig
3、4、5	Code	Inlet/ Outlet Connection
	7	UCR
	T	Tube stubs
	4	1/4"
	6	3/8"
	8	1/2"
	M	Integral Male
	F	Female
	MS	Male Swivel
6	Code	Valve Body Material
	SS	316L
	V2	316L(VIM+VAR)
7	Code	Actuator
	NC	Normally closed
8	Code	Options
	PI	Polyimide Seat
	PFA	PFA Seat

DVB SERIES DUAL-PORT THREE-WAY DIAPHRAGM VALVES



Featuring a compact integrated valve body design with an optimized purge structure. The absence of internal threads, springs, or redundant components minimizes dead volume and enhances cleanliness. Employing a diaphragm-type hard-sealed structure to achieve ultra-low leakage rates, this valve is engineered for ultra-high-purity gases and highly toxic/corrosive media in semiconductor applications, meeting process gas demands in ULSIC manufacturing.

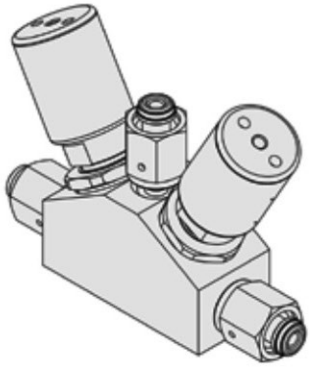
Features:

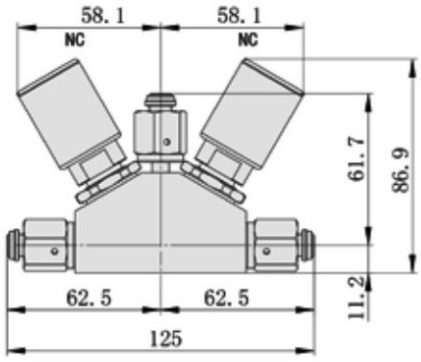
- Ideal for ultra-high-purity gas applications
- Diaphragm material: Ni-Co alloy/UNS R30003
- Rapid, repeatable pneumatic actuator performance
- Individual helium mass spectrometer leak testing per valve
- No internal threads or springs, significantly reducing particle generation and gas entrapment

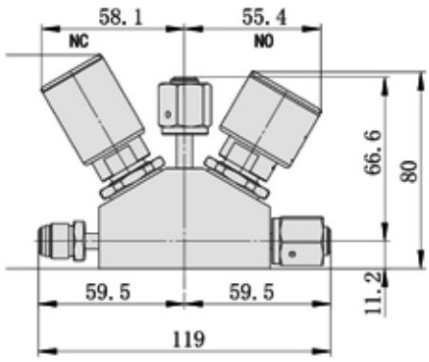
Technical Data

Operating Pressure:Vacuum to 150 psig	Internal Leakage Rate:≤ 1×10^{-11} $Pa.m^3/sec.He$
Burst Pressure:3000psig	External Leakage Rate:≤ 1×10^{-11} $Pa.m^3/sec.He$
Operating Temperature:-10 - 80℃	Internal Surface Roughness:Ra ≤ 0.13μm
Flow Coefficient (Cv):0.3	

Dimensions (mm)







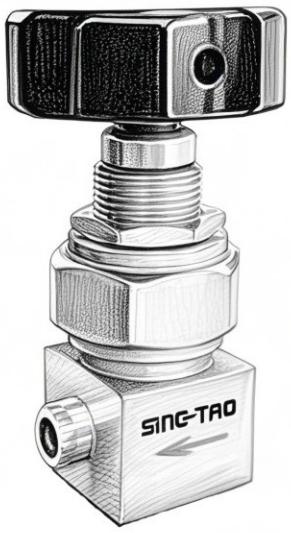
Note: Dimensions are for reference only, final specifications subject to physical product. Custom sizing available upon request.

Coding Rules

Tag Number		1	2	3、4、5	3、4、5	3、4、5	6	7、8	9
Code	DVB	BY	01	74F	74F	74F	V2	NC	-
Property Definition	Model	Flow Path Type	Operating Pressure	Inlet Connection	Outlet Connection	Inlet/ Outlet Connection	Valve Body Material	Actuator	Options

Tag Number	Code	Flow Path Type
1	BY	Three-Way(Y)
	BV	Three-Way(V)
2	Code	Operating Pressure
	01	0 ~ 150Psig
3、4、5	Code	Inlet Connection、Outlet Connection、Inlet/ Outlet Connection
	7	UCR
	4	1/4"
	M	Integral Male
	MS	Male Swivel
6	Code	Valve Body Material
	SS	316L
	V2	316L(VIM+VAR)
7、8	Code	Actuator
	PA1	Left Actuator
	PA2	Right Actuator
	NC	Normally closed
	NO	Normally open
9	Code	Options
	A	119×66.6
	Default	125×61.7

DVH SERIES HIGH-PRESSURE DIAPHRAGM VALVES



Achieving ultra-low leakage rates through a diaphragm-type hard-sealed structure, the all-metal housing eliminates packing while incorporating no internal threads or springs to ensure high cleanliness, operational stability, and extended lifespan. With a pressure rating of 3500 psig at ambient temperature, this valve is ideal for applications demanding stringent cleanliness and pressure tolerance.

Features:

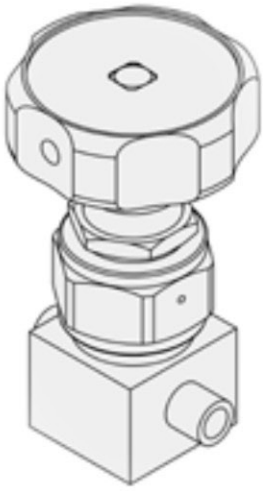
- No internal threads or springs
- 3500 psig pressure rating at ambient temperature
- Diaphragm material: Ni-Co alloy/UNS R30003
- Individual helium mass spectrometer leak testing per valve
- ~1¾ turns from fully open to closed position

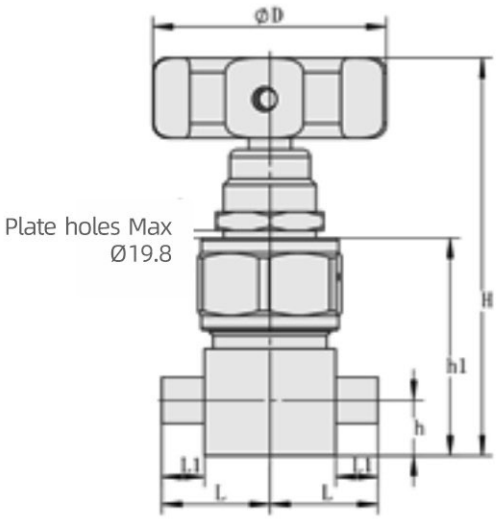
Technical Data

Operating Pressure: Vacuum to 3500 psig	Internal Leakage Rate:≤ 1×10^{-11} $Pa.m^3/sec.He$
Flow Coefficient (Cv):0.3	External Leakage Rate:≤ 1×10^{-11} $Pa.m^3/sec.He$
Operating Temperature:-73 - 121℃	Internal Surface Roughness:Ra ≤ 0.13μm

Main Material Components	
Valve Body	316L
Diaphragm	Ni-Cr-Mo alloy/UNS N06022
Gasket	PCTFE
Handle	6063 Aluminum Alloy

Dimensions (mm)





Connection Type	L		h	hl	H	A	B	D
74M	29.2	±0.25	11.4	44.8	81.9	28.7	26.9	48
74MS/74F	35.35	±0.25	11.4	44.8	81.9	28.7	26.9	48
W4	22.2	±0.25	11.4	44.8	81.9	28.7	26.9	48
T6	22.2	±0.25	11.4	44.8	81.9	28.7	26.9	48

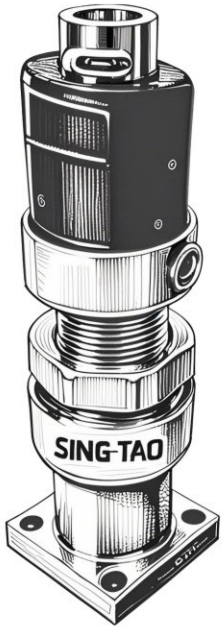
Note: Dimensions are for reference only, final specifications subject to physical product. Custom sizing available upon request.

Coding Rules

Tag Number		1	2	3、4、5	3、4、5	6	7
Code	DVH	I	02	W4	T6	SS	B
Property Definition	Model	Flow Path Type	Operating Pressure	Inlet Connection	Outlet Connection	Valve Body Material	Handle Color

Tag Number	Code	Flow Path Type
1	I	Straight
	JL	Right-Angle (L)
	JR	Right-Angle (R)
	BI	Backside Inlet
	T	Three-Way
	L	Three-Way (L)
	R	Three-Way (R)
	TT	Three-Way (T)
	TL	Three-Way (TL)
	TR	Three-Way (TR)
	HH	Four-Way
	FS	Four-Way (FS)
2	Code	Operating Pressure
	02	0 ~ 3500Psig
3、4、5	Code	Inlet/ Outlet Connection
	7	UCR
	W	Socket Weld
	T	Tube stubs
	4	1/4"
	6	3/8"
	M	Integral Male
	F	Female
	MS	Male Swivel
6	Code	Valve Body Material
	SS	316L
7	Code	Handle Color
	R	Red
		Blue

DVI SERIES DIAPHRAGM VALVES



Featuring a diaphragm-type hard-sealed structure with minimal leakage, this valve is designed for ultra-high-purity gases and toxic/corrosive media in semiconductor applications. Its dead-zone-free flow path design facilitates efficient purging to eliminate gas retention. Packing-free diaphragm sealing ensures gas purity, meeting rigorous requirements for stable, safe, and high-purity gas delivery in semiconductor manufacturing.

Features:

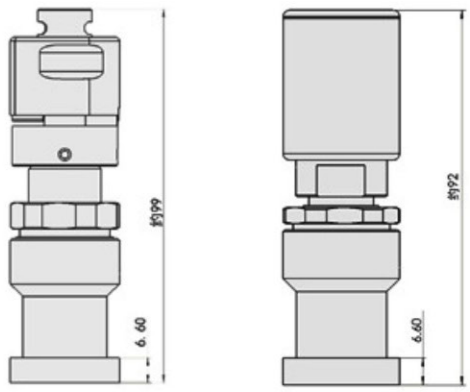
- Compatible with modular gas distribution systems
- Dead-zone-free flow path design for easy purging
- Individual helium mass spectrometer leak testing per valve

Technical Data

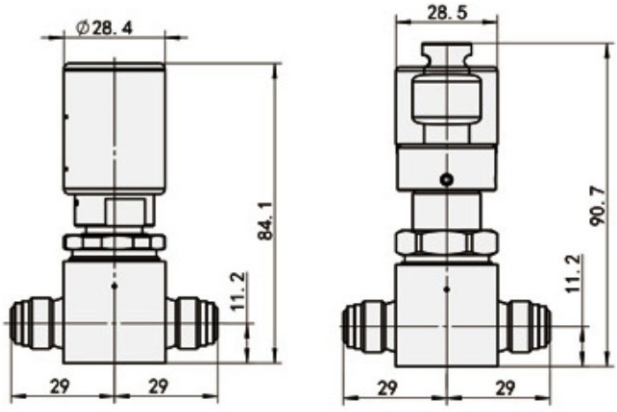
Operating Pressure:150psig	Internal Leakage Rate:≤ 1×10^{-11} $Pa.m^3/sec.He$
Burst Pressure:450psig	External Leakage Rate:≤ 1×10^{-11} $Pa.m^3/sec.He$
Operating Temperature:-10 - 80℃	Internal Surface Roughness:Ra ≤ 0.13μm
Flow Coefficient (Cv):0.1/0.3HF	

Main Material Components	
Valve Body	316L/316L（VIM+VAR）
Diaphragm	Ni-Co alloy /UNS R30003
Gasket	PCTFE

Dimensions (mm)

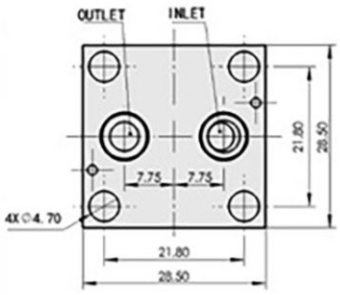


DVI

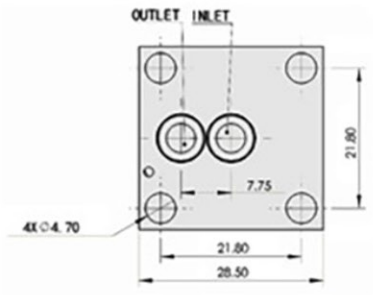


VCR

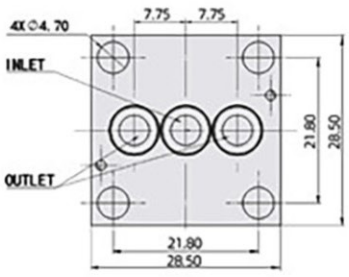
DVI Flow Path Configuration2P



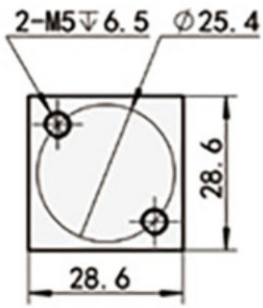
DVI Flow Path Configuration2P1



DVI Flow Path Configuration3P



VCR



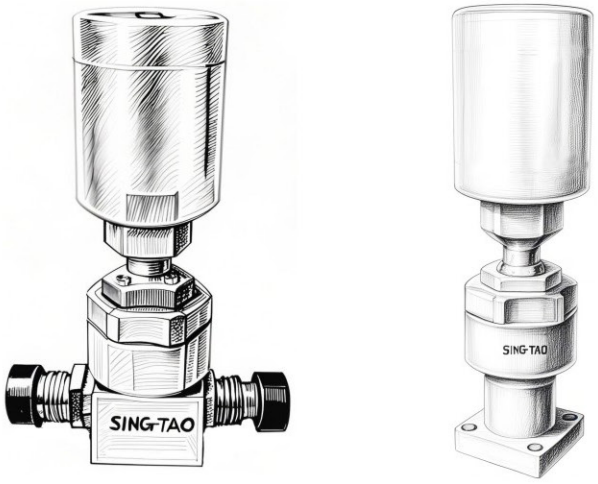
Note: Dimensions are for reference only, final specifications subject to physical product. Custom sizing available upon request.

Coding Rules

Tag Number	1	2	3	4	5	5	6
Code	MHDV	2P	1.125C	V2	B	RNC	-
Property Definition	Actuation Type	Flow Path Type	Connection Type	Valve Body Material	Handle Color	Actuator	Options

Tag Number	Code	Flow Path Type
1	MHDV	Manual Diaphragm Valve
	MPDV	Pneumatic Diaphragm Valve
2	Code	Flow Path Configuration
	2P	2-Port
	3P	3-Port
	4P	4-Port
	I	Straight
	JL	Right-Angle (L)
	JR	Right-Angle (R)
	BI	Backside Inlet
	T	Three-Way
	L	Three-Way (L)
	R	Three-Way (R)
	TT	Three-Way (T)
	TL	Three-Way (TL)
	TR	Three-Way (TR)
	HH	Four-Way
	FS	Four-Way (FS)
3	Code	Connection Type
	1.125C	1-1/8" C-seal
	1.5C	1-1/2" C-seal
	74F	1/4" UCR Female
	74M	1/4" UCR Integral Male
	74MS	1/4" UCR Male Swivel
4	Code	Valve Body Material
	SS	316L
	V2	316L(VIM+VAR)
5	Code	Handle Color
	R	Red
	B	Blue
	Code	Actuator
	NC	Normally closed
	NO	Normally open
6	Code	Options
	HF	High-Flow

QVP SERIES DIAPHRAGM VALVES



Engineered with a diaphragm-type hard-sealed structure for ultra-low leakage, extended lifespan, and rapid response. High-temperature-resistant actuator configurations are available. Designed for atomic layer deposition (ALD) systems, this valve delivers ultra-high-purity and toxic/corrosive gases in integrated circuit wafer production. The high-temperature actuator ensures reliable performance in elevated-temperature environments.

Features:

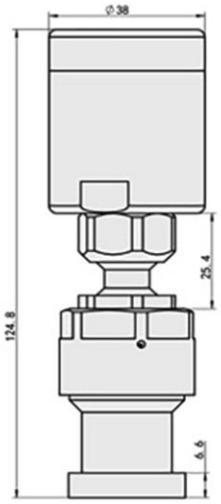
- Long lifespan under rapid cycling
- High-temperature-resistant actuator
- Individual helium mass spectrometer leak testing per valve
- Optional modular surface-mount, tube weld, and VCR end connections

Technical Data

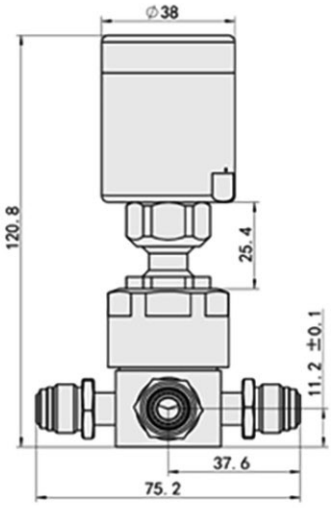
Operating Pressure: Vacuum to 145 psig	Internal Leakage Rate:≤ 1×10^{-11} $Pa.m^3/sec.He$
Operating Temperature: -10 - 70℃,0 - 200℃(High temperature type)	External Leakage Rate:≤ 1×10^{-11} $Pa.m^3/sec.He$
Flow Coefficient (Cv):0.27/0.62	Internal Surface Roughness:Ra ≤ 0.13μm

Main Material Components	
Valve Body	316L(VIM+VAR)
Diaphragm	Elgiloy
Gasket	PFA
Pneumatic Actuators	6061 Aluminum Alloy

Dimensions (mm)

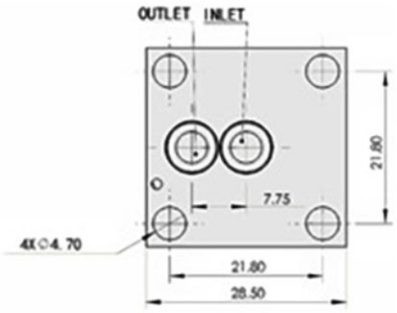


DVI

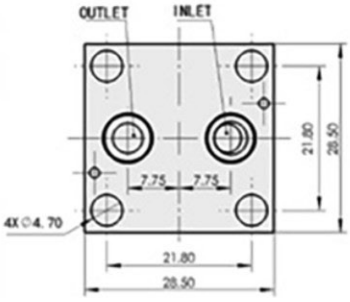


VCR

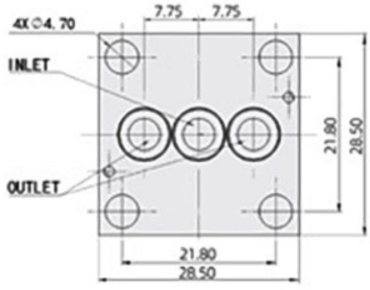
DVI Flow Path Configuration2P



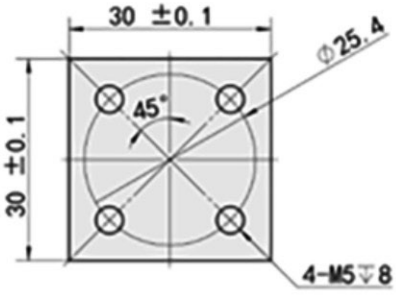
DVI Flow Path Configuration2P1



DVI Flow Path Configuration3P



VCR



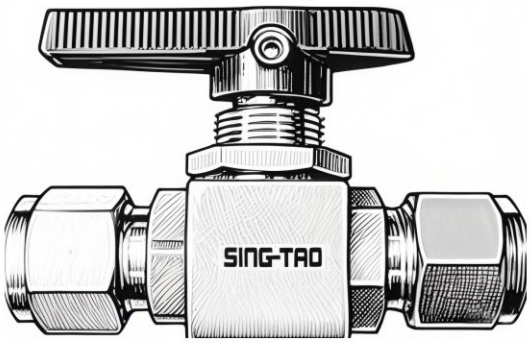
Note: Dimensions are for reference only, final specifications subject to physical product. Custom sizing available upon request.

Coding Rules

Tag Number	1	2	3	3	4	5	6	7
Code	QVP	I	74M	74M	V2	NC	HT	SV
Property Definition	Actuation Type	Flow Path Type	Connection Type	Valve Body Material	Actuation Type	Actuator	Operating Temperature	Accessories

Tag Number	Code	Flow Path Type
1	QVP	Quick-Response Pneumatic Diaphragm Valve
	QVPH	High-Flow Quick-Response Pneumatic Diaphragm Valve
2	Code	Flow Path Configuration
	2P	2-Port
	3P	3-Port
	I	Straight
	JL	Right-Angle (L)
	JR	Right-Angle (R)
	BI	Backside Inlet
	T	Three-Way
	L	Three-Way (L)
	R	Three-Way (R)
	TT	Three-Way (T)
	TL	Three-Way (TL)
	TR	Three-Way (TR)
	HH	Four-Way
	FS	Four-Way (FS)
3	Code	Connection Type
	1.125C	1-1/8" C-seal
	1.5C	1-1/2" C-seal
	74F	1/4" UCR Female
	74M	1/4" UCR Integral Male
4	Code	Valve Body Material
	V2	316L(VIM+VAR)
5	Code	Actuator
	NC	Normally closed
	NO	Normally open
6	Code	Operating Temperature
	HT	High-Temperature Configuration
	ST	Standard-Temperature Configuration
7	Code	Accessories
	S	Position Sensor
	V	Solenoid Valve
	H	Heating Cartridge Mounting Hole

BV SERIES BALL VALVES



Optimized transmission mechanism design reduces operating torque, while lightweight materials and compact construction minimize valve size and weight. Each valve undergoes nitrogen/compressed air leak testing under rated pressure to ensure leakage below industry standards, balancing operational ease and sealing reliability.

Features:

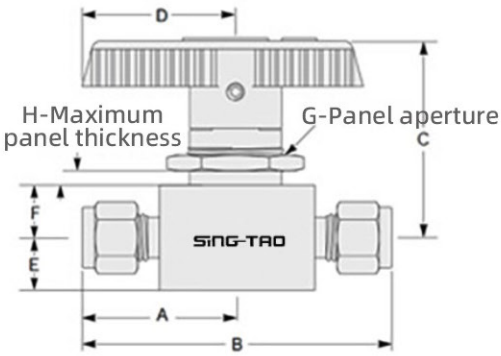
- Compact and lightweight
- 90° rotation for open/close operation
- Tube fitting and NPT threaded connections

Technical Data

Connection Type	Specification	Nominal Diameter in. (mm)	Flow Coefficient (Cv)	Operating Pressure	Operating Temperature
Tube Fitting	1/16"	0.052(1.3)	0.1	3000PSI	-53 - 158℃
	1/8"	0.093(2.4)	0.2		
	1/4"	0.125(3.2)	0.6		
	1/4"	0.187(4.8)	1.4		
	3/8"	0.187(4.8)	1.5		
	3/8"	0.281(7.1)	6.0		
	1/2"	0.406(10.3)	12.0		
	3/4"	0.406(10.3)	6.4		
	3mm	0.093(2.4)	0.2		
	6mm	0.125(3.2)	0.6		
	6mm	0.187(4.8)	1.4		
	8mm	0.187(4.8)	1.5		
	10mm	0.281(7.1)	6.0		
	12mm	0.406(10.3)	12.0		
NPT Internal Thread	1/8"	0.125(3.2)	0.5		
	1/8"	0.187(4.8)	1.2		
	1/4"	0.187(4.8)	0.9		
	1/4"	0.281(7.1)	3		
	3/8"	0.281(7.1)	2.6		
	1/2"	0.406(10.3)	6.3		
NPT External Thread	1/4"	0.187(4.8)	1.2		
ISO Tapered Internal Thread	1/4"	0.187(4.8)	0.9		
	3/8"	0.281(7.1)	2.6		
	1/2"	0.406(10.3)	6.3		

Main Material Components	
Valve Body	316L
Valve Ball	316L
Seat	316L
Gasket	PTFE

Dimensions (mm)



Note: Dimensions are for reference only, final specifications subject to physical product. Custom sizing available upon request.

Connection Type	Specification	Nominal Diameter in. (mm)	A	B	C	D	E	F	G	H	I
Tube Fitting	1/16"	0.052(1.3)	0.84(21.3)	1.68(42.6)	1.36(34.5)	1.12(28.4)	0.28(7.1)	0.34(8.6)	0.25(6.4)	0.59(15.1)	-
	1/8"	0.093(2.4)	1.01(25.7)	2.02(51.4)	1.36(34.5)	1.12(28.4)	0.28(7.1)	0.34(8.6)	0.25(6.4)	0.59(15.1)	0.97(24.6)
	1/4"	0.125(3.2)	1.10(27.9)	2.20(55.8)	1.36(34.5)	1.12(28.4)	0.28(7.1)	0.34(8.6)	0.25(6.4)	0.59(15.1)	1.07(27.2)
	1/4"	0.187(4.8)	1.20(30.5)	2.40(61.0)	1.47(37.3)	1.53(38.9)	0.38(9.7)	0.44(11.2)	0.19(4.8)	0.78(19.8)	1.17(29.7)
	3/8"	0.187(4.8)	1.29(32.8)	2.58(65.5)	1.47(37.3)	1.53(38.9)	0.38(9.7)	0.44(11.2)	0.19(4.8)	0.78(19.8)	1.29(32.8)
	3/8"	0.281(7.1)	1.52(38.6)	3.05(77.5)	2.07(52.6)	2.00(50.8)	0.56(14.2)	0.56(14.2)	0.38(9.7)	1.13(28.6)	1.43(36.3)
	1/2"	0.406(10.3)	1.96(49.8)	3.92(99.6)	2.43(61.7)	3.00(76.2)	0.69(17.5)	0.69(17.5)	0.38(9.7)	1.50(38.1)	1.74(44.2)
	3/4"	0.406(10.3)	1.96(49.8)	3.92(99.6)	2.43(61.7)	3.00(76.2)	0.69(17.5)	0.69(17.5)	0.38(9.7)	1.50(38.1)	1.74(44.2)
	3mm	0.093(2.4)	1.01(25.7)	2.02(51.4)	1.36(34.5)	1.12(28.4)	0.28(7.1)	0.34(8.6)	0.25(6.4)	0.59(15.1)	0.97(24.6)
	6mm	0.125(3.2)	1.10(27.9)	2.20(55.8)	1.36(34.5)	1.12(28.4)	0.28(7.1)	0.34(8.6)	0.25(6.4)	0.59(15.1)	1.07(27.2)
	6mm	0.187(4.8)	1.20(30.5)	2.40(61.0)	1.47(37.3)	1.53(38.9)	0.38(9.7)	0.44(11.2)	0.19(4.8)	0.78(19.8)	1.17(29.7)
	8mm	0.187(4.8)	1.23(31.2)	2.46(62.5)	1.47(37.3)	1.53(38.9)	0.38(9.7)	0.44(11.2)	0.19(4.8)	0.78(19.8)	1.17(29.7)
	10mm	0.281(7.1)	1.53(38.9)	3.06(77.8)	2.07(52.6)	2.00(50.8)	0.56(14.2)	0.56(14.2)	0.38(9.7)	1.13(28.6)	1.43(36.3)
	12mm	0.406(10.3)	1.96(49.8)	3.92(99.6)	2.43(61.7)	3.00(76.2)	0.69(17.5)	0.69(17.5)	0.38(9.7)	1.50(38.1)	1.74(44.2)
NPT Internal Thread	1/8"	0.125(3.2)	0.81(20.6)	1.62(41.1)	1.36(34.5)	1.12(28.4)	0.28(7.1)	0.34(8.6)	0.25(6.4)	0.59(15.1)	0.81(20.6)
	1/8"	0.187(4.8)	1.00(25.4)	2.00(50.8)	1.47(37.3)	1.53(38.9)	0.38(9.7)	0.44(11.2)	0.19(4.8)	0.78(19.8)	1.00(25.4)
	1/4"	0.187(4.8)	1.03(26.2)	2.06(52.4)	1.47(37.3)	1.53(38.9)	0.38(9.7)	0.44(11.2)	0.19(4.8)	0.78(19.8)	1.03(26.2)
	1/4"	0.281(7.1)	1.25(31.8)	2.50(63.5)	2.07(52.6)	2.00(50.8)	0.56(14.2)	0.56(14.2)	0.38(9.7)	1.13(28.6)	1.25(3.18)
	3/8"	0.281(7.1)	1.25(31.8)	2.50(63.5)	2.07(52.6)	2.00(50.8)	0.56(14.2)	0.56(14.2)	0.38(9.7)	1.13(28.6)	1.25(3.18)
	1/2"	0.406(10.3)	1.56(39.6)	3.12(79.2)	2.43(61.7)	3.00(76.2)	0.69(17.5)	0.69(17.5)	0.38(9.7)	1.50(38.1)	1.56(39.6)
NPT External Thread	1/4"	0.187(4.8)	1.00(25.4)	2.00(50.8)	1.47(37.3)	1.53(38.9)	0.38(9.7)	0.44(11.2)	0.19(4.8)	0.78(19.8)	1.03(26.2)
ISO Tapered Internal Thread	1/4"	0.187(4.8)	1.03(26.2)	2.06(52.4)	1.47(37.3)	1.53(38.9)	0.38(9.7)	0.44(11.2)	0.19(4.8)	0.78(19.8)	-
	3/8"	0.281(7.1)	1.25(31.8)	2.50(63.5)	2.07(52.6)	2.00(50.8)	0.56(14.2)	0.56(14.2)	0.38(9.7)	1.13(28.6)	-
	1/2"	0.406(10.3)	1.56(39.6)	3.12(79.2)	2.43(61.7)	3.00(76.2)	0.69(17.5)	0.69(17.5)	0.38(9.7)	1.50(38.1)	-

Coding Rules

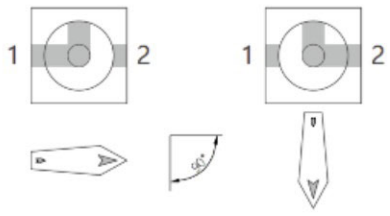
Tag Number		1	2、3、4	2、3、4	5	6
Code	BV	1	268	268	BLA	HF
Property Definition	Model	Flow Path Type	Inlet Connection	Outlet Connection	Handle Color	Options

Tag Number	Code	Flow Path Type
1	1	2-Port, Straight Path
	1L	2-Port Straight Type, L-Flow Path
	1T	2-Port Straight Type, T-Flow Path
	2	2-Port Straight Type, T-Flow Path
	3	3-Port Switching Type
	3L	3-Port Switching Type, L-Flow Path
	3I	3-Port Switching Type, I-Flow Path
	3T	3-Port Switching Type, T-Flow Path
	4	4-Port Cross Type
	4L	4-Port Cross Type, L-Flow Path
	4I	4-Port Cross Type, I-Flow Path
	4T	4-Port Cross Type, T-Flow Path
	5	5-Port Switching Type
	5L	5-Port Switching Type, L-Flow Path
	5I	5-Port Switching Type, I-Flow Path
	5T	5-Port Switching Type, T-Flow Path
	6	6-Port Cross Type
	7	7-Port Switching Type

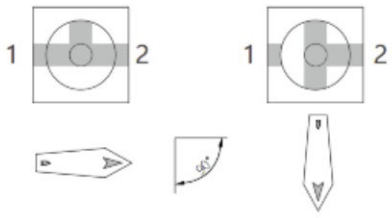
Tag Number	Code	Inlet Connection
2、3、4	5	NPT
	6	Tube Fitting
	8	ISO Thread
	E	Other
	Code	Outlet Connection
	1	1/16"
	2	1/8"
	4	1/4"
	6	3/8"
	8	1/2"
	12	3/4"
	M3	3mm
	M6	6mm
	M8	8mm
	M10	10mm
	M12	12mm
	Code	Connection
	F	Female
5	Code	Handle Color
	BLA	Black
	B	Blue
	G	Green
	R	Red
6	Code	Options
	HF	High-Flow
	LF	Low-Flow

Ball valve flow channel

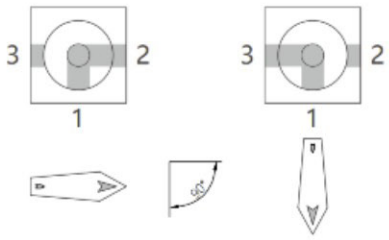
Two way - L-shaped flow channel



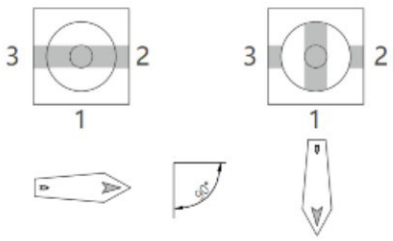
Two way - T-shaped flow channel



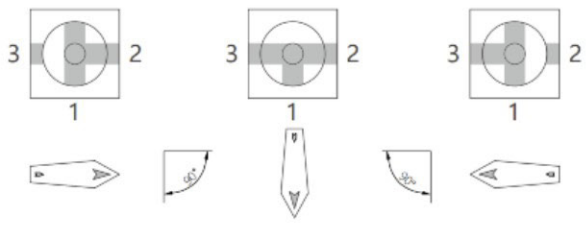
Three way L-shaped flow channel



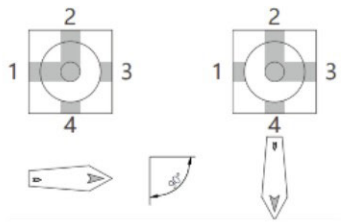
Three way I-shaped flow channel



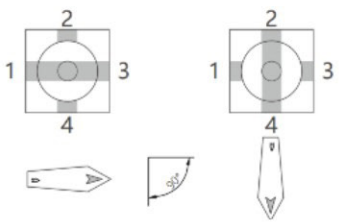
Three way T-shaped flow channel



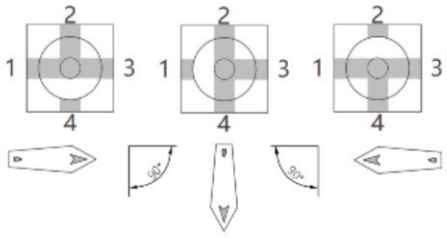
Four way L-shaped flow channel



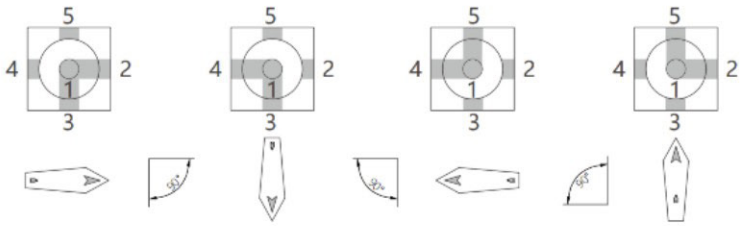
Four way I-shaped flow channel



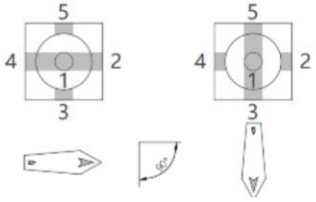
Four way T-shaped flow channel



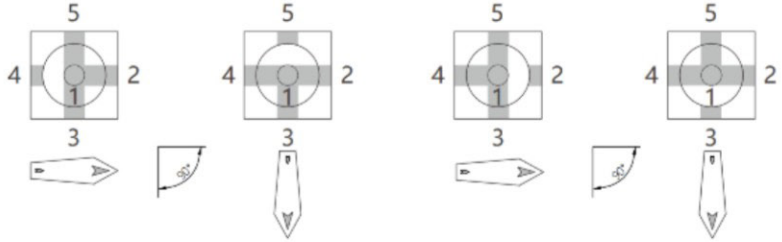
Five way L-shaped flow channel



Five way I-shaped flow channel



Five way T-shaped flow channel



CV CHECK VALVES

Incorporating precision preset cracking pressure technology and omnidirectional installation capability. The elastomeric sealing seat with dynamic compensation ensures reliable sealing and silent operation, effectively preventing backflow while optimizing installation flexibility and sealing performance.

Features:

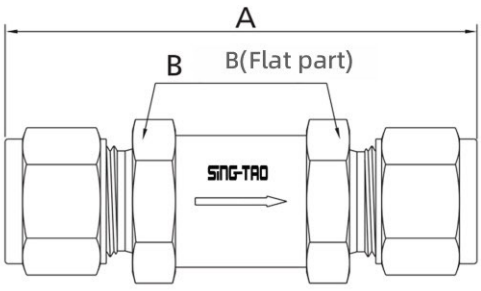
- Fixed cracking pressure with omnidirectional installation
- Maximum working pressure: 3000 PSI (206 bar)
- Elastomeric sealing seat for silent backflow prevention

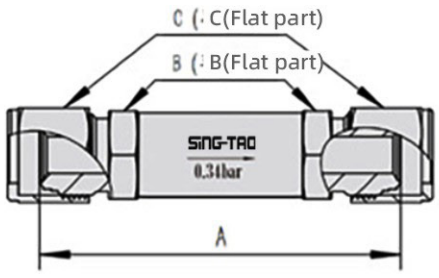
Technical Data

Metric Ferrule	6mm	4.8	0.47	6000PSI (413bar)	-25 - 232℃
	10mm	8	1.68		
Imperial Ferrule	1/4"	4.8	0.47		
	3/8"	7	1.47		
	1/2"	10.2	2.21		
NPT Thread	1/4"	4.8	0.47		
UCR	1/4"	4.8	0.47		
	1/2"	10.2	2.21		

Main Material Components	
Valve Body	316L/316L(VIM+VAR)
Lift Core	316L/316L(VIM+VAR)
Valve Body	316L/316L(VIM+VAR)
Seals	FKM / FFKM
Spring	316L/316L(VIM+VAR)

Dimensions (mm)





Nominal Opening Pressure psi (bar)	1/3(0.03)	1(0.07)	5(0.34)	10(0.68)	25(1.7)
Opening Pressure Range psi (bar)	Max3(0.21)	Max4(0.28)	3-9(0.2-0.62)	7-15(0.48-1.0)	20-30(1.3-2.0)
Reclosing Pressure psi (bar)	Max6(0.42)	Max5(0.4)	Max2(0.14)	Minimum3(0.2)	Minimum17(1.1)
Note	※ Cracking Pressure: The pressure differential between inlet and outlet at which initial fluid flow occurs through the valve when achieved. ※ Resealing Pressure: The pressure differential between inlet and outlet at which no fluid flow occurs through the valve when achieved. ※ After prolonged non-activation, the valve's initial cracking pressure may exceed the preset value.				

Connection Type	H	A	B	D
Metric Ferrule	6mm	60	17	14
	10mm	84	22	19
Imperial Ferrule	1/4"	60	17	14
	3/8"	84	22	19
	1/2"	84	22	22

Connection Type	H	A	B	D
NPT Internal Thread	1/4"	50	17	14
NPT External Thread	1/4"	50	17	14
VCR	1/4"	59.5	17	-
	1/2"	99.2	24	-

Note: Dimensions are for reference only, final specifications subject to physical product. Custom sizing available upon request.

Coding Rules

Tag Number		1、2、3	1、2、3	4	5
Code	CV	78M	78M	SS	3
Property Definition	Model	Inlet Connection	Outlet Connection	Material	Opening Pressure

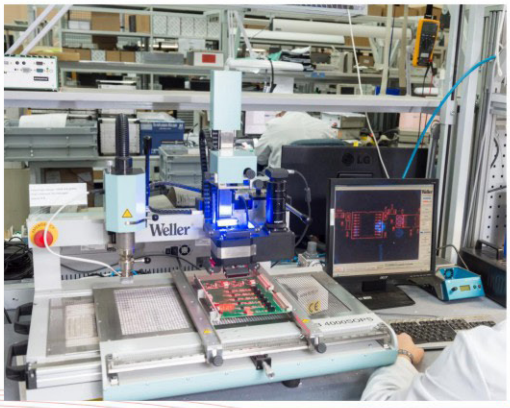
Tag Number	Code	Inlet Connection
1、2、3	5	NPT
	6	Ferrule Fitting
	7	UCR
	E	Other
	Code	**Outlet Connection**
	4	1/4"
	6	3/8"
	8	1/2"
	M6	6mm
	M10	10mm
	E	Other
	Code	**Outlet Connection**
	SS	External Thread
	V2	Internal Thread
4	**Code**	**Material**
	SS	316L
	V2	316L(VIM+VAR)
5	**Code**	**Opening Pressure**
	1	0.03Bar
	2	0.07Bar
	3	0.34Bar
	4	0.68Bar
	5	1.7Bar

Application scenarios

Biological medicine

Daily chemicals and beverages

Food



Electronic semiconductor

QUALITY FIRST

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