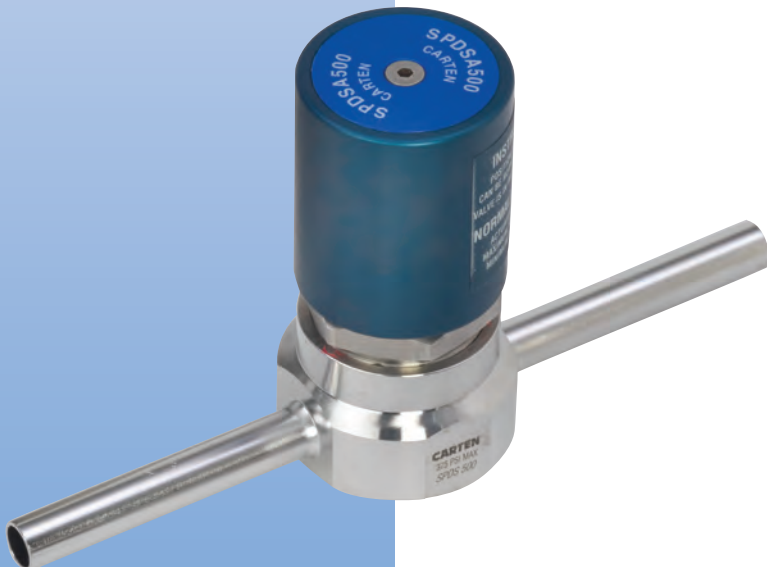


SPDSA SERIES

Ultra-High Purity Bar Stock Stainless Steel
Air-Actuated Diaphragm Valves



SPDSA SERIES

SPDSA Series Product Applications

This SPDSA (Diaphragm Design) is intended for bulk gas distribution where containment, cleanliness and purity are of the utmost importance.

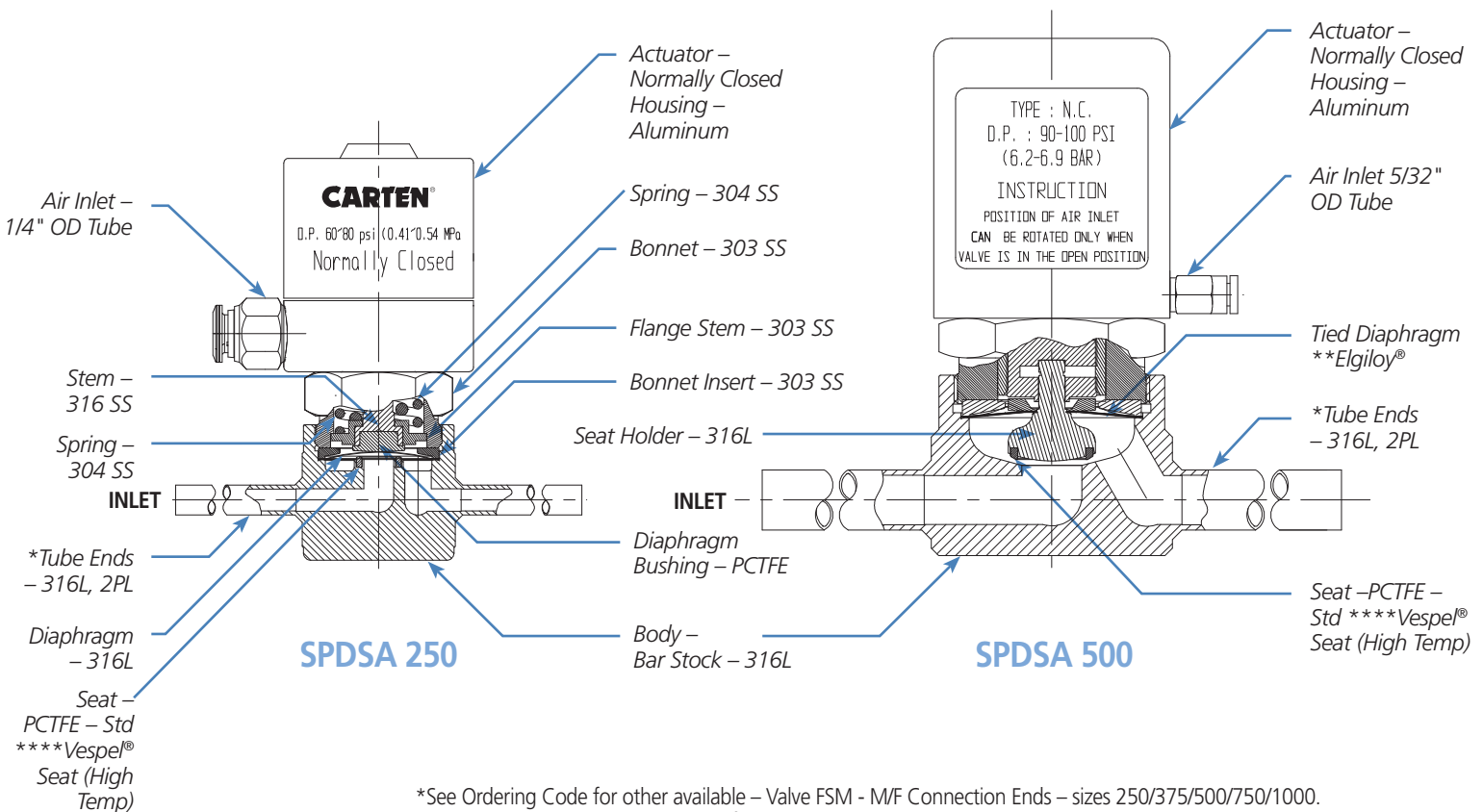
Applications for this valve include:

- High-purity gas system control valves
- High-purity gas control for point-of-use service
- Superior containment and cleanliness for your most critical valve applications
- Suitable for inert and most toxic gases
- Valve manifold boxes and valve manifold panels

SPDSA Series Product Features

- High Cv Actuated Diaphragm Valve, Compact Round Body Design
- Ultra-High Purity Bar Stock Stainless Steel/PCTFE/Vespel® Valve Construction
- **Elgiloy® Tied-Diaphragm for Maximum Flow on Valve Sizes – .500" and 1.00" Only
- Springless, Packless Design – Low Dead Volume / Internal Flowpath
- 10 Ra Max – Electropolished Surface Finish – Std (Optional Surface Finishes Available)
- Purge Connections and Purge Valves are Integrated in Valve Body
- Valve Body and Tube Stubs are Serialized for Material Certification

SPDSA Construction Materials



*See Ordering Code for other available – Valve FSM - M/F Connection Ends – sizes 250/375/500/750/1000.

**Elgiloy® is a registered trademark of Elgiloy Specialty Metals.

***Turcite-A® is a registered trademark of Emco Industrial Plastics, Inc.

****Vespel® is a registered trademark of DuPont Company.

SPDSA SERIES

SPDSA Series Technical Data

MATERIAL OF CONSTRUCTION	Wetted Areas	***Elgiloy®, 316L Stainless Steel, PCTFE, Nickel Alloy	
	Non-Wetted Areas	316L Stainless Steel, 303 Stainless Steel	
MAXIMUM OPERATING PRESSURE	SPDSA 250 & 375 & 525	Vacuum to 250 psig (0-17.2 bar)	60-80 psig (4.1 - 5.5 bar) - Actuator - N.C.
	SPDSA 500 & 755		90-100 psig (6.2 - 6.9 bar) - Actuator - N.C.
	SPDSA 500 & 755		60-100 psig (4.5 - 6.9 bar) - Actuator - N.O.-I.D.
	*SPDSA 751-TE & 1000 & 1501		80-100 psig (5.5 - 6.9 bar) - Actuator - N.O.-I.D.
	SPDSA 751-TE & 1000 & 1501		90-100 psig (6.2 - 6.9 bar) - Actuator - N.C.- I.D.
MAXIMUM OPERATING TEMPERATURE	PCTFE Seat – Std	-22°F (-30°C) to 180°F (82°C)	
	**Vespel® Seat (High Temp)	181°F (83°C) to 302°F (150°C)	
INTERNAL VOLUME	SPDSA 250	0.124 in ³ (2.032 cm ³)	
	SPDSA 375 & 525	0.177 in ³ (2.901 cm ³)	
	SPDSA 500 & 755	0.816 in ³ (13.374 cm ³)	
	SPDSA 751-TE & 1000 & 1501	1.881 in ³ (30.824 cm ³)	

*SPDSA 751-TE & 1000 & 1501 N.O.-I.D. PRESSURE RATING is 150 psig. **Vespel® is a registered trademark of DuPont Company.

***Elgiloy® is a registered trademark of Elgiloy Specialty Metals.

VALVE MODELS	BODY DATA	FLOW COEFFICIENT	CYCLE LIFE
Series/Size-Inch	Tube/Body (Seat-Orifice) Sizes	C _v	@250 PSIG
SPDSA 250-NC	Ø.250 / .250 (Ø.250 in. (Ø6.35mm)-Orifice)	0.41	200,000
SPDSA 375-NC	Ø.375 / .250 (Ø.250 in. (Ø6.35mm)-Orifice)	0.64	
SPDSA 525-NC	Ø.500 / .250 (Ø.250 in. (Ø6.35mm)-Orifice)	0.68	
SPDSA 500-NC	Ø.500 / .500 (Ø.500 in. (Ø12.7mm)-Orifice)	2.01	50,000
SPDSA 500-NO-ID	Ø.500 / .500 (Ø.500 in. (Ø12.7mm)-Orifice)	2.50	100,000
SPDSA 755-NC	Ø.750 / .500 (Ø.500 in. (Ø12.7mm)-Orifice)	2.03	50,000
SPDSA 755-NO-ID	Ø.750 / .500 (Ø.500 in. (Ø12.7mm)-Orifice)	2.60	100,000
SPDSA 751-TE-NC-ID / NO-ID	Ø.750 / 1.000 (Ø1.06 in. (Ø27.0mm)-Orifice)	4.49	50,000
SPDSA 1000-NC-ID / NO-ID	Ø1.000 / 1.000 (Ø1.06 in. (Ø27.0mm)-Orifice)	5.50	50,000
SPDSA 1501-NC-ID / NO-ID	Ø1.500 / 1.000 (Ø1.06 in. (Ø27.0mm)-Orifice)	5.33	50,000

HELIUM LEAK TEST	Inboard Across the Seat Outboard Pressure Test	≤ 1 x 10 ⁻⁹ std.cc (atm) He / sec ≤ 1 x 10 ⁻⁹ std.cc (atm) He / sec ≤ 1 x 10 ⁻⁶ std.cc (atm) He / sec
CLEANLINESS AND PACKAGING	Assembled and tested in Class 100 Cleanroom. Purged and Final Packaged in Class 1 Cleanroom. Double-bag Packaging (2 mil nylon inner bag, 6 mil polyethylene outer bag) with Ultra-High Purity N ₂ gas environment.	
STANDARD FINISH	10 Ra Max – Electropolished Surface Finish – Std (Optional surface finishes available)	
NOTES AND OPTIONS	Testing: Particle, Moisture, O ₂ , SEM, ESCA, and AES Purge Connection – Valve Type/Location Size .250 Valve Connection Ends – Inlet/Outlet Sizes .250 to 1.000 Valve Body Mounting Holes Std. Options: 1) SPDS 250 to 750 – M5 x 0.8 or 10-32UNC-2B 2) SPDS 1000 – .250-20UNC-2B Pneumatic Repair Kits Available for All Sizes	

Specifications are subject to change without notice.

SPDSA SERIES



SPDSA Series Technical Dimensions

SERIES/SIZE (INCH)	A	B	C	D	E	F	G	H	J	K
SPDSA 250-NC	Ø .250 (6.4mm)	0.035 (0.89mm)	0.50 (12.7mm)	3.04 (77.2mm)	7.35 (186.7mm)	3.46 (87.9mm)	Ø 1.57 (39.9mm)	1.98 (50.3mm)	2.55 (64.8mm)	5.10 (129.5mm)
SPDSA 375-NC	Ø .375 (9.5mm)	0.035 (0.89mm)	0.50 (12.7mm)	3.04 (77.2mm)	7.35 (186.7mm)	3.46 (87.9mm)	Ø 1.57 (39.9mm)	1.98 (50.3mm)	2.55 (64.8mm)	5.10 (129.5mm)
SPDSA 525-NC	Ø .500 (12.7mm)	0.049 (1.2mm)	0.50 (12.7mm)	3.04 (77.2mm)	7.35 (186.7mm)	3.46 (87.9mm)	Ø 1.57 (39.9mm)	1.98 (50.3mm)	2.55 (64.8mm)	5.10 (129.5mm)
SPDSA 500-NC	Ø .500 (12.7mm)	0.049 (1.2mm)	0.46 (11.7mm)	3.04 (77.2mm)	8.08 (205.2mm)	4.29 (109.0mm)	Ø 1.96 (49.8mm)	2.05 (52.1mm)	2.63 (66.8mm)	3.71 (94.2mm)
SPDSA 500-NO-ID	Ø .500 (12.7mm)	0.049 (1.2mm)	0.46 (11.7mm)	3.04 (77.2mm)	8.08 (205.2mm)	3.31 (84.1mm)	Ø 3.33 (84.6mm)	2.05 (52.1mm)	2.63 (66.8mm)	3.71 (94.2mm)
SPDSA 755-NC	Ø .750 (19.1mm)	0.065 (1.65mm)	0.46 (11.7mm)	3.04 (77.2mm)	8.08 (205.2mm)	4.29 (109.0mm)	Ø 1.96 (49.8mm)	2.05 (52.1mm)	2.63 (66.8mm)	3.71 (94.2mm)
SPDSA 755-NO-ID	Ø .750 (19.1mm)	0.065 (1.65mm)	0.46 (11.7mm)	3.04 (77.2mm)	8.08 (205.2mm)	3.31 (84.1mm)	Ø 3.33 (84.6mm)	2.05 (52.1mm)	2.63 (66.8mm)	3.71 (94.2mm)
SPDSA 751-TE-NC-ID	Ø .750 (19.1mm)	0.065 (1.65mm)	0.75 (19.1mm)	3.06 (77.7mm)	10.79 (274.1mm)	5.68 (144.3mm)	Ø 3.33 (84.6mm)	1.26 (32.0mm)	1.83 (46.5mm)	
SPDSA 751-TE-NO-ID	Ø .750 (19.1mm)	0.065 (1.65mm)	0.75 (19.1mm)	3.06 (77.7mm)	10.79 (274.1mm)	4.54 (115.3mm)	Ø 3.33 (84.6mm)	1.26 (32.0mm)	1.83 (46.5mm)	
SPDSA 1000-NC-ID	Ø 1.000 (25.4mm)	0.065 (1.65mm)	0.75 (19.1mm)	3.06 (77.7mm)	10.79 (274.1mm)	5.68 (144.3mm)	Ø 3.33 (84.6mm)	1.26 (32.0mm)	1.83 (46.5mm)	
SPDSA 1000-NO-ID	Ø 1.000 (25.4mm)	0.065 (1.65mm)	0.75 (19.1mm)	3.06 (77.7mm)	10.79 (274.1mm)	4.54 (115.3mm)	Ø 3.33 (84.6mm)	1.26 (32.0mm)	1.83 (46.5mm)	
SPDSA 1501-NO-ID	Ø 1.500 (38.1mm)	0.065 (1.65mm)	0.75 (19.1mm)	5.00 (127.0mm)	13.65 (346.7mm)	5.68 (144.3mm)	Ø 3.33 (84.6mm)	1.26 (32.0mm)	1.83 (46.5mm)	
SPDSA 1501-NC-ID	Ø 1.500 (38.1mm)	0.065 (1.65mm)	0.75 (19.1mm)	5.00 (127.0mm)	13.65 (346.7mm)	4.54 (115.3mm)	Ø 3.33 (84.6mm)	1.26 (32.0mm)	1.83 (46.5mm)	

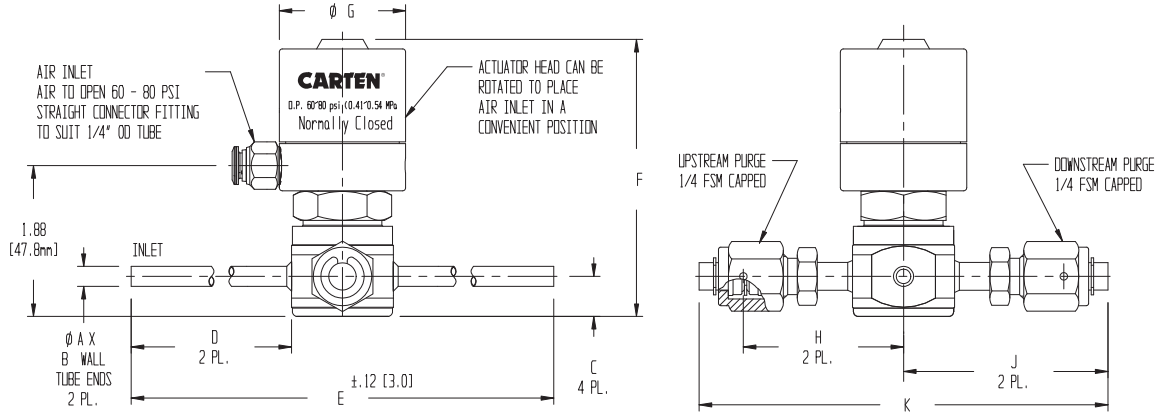
NOTE 1: All tolerances are ± 0.06 in. (± 1.52 mm) unless otherwise stated.

NOTE 2: Dimensional drawings shown are for reference only. Please contact CARTEN® for customer drawings.

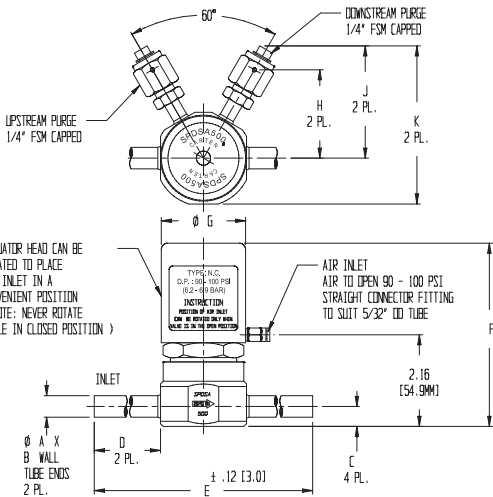
SPDSA SERIES

SPDSA Series Typical Valve Dimensions

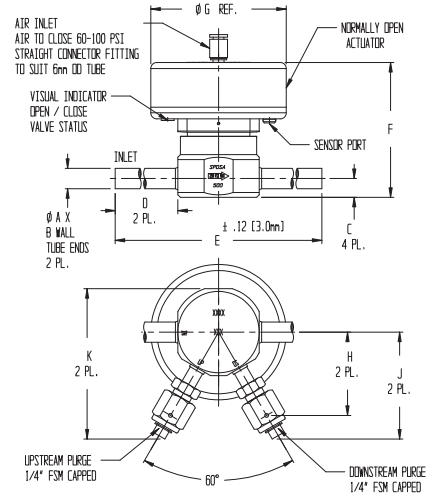
SPDSA 250 BODY (N.C. SHOWN)
250 / 375 / 525 - N.C.



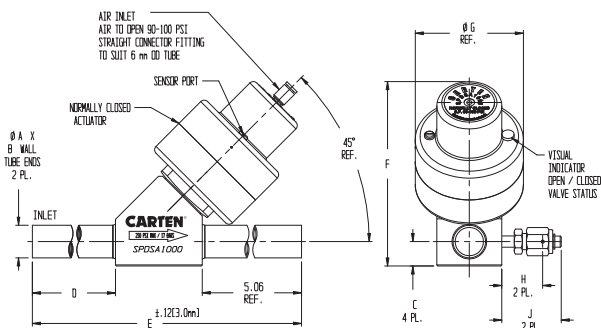
SPDSA 500 BODY (N.C. SHOWN)
500 / 755 - N.C. / N.O.-ID



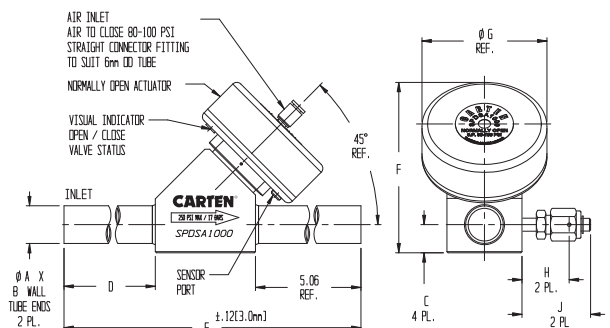
SPDSA 500 BODY (N.O.-ID SHOWN)
500 / 755 - N.C. / N.O.-ID



SPDSA 1000 BODY (N.C.-ID SHOWN)
751-TE / 1000 / 1501 - N.C.-ID / N.O.-ID



SPDSA 1000 BODY (N.O.-ID SHOWN)
751-TE / 1000 / 1501 - N.C.-ID / N.O.-ID



SPDSA SERIES

SPDSA Series Ordering Code

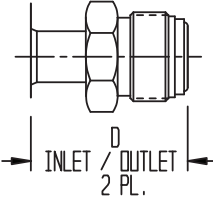
SPDSA		–	500		–	10		–	PC2		–	FSM-MR		–	NC		
SERIES	TYPE					CODE	SURFACE FINISH		CODE	TYPE							
SPDSA	Pneumatic					10	10 Ra Max - Std EP		FSM-MR	Fixed Male-RH							
						5	5 Ra Max - EP			FSM – Face Seal Metal Purge (Right Hand)							
VALVE SIZES	TUBE/(BODY) INCH – SIZES					CODE	SIZE/LOCATION	TYPE			CODE	OPTIONS					
250	Ø .250	.250				LV	Not Required	None				Pneumatics					
375	Ø .375					PC1	1/4" Downstream	Purge			NC	Normally Closed					
525	Ø .500					PC2	1/4" Up & Downstream	Purge			NC-ID	NC w/ ID					
500	Ø .500	.500				PC3	1/4" Upstream	Purge			NO	Normally Open					
755	Ø .750					PV1	1/4" Downstream	Valve			NO-ID	NO w/ ID					
751-TE	Ø .750	1.000				PV2	1/4" Up & Downstream	Valve									
1000	Ø 1.000					PV3	1/4" Upstream	Valve			V	*Vespel® Seat					
1501	Ø 1.500																

*Vespel® is a registered trademark of DuPont Company.

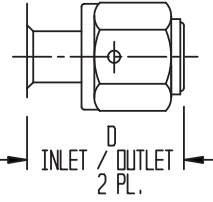
OPTIONAL VALVE FSM - M/F CONNECTION ENDS

Available on SPDSA .250" to 1.000" Body Sizes

CONNECTION END SIZES .250 / .375 / .500 / .750 / 1.000		
Connection Size	Dimension "D"	
	FSM-M-2X	FSM-F-3X
.250	1.32 (33.5mm)	1.32 (33.5mm)
.375 / .500	1.54 (39.1mm)	1.54 (39.1mm)
.750	2.06 (52.3mm)	2.06 (52.3mm)
1.000	2.38 (60.5mm)	2.38 (60.5mm)



FSM-M-2X



FSM-F-3X

Safe Product Selection

When selecting a product, the total system design must be considered to ensure safe, trouble-free performance. Function, material compatibility, adequate ratings, proper installation, operation, and maintenance are the responsibilities of the system designer and user.

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Carten Controls is a member of Fujikin Corp Group (FCG) with Headquarters in Osaka, Japan.