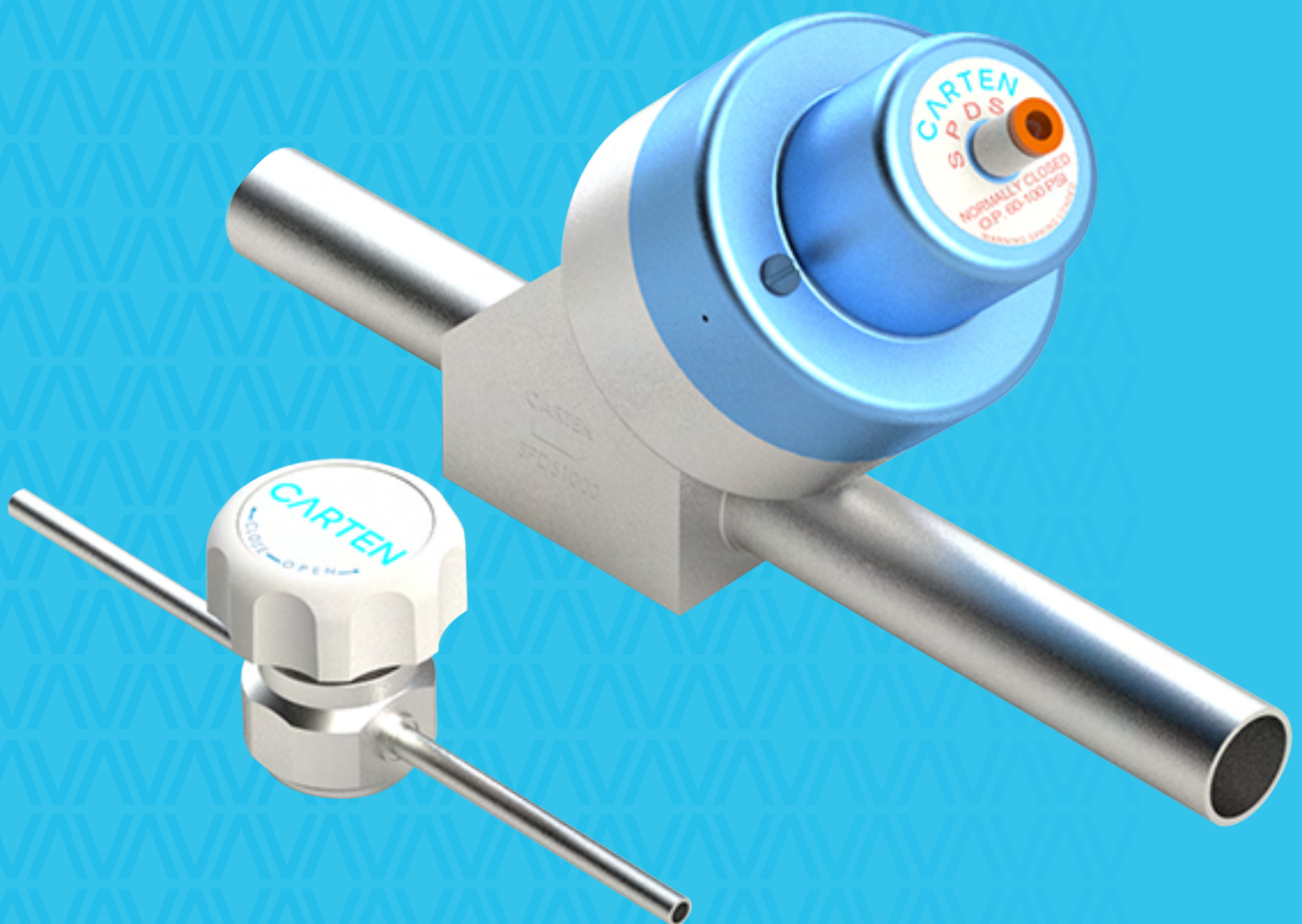


CARTEN

FLOW SOLUTIONS - **WE GO BEYOND**

INTRODUCING CARTEN'S SPDS SERIES

ULTRA-HIGH PURITY
DIAPHRAGM VALVES



SPDS Series

Ultra-High Purity Diaphragm Valves

The UHP diaphragm valve-of-choice for semiconductor applications allows the highest flow rates (Cv) in the industry.

Key Features

Available in line sizes up to 1"

Metal-to-metal external seals

Pneumatic or manual interchangeability

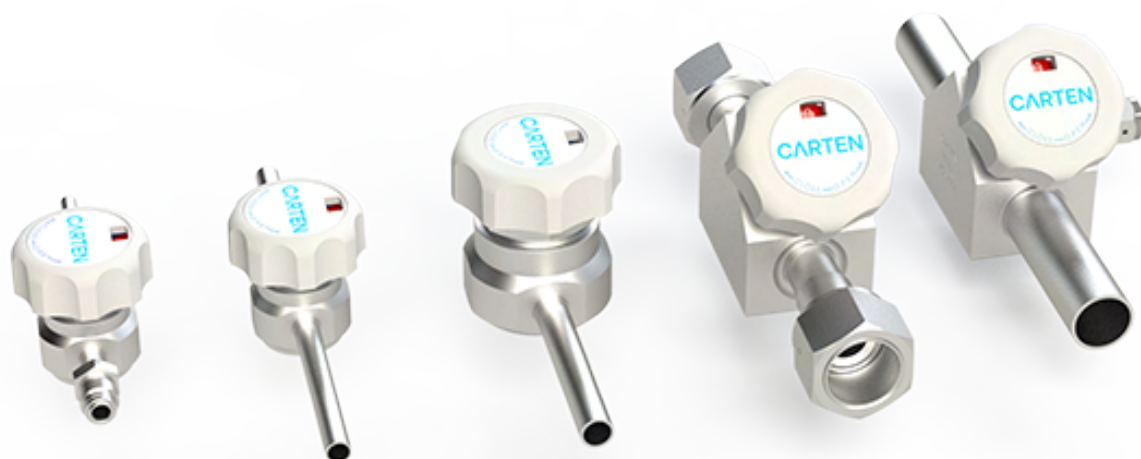
Standard & bespoke multiport / block options

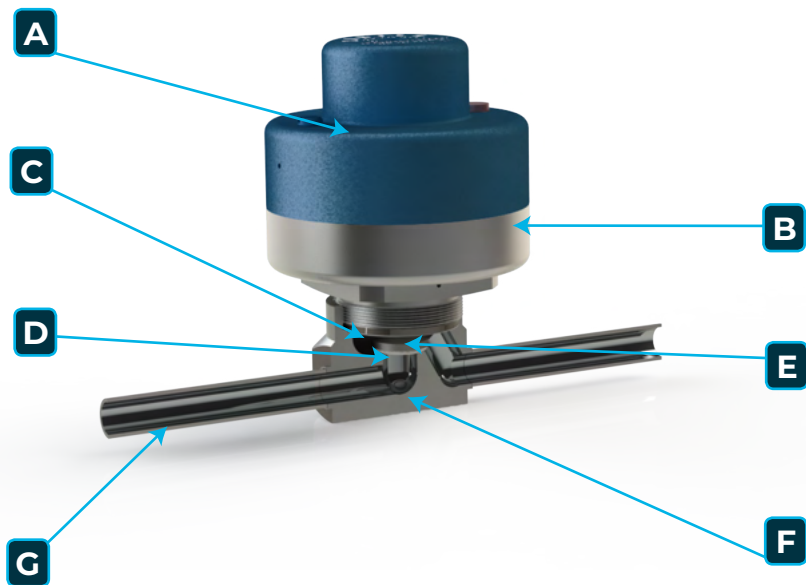
Typical Applications

Lateral points-of-connection (POC), tool hook-up shut-off, ultra-high-purity gas control for point-of-use service, valve manifold boxes (VMB), gas distribution panels, gas sticks, and critical application containment functionality.

Key Specifications

Materials of Construction	Cleanliness	Specifications	Options
316L stainless body	Manufactured in ISO Class 4 Cleanroom	Manual 375 PSI Max Pneumatic 250 Psi Max	Solenoid Actuation (Pneumatic only)
Elgiloy Diaphragm	Zero particles @0.1µm in static conditions	<10Ra micro-inch surface roughness	PFA / PI seat high temperature (up to 150°C)
Barstock-only source	<10ppb O2/H2O outgassing	0.41 - 9.0 Cv (flow coefficient)	Position Sensing (Pneumatic only)
PCTFE standard seat (minimal volume)	Cleaned using DI water & oven baked	100% leak tested using mass spectrometer to 1×10^{-9} scc/s under vacuum and 1×10^{-6} scc/s under pressure	Manual or pneumatic, LOTO failsafe configurations





Material of Construction

Item	Part
A	Aluminium, SS 303/304, Viton®
B	Bonnet Stainless Steel
C *	Elgiloy Diaphragms (Tied-Diaphragms)
D *	Seat PCTFE
E *	Seat Holder 316L SS
F *	Body Barstock 316L SS
G *	Tube Ends 316L SS

® Viton is a registered trademark of DuPont

*Wetted Area

SPDSA Series Technical Specifications

Maximum Operating Pressure		SPDSA Series		Vacuum to 250 psi. (17.23 BAR)	
Maximum Operating Temperature		PCTFE Seat Vespel® Seat		-30°C (-22°F) to 82°C (180°F) 302°F (150°C)	
Inch Model		Cv	Control Function	Cycle Life**	Actuation Pressure
Description	Line (Body) Size				
SPDSA 500	.500 (.500)	2.50	NC, NO	100,000	60-100PSIG (4.14-6.9BAR)
SPDSA 755	.750 (.500)	2.60	NC, NO	100,000	60-100PSIG (4.14-6.9BAR)
SPDSA 750	.750 (.750)	3.10	NC, NO	100,000	60-100PSIG (4.14-6.9BAR)
SPDSA 1075	1.000 (.750)	3.10	NC, NO	100,000	60-100PSIG (4.14-6.9BAR)
SPDSA 751***	.750 (1.000)	5.50	NC NO	50,000	90-100PSIG (6.20-6.9BAR) 80-100PSIG (5.51-6.9BAR)
SPDSA 1000***	1.000 (1.000)	6.50	NC NO	50,000	90-100PSIG (6.20-6.9BAR) 80-100PSIG (5.51-6.9BAR)
Helium Leak Test Performed with 100% Helium		Inboard Across the Seat Outboard Pressure Test		<1 x 10 ⁻⁹ scc/s He <1 x 10 ⁻⁹ scc/s He <1 x 10 ⁻⁶ scc/s He	
Cleanliness and Packaging		Assembled and tested in ISO Class 4 Cleanroom. Purged and Final Packaged in ISO Class 4 Cleanroom. Double-bag packaging with Ultra-High Purity N ² gas environment. Cleaned using DI water & Oven backed			
Standard Finish		Electropolished to 10 Ra µin Max (0.25 µm) on all wetted surfaces			
Options		Optional surface finishes available. Testing: Particle, moisture, O2 on request. Purge connections and Purge valves available. Metric tube stubs. VIM/VAR st.st. optional body End connections, Face seal, Compression available up to 1". Position Sensors.			

**Cycle life based on minimum pressure rating, through a standardised testing of sample set under laboratory conditions

***SPDSA751 & SPDSA1000 Normally Open Pressure Rating is 150psig

® Vespel is a registered trademark of DuPont Company.

Material of Construction

Item	Part
A	ABS
B	Bonnet Stainless Steel
C *	Elgiloy Diaphragms (Tied-Diaphragms)
D *	Seat PCTFE
E **	Seat Holder 316L SS
F *	Body Barstock 316L SS
G *	Tube Ends 316L SS

*Wetted Area

** Wetted Area in SPDS500 only

SPDS Series Technical Specifications

Maximum Operating Pressure	SPDS Series	Vacuum to 375 psi. (25.85 BAR)
Maximum Operating Temperature	PCTFE Seat (Standard) Vespel® Seat	-30°C (-22°F) to 82°C (180°F) 302°F (150°C)
Inch Model		Cv
Description	Line (Body) Size	
SPDS 250	.250 (.250)	0.41
SPDS 375	.375 (.250)	0.64
SPDS 500	.500 (.500)	2.80
SPDS 755	.750 (.500)	3.15
SPDS 750	.750 (.750)	3.90
SPDS 1075	1.000 (.750)	3.90
SPDS 751	.750 (1.000)	7.00
SPDS 1000	1.000 (1.000)	9.00
Helium Leak Test Performed with 100% Helium	Inboard Across the Seat Outboard Pressure Test	<1 x 10 ⁻⁹ scc/s He <1 x 10 ⁻⁹ scc/s He <1 x 10 ⁻⁶ scc/s He
Cleanliness and Packaging	Assembled and tested in ISO Class 4 Cleanroom. Purged and Final Packaged in ISO Class 4 Cleanroom. Double-bag packaging with Ultra-High Purity N ² gas environment. Cleaned using DI water & Oven baked.	
Standard Finish	Electropolished to 10 Ra µin Max (0.25 µm) on all wetted surfaces	
Options	Optional surface finishes available. Testing: Particle, moisture, O2 on request. Purge connections and Purge valves available. Metric tube stubs. VIM/VAR st.st. optional body End connections, Face seal, Compression available up to 1".	

Order Information

Sample: SPDS - 500 - 049 - 1/2" FSM M(S) - PC2

SPDS Manual Valve with a 1/2" Tube End Connection x 1/2" Male Swivel with a 1/4" Up and Downstream Purge Connection

Series	Size	Inlet Connection	Outlet Connection ¹	Purge Type ⁴	Handle Colour ²	Actuator Designator ³	Actuator Accessories ³
SPDS – Manual Multi Turn Version	250 (1/4")	1/4" TE = 035	1/4" TE = 035	Blank - No Purge	Blank (White Handwheel Supplied)	NC - Normally Closed	PS (Proximity Sensor)
SPDSA – Pneumatic Air Operated Version	375 (3/8")	3/8" TE = 035	3/8" TE = 035	PC1 - 1/4" Downstream Purge Connection	Red (Red Handwheel Supplied)	NO - Normally Open	PSEx (Explosion Proof Proximity Sensor)
	500 (1/2")	1/2" TE = 049	1/2" TE = 049	PC2 - 1/4" Up and Downstream Purge Connection	Yellow (Yellow Handwheel Supplied)		
	755 (3/4")	3/4" TE = 065	3/4" TE = 065	PC3 - 1/4" Upstream Purge Connection	Green (Green Handwheel Supplied)		
	750 (3/4")	1" TE = 065	1" TE = 065	PV1 - 1/4" Downstream Purge Valve	Orange (Orange Handwheel Supplied)		
	751 (3/4")	1/4" FSM M	1/4" FSM M	PV2 - 1/4" Up and Downstream Purge Valve	Black (Black Handwheel Supplied)		
	1000 (1")	1/4" FSM FM	1/4" FSM FM	PV3 - 1/4" Upstream Purge Valve	Blue (Blue Handwheel Supplied)		
		1/4" C/LOK	1/4" C/LOK		Pink (Pink Handwheel Supplied)		
		3/8" C/LOK	3/8" C/LOK		Brown (Brown Handwheel Supplied)		
		1/2" FSM FM	1/2" FSM FM		Gold (Gold Handwheel Supplied)		
		1/2" FSM M(S)	1/2" FSM M(S)		Grey (Grey Handwheel Supplied)		
		1/2" C/LOK	1/2" C/LOK		Silver (Silver Handwheel Supplied)		
		3/4" FSM FM	3/4" FSM FM		Purple (Purple Handwheel Supplied)		
		3/4" FSM M(S)	3/4" FSM M(S)				
		3/4" C/LOK	3/4" C/LOK				
		1" FSM FM	1" FSM FM				
		1" FSM M(S)	1" FSM M(S)				

FSM = Face Seal Metal - VCR® type connections
100% compatible with VCR® brand

¹ Only Specify the Outlet connection when different from the Inlet connection

² Manual Version only ³ Actuated Version only

⁴ PC = FSM Male Capped
PV = Diaphragm Valve With FSM Male Capped

CARTEN

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