

# 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.

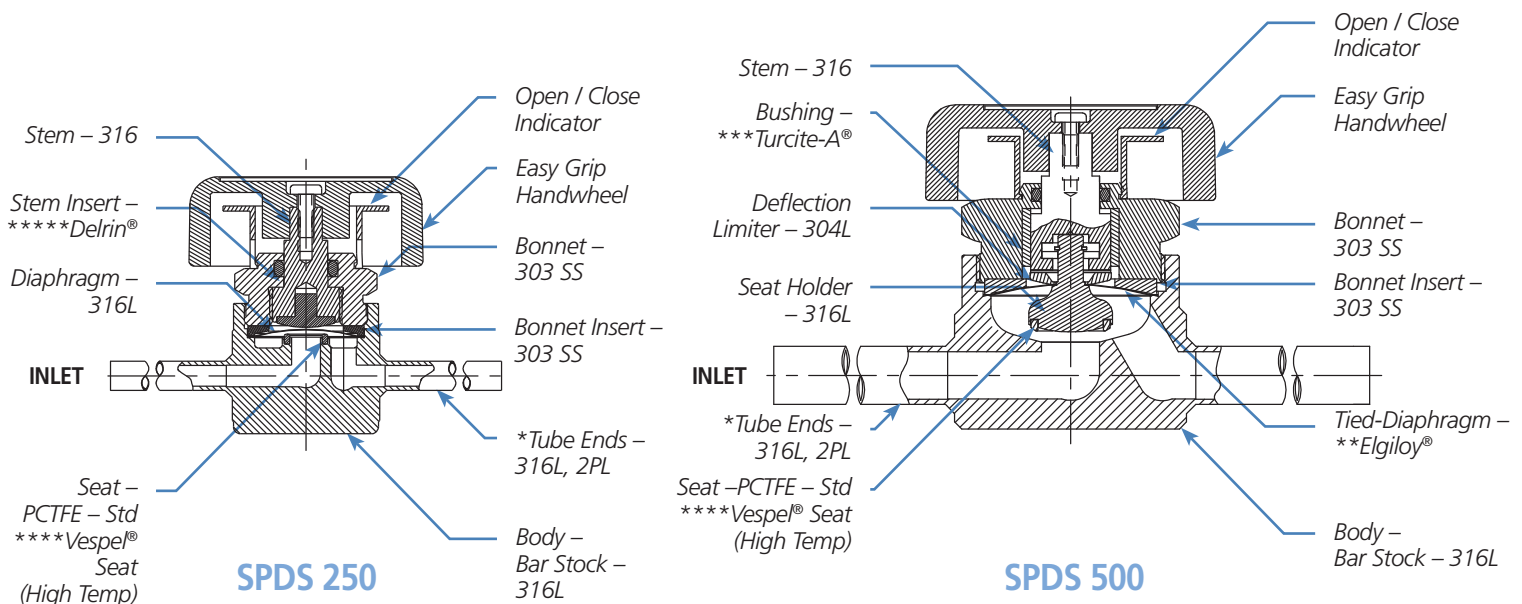
Applications for this valve include:

- 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.

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## 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 in <sup>3</sup> (2.032 cm <sup>3</sup> )
	SPDS 375 & 525	0.177 in <sup>3</sup> (2.901 cm <sup>3</sup> )
	SPDS 500 & 755	0.816 in <sup>3</sup> (13.374 cm <sup>3</sup> )
	SPDS 751-TE & 1000 & 1501	1.881 in <sup>3</sup> (30.824 cm <sup>3</sup> )

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

VALVE MODELS Series/Size-Inch	BODY DATA Tube/Body (Seat-Orifice) Sizes	FLOW COEFFICIENT C <sub>v</sub>	WEIGHT	
			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	≤ 1 x 10 <sup>-9</sup> std.cc (atm) He / sec ≤ 1 x 10 <sup>-9</sup> std.cc (atm) He / sec ≤ 1 x 10 <sup>-6</sup> 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 <sub>2</sub> gas environment.	
STANDARD FINISH	10 Ra Max – Electropolished Surface Finish – Std (Optional surface finishes available)	
NOTES AND OPTIONS	Testing: Particle, Moisture, O <sub>2</sub> , 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  $\pm 0.06$  in. ( $\pm 1.52$ mm) unless otherwise stated.

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



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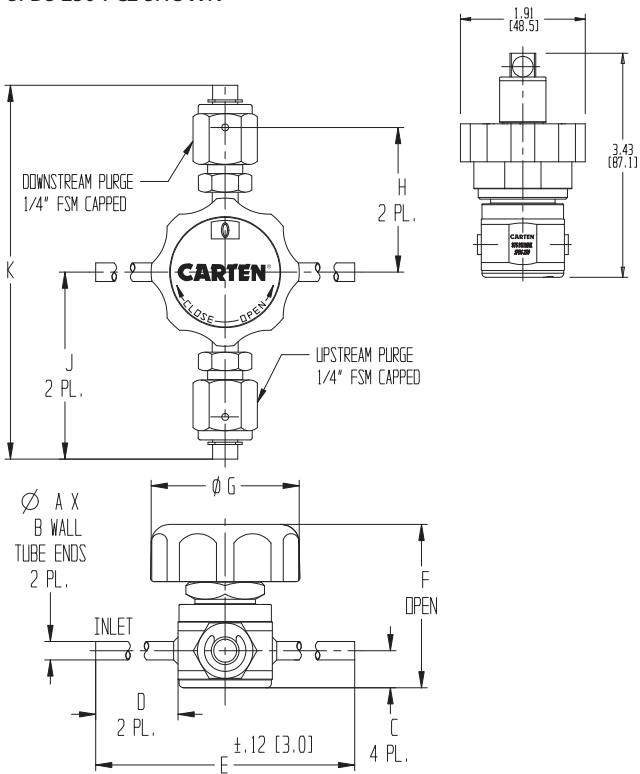
## SPDS Series Typical Valve Dimensions

### SPDS 250 BODY

250 / 375 / 525

SPDS 250-PC2 SHOWN

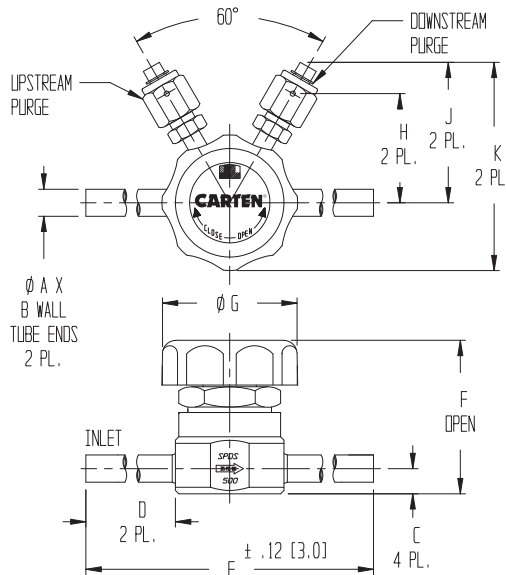
### SPDS 250 LOCK-OUT HANDLE



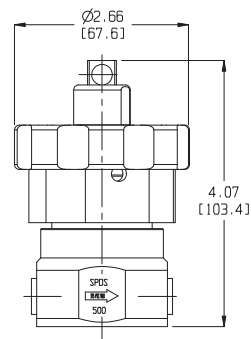
### SPDS 500 BODY

500 / 755

SPDS 500-PC2 SHOWN



### SPDS 500 LOCK-OUT HANDLE

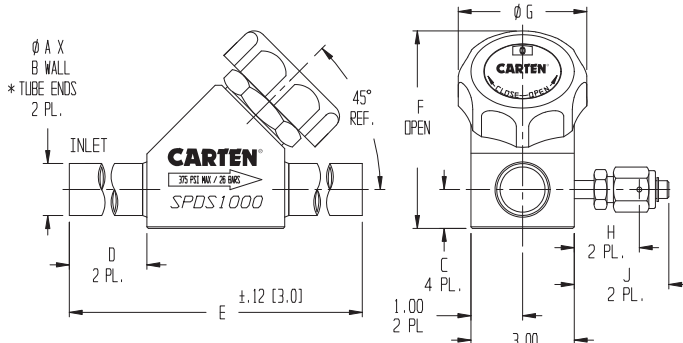
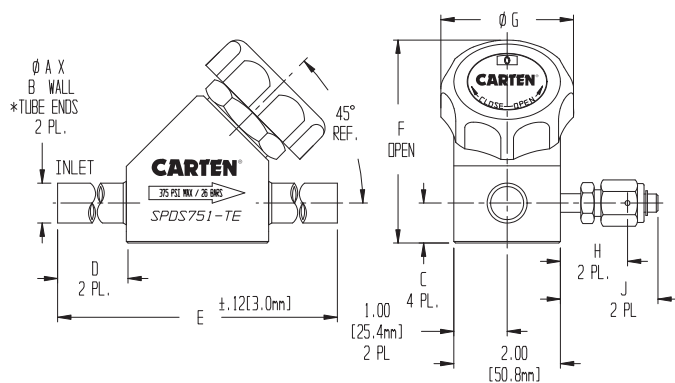


### SPDS 751-TE PC2 SHOWN

### SPDS 1000 BODY

751-TE / 1000 / 1501

### SPDS 1000 PC2 SHOWN



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

# SPDS SERIES

## SPDS Series Ordering Code

**SPDS** – **500** – **10** – **PC2** – **FSM-MR** – **BK**

SERIES	TYPE
SPDS	Manual

CODE	SURFACE FINISH
10	10 Ra Max - Std EP
5	5 Ra Max - EP

CODE	TYPE
FSM-MR	Fixed Male-RH

FSM – Face Seal Metal Purge  
(Right Hand)

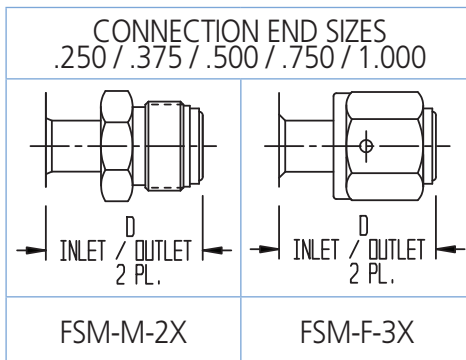
VALVE SIZES	TUBE/(BODY) INCH – SIZES
250	∅ .250
375	∅ .375
525	∅ .500
500	∅ .500
755	∅ .750
751-TE	∅ .750
1000	∅ 1.000
1501	∅ 1.500

CODE	SIZE/LOCATION	TYPE
LV	Not Required	None
PC1	1/4" Downstream	Purge
PC2	1/4" Up & Downstream	Purge
PC3	1/4" Upstream	Purge
PV1	1/4" Downstream	Valve
PV2	1/4" Up & Downstream	Valve
PV3	1/4" Upstream	Valve

CODE	OPTIONS
	Handwheel
BL	Blue
BK	Black
DG	Dark Gold
BR	Brown
GL	Gold
GR	Green
GY	Grey
OR	Orange
PR	Purple
PK	Pink
RD	Red
SL	Silver
TL	Teal
WT	White – Standard
YL	Yellow
V	*Vespel® Seat
LO	Lock-Out Device

### OPTIONAL VALVE FSM - M/F CONNECTION ENDS

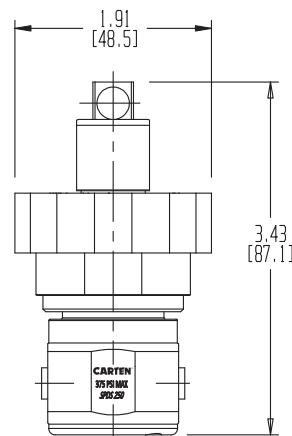
Available on SPDS .250" to 1.000" Body Sizes



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



\*Vespel® 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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**CARTEN®**  
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Carten Controls is a member of Fujikin Corp Group (FCG) with Headquarters in Osaka, Japan.