

SPDS SERIES

Ultra-High Purity Bar Stock Stainless Steel
Manual Diaphragm Valves



SPDS SERIES

SPDS Series Product Applications

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

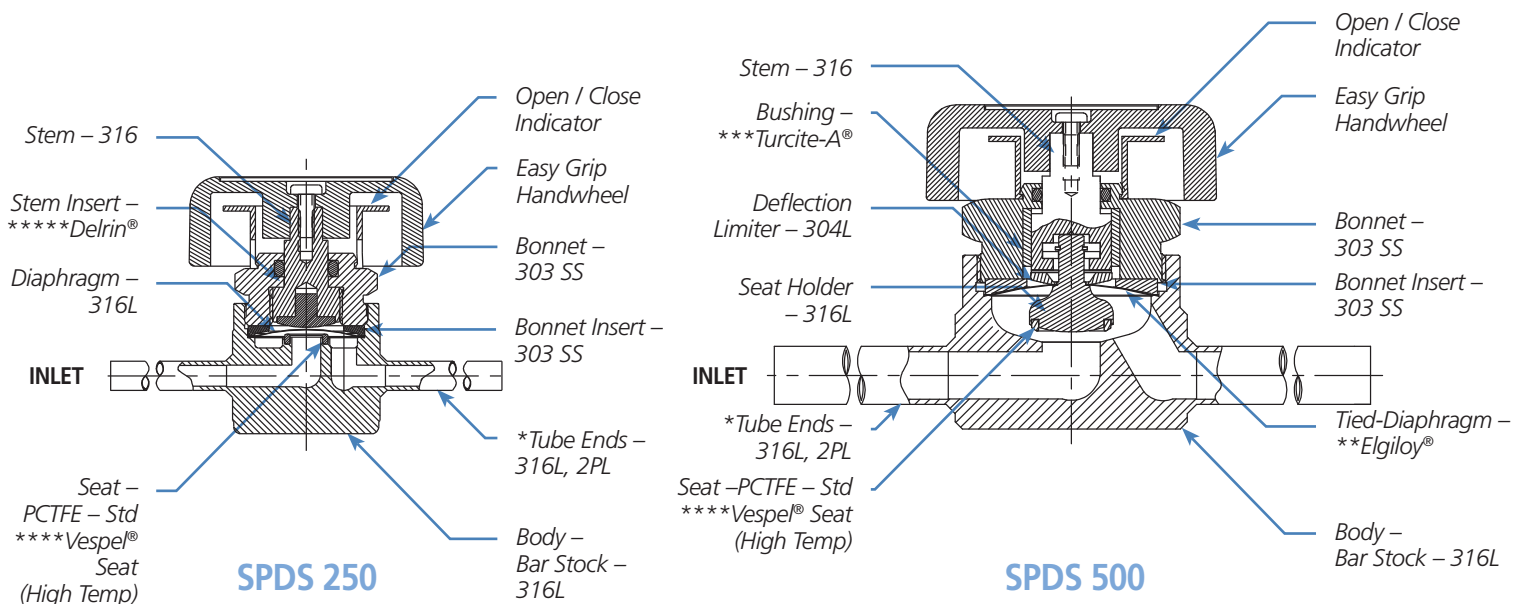
Applications for this valve include:

- 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

SPDS Series Product Features

- High Cv Manual 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

SPDS 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.

*****Delrin® is a registered trademark of Ridout Plastics Inc.

SPDS SERIES

SPDS Series Technical Data

MATERIAL OF CONSTRUCTION	Wetted Areas	**Elgiloy®, 316L Stainless Steel, PCTFE
	Non-Wetted Areas	316L Stainless Steel, 303 Stainless Steel
MAXIMUM OPERATING PRESSURE	SPDS 250 & 375 & 525	Vacuum to 375 psig (0-25.8 bar)
	SPDS 500 & 755	
	SPDS 751-TE & 1000 & 1501	
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	SPDS 250	0.124 in³ (2.032 cm³)
	SPDS 375 & 525	0.177 in³ (2.901 cm³)
	SPDS 500 & 755	0.816 in³ (13.374 cm³)
	SPDS 751-TE & 1000 & 1501	1.881 in³ (30.824 cm³)

*Vespel® is a registered trademark of DuPont Company.
**Elgiloy® is a registered trademark of Elgiloy Specialty Metals.

VALVE MODELS	BODY DATA	FLOW COEFFICIENT C _v	WEIGHT	
	Tube/Body (Seat-Orifice) Sizes		LBS	(KG)
SPDS 250	Ø.250 / .250 (Ø.250 in. (Ø6.35mm)-Orifice)	0.41	0.90	(0.41)
SPDS 375	Ø.375 / .250 (Ø.250 in. (Ø6.35mm)-Orifice)	0.64	0.90	(0.41)
SPDS 525	Ø.500 / .250 (Ø.250 in. (Ø6.35mm)-Orifice)	0.68	0.70	(0.32)
SPDS 500	Ø.500 / .500 (Ø.500 in. (Ø12.7mm)-Orifice)	2.81	1.80	(0.82)
SPDS 755	Ø.750 / .500 (Ø.500 in. (Ø12.7mm)-Orifice)	3.15	1.70	(0.77)
SPDS 751-TE	Ø.750 / 1.000 (Ø1.06 in. (Ø27.0mm)-Orifice)	7.00	3.10	(1.41)
SPDS 1000	Ø1.000 / 1.000 (Ø1.06 in. (Ø27.0mm)-Orifice)	9.00	3.10	(1.41)
SPDS 1501	Ø1.500 / 1.000 (Ø1.06 in. (Ø27.0mm)-Orifice)	8.17	3.50	(1.59)

HELIUM LEAK TEST	Inboard Across the Seat Outboard Pressure Test	$\leq 1 \times 10^{-9}$ std.cc (atm) He / sec $\leq 1 \times 10^{-9}$ std.cc (atm) He / sec $\leq 1 \times 10^{-6}$ 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 Integral Lockout Design Handle – sizes .250 / .500	

Specifications are subject to change without notice.

SPDS SERIES



SPDS Series Technical Dimensions

SERIES/SIZE (INCH)	A	B	C	D	E	F	G	H	J	K
SPDS 250	Ø .250 (6.4mm)	0.035 (0.89mm)	0.50 (12.7mm)	3.04 (77.2mm)	7.35 (186.7mm)	2.22 (56.4mm)	Ø 2.00 (50.8mm)	1.98 (50.3mm)	2.55 (64.8mm)	5.10 (129.5mm)
SPDS 375	Ø .375 (9.5mm)	0.035 (0.89mm)	0.50 (12.7mm)	3.04 (77.2mm)	7.35 (186.7mm)	2.22 (56.4mm)	Ø 2.00 (50.8mm)	1.98 (50.3mm)	2.55 (64.8mm)	5.10 (129.5mm)
SPDS 525	Ø .500 (12.7mm)	0.049 (1.2mm)	0.50 (12.7mm)	3.04 (77.2mm)	7.35 (186.7mm)	2.22 (56.4mm)	Ø 2.00 (50.8mm)	1.98 (50.3mm)	2.55 (64.8mm)	5.10 (129.5mm)
SPDS 500	Ø .500 (12.7mm)	0.049 (1.2mm)	0.46 (11.7mm)	3.04 (77.2mm)	8.08 (205.2mm)	2.83 (71.9mm)	Ø 2.50 (63.5mm)	2.05 (52.1mm)	2.63 (66.8mm)	3.84 (97.5mm)
SPDS 755	Ø .750 (19.1mm)	0.065 (1.65mm)	0.46 (11.7mm)	3.04 (77.2mm)	8.00 (203.2mm)	2.83 (71.9mm)	Ø 2.50 (63.5mm)	2.05 (52.1mm)	2.63 (66.8mm)	3.84 (97.5mm)
SPDS 751-TE	Ø .750 (19.1mm)	0.065 (1.65mm)	0.75 (19.1mm)	3.06 (77.7mm)	8.79 (223.3mm)	3.82 (97.0mm)	Ø 2.50 (63.5mm)	1.26 (32.0mm)	1.83 (46.5mm)	
SPDS 1000	Ø 1.000 (25.4mm)	0.065 (1.65mm)	0.75 (19.1mm)	3.06 (77.7mm)	8.79 (223.3mm)	3.82 (97.0mm)	Ø 2.50 (63.5mm)	1.26 (32.0mm)	1.83 (46.5mm)	
SPDS 1501	Ø 1.500 (38.1mm)	0.065 (1.65mm)	0.75 (19.1mm)	5.00 (127.0mm)	12.67 (321.8mm)	3.82 (97.0mm)	Ø 2.50 (63.5mm)	1.26 (32.0mm)	1.83 (46.5mm)	

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

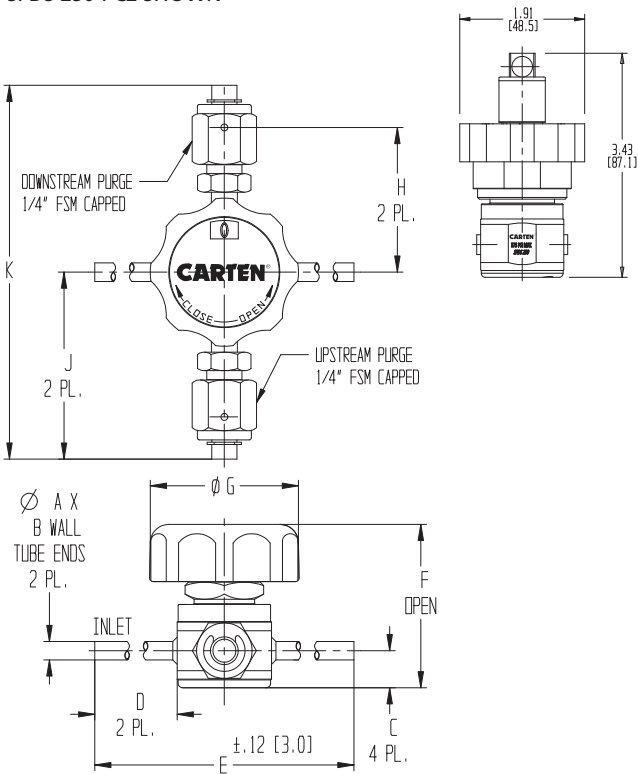
NOTE 2: Dimensional drawings shown are for reference only. Please contact CARTEN® for customer drawings.

SPDS SERIES

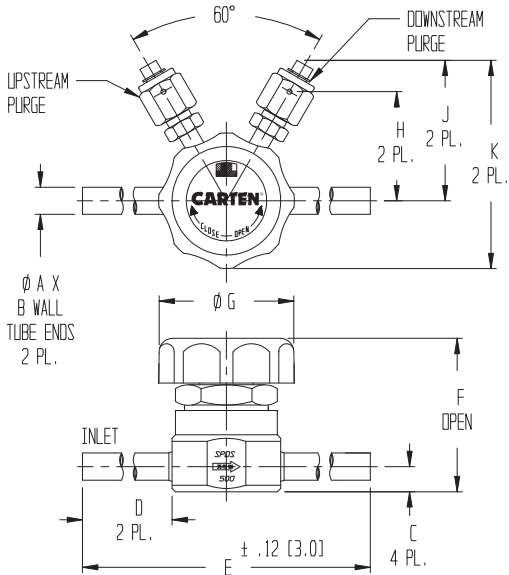
SPDS Series Typical Valve Dimensions

SPDS 250 BODY
250 / 375 / 525
SPDS 250-PC2 SHOWN

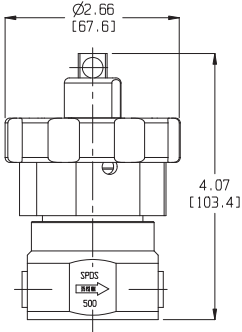
SPDS 250 LOCK-OUT HANDLE



SPDS 500 BODY
500 / 755
SPDS 500-PC2 SHOWN

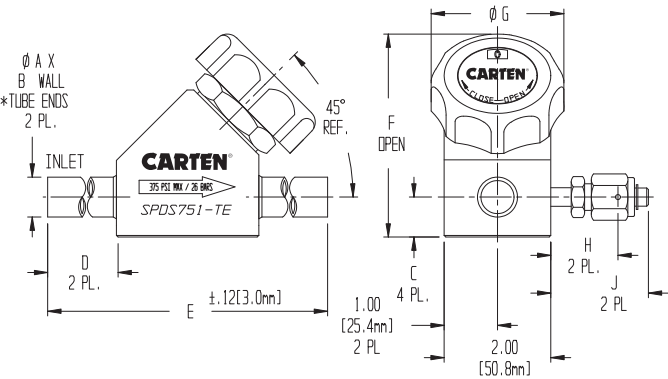


SPDS 500 LOCK-OUT HANDLE

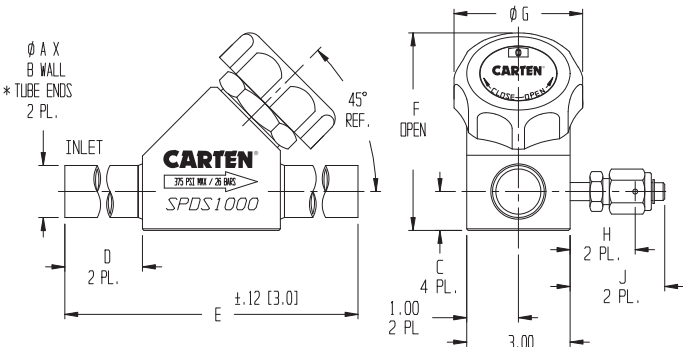


SPDS 751-TE PC2 SHOWN

SPDS 1000 BODY
751-TE / 1000 / 1501



SPDS 1000 PC2 SHOWN



See Ordering Code for other available FSM - M/F connection ends.

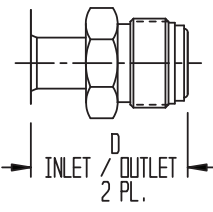
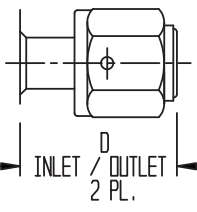
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SPDS Series Ordering Code

SPDS		500	10	PC2	FSM-MR	BK
SERIES	TYPE		CODE	SURFACE FINISH	CODE	TYPE
SPDS	Manual		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					
250	Ø .250	.250				
375	Ø .375					
525	Ø .500					
500	Ø .500	.500				
755	Ø .750					
751-TE	Ø .750	1.000				
1000	Ø 1.000					
1501	Ø 1.500					

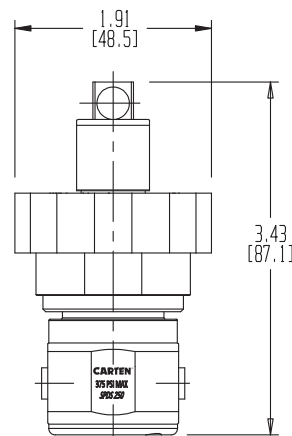
OPTIONAL VALVE FSM - M/F CONNECTION ENDS

Available on SPDS .250" to 1.000" Body Sizes

CONNECTION END SIZES .250 / .375 / .500 / .750 / 1.000	
	
FSM-M-2X	FSM-F-3X

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)

LOCK-OUT DEVICE 250 / 500 Sizes



V	*Vespe® Seat
LO	Lock-Out Device

*Vespe® is a registered trademark of DuPont Company.

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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