

# SPDS SERIES Ultra-High Purity Diaphragm Valves



## 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

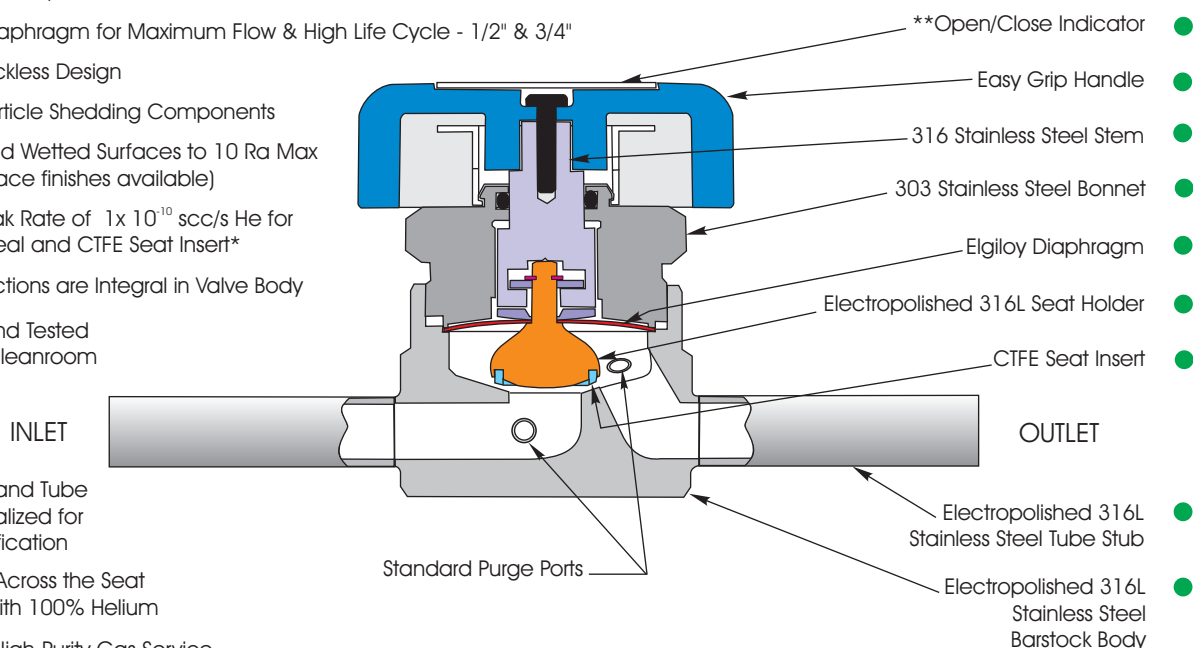
## PRODUCT FEATURES

- ▶ Diaphragm Design for Ultra-High Purity and Long Cycle Life
- ▶ High-Purity Stainless/CTFE Gas Containment
- ▶ Elgiloy Tied-Diaphragm for Maximum Flow & High Life Cycle - 1/2" & 3/4"
- ▶ Springless, Packless Design
- ▶ No Internal Particle Shedding Components
- ▶ Electropolished Wetted Surfaces to 10 Ra Max (Optional surface finishes available)
- ▶ Maximum Leak Rate of  $1 \times 10^{-10}$  scc/s He for Diaphragm Seal and CTFE Seat Insert\*
- ▶ Purge Connections are Integral in Valve Body
- ▶ Assembled and Tested in CLASS 10 Cleanroom

- ▶ Valve Bodies and Tube Stubs are Serialized for Material Certification
- ▶ Inboard and Across the Seat Leak Tested with 100% Helium
- ▶ Cleaned For High-Purity Gas Service
- ▶ Purged and Final Packaged in CLASS 1 Cleanroom. Double-Bag Packaging with  $N_2$  Gas Environment Supplied from Liquid Source

\*Excluding Permeation of CTFE

## CONSTRUCTION MATERIALS



SPDS 500

## SPDS SERIES - Technical Data

CONSTRUCTION MATERIAL	Wetted Areas	Elgiloy, 316L Stainless Steel, CTFE	
	Non-Wetted Areas	316L Stainless Steel, 303 Stainless Steel	
MAXIMUM OPERATING PRESSURE	SPDS 250 & 375 SPDS 500 & 750	Vacuum to 375 psi. (25 BAR)	
ORIFICE	SPDS 250 & 375 SPDS 500 & 750	0.250 in. (6.35 mm) 0.500 in. (12.7 mm)	
MAXIMUM OPERATING TEMPERATURE		180° F (82°C)	
FLOW COEFFICIENT ( $C_v$ )	SPDS 250 & 375 SPDS 500 & 750	0.41 & 0.64 respectively 2.81	
HELIUM LEAK TEST	Inboard/across the seat	$1 \times 10^{-10}$ scc/s He max.	Rated
		$1 \times 10^{-9}$ scc/s He max.	Std. Production
Helium leak test performed with 100% helium			

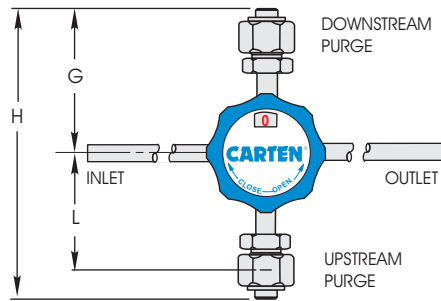
INTERNAL VOLUME	SPDS 250 SPDS 375 SPDS 500 & 750	0.124 in <sup>3</sup> (2.032 cm <sup>3</sup> ) 0.177 in <sup>3</sup> (2.901 cm <sup>3</sup> ) 0.816 in <sup>3</sup> (13.374 cm <sup>3</sup> )
CLEANLINESS	Assembled and tested in CLASS 10 cleanroom. Purged and final packaged in Class 1 cleanroom. Double-bag packaging (2 mil nylon inner bag, 6 mil polyethylene outer bag) with $N_2$ gas environment supplied from a liquid source.	
STANDARD FINISH	Electropolished to 10 Ra (0.25 Ra - m) on all wetted surfaces	
OPTIONS	Surface finish - 5 Ra, 20 Ra Panel Mounting Angle valve (PMA) Air-Actuated (SPDS 250 & 375) Particle, moisture, THC and $O_2$ testing SEM and ESCA testing, Auger analysis Fitting type and location Material: VAR; VIM / VAR, Vespe <sup>®</sup> seat Handle color (Std. white) JIS tube stubs and tube length 1/4 Turn handles (SPDS 250 & 375 only)	

Specifications are subject to change without notice.  
Vespe<sup>®</sup> is a registered trademark of DuPont Company

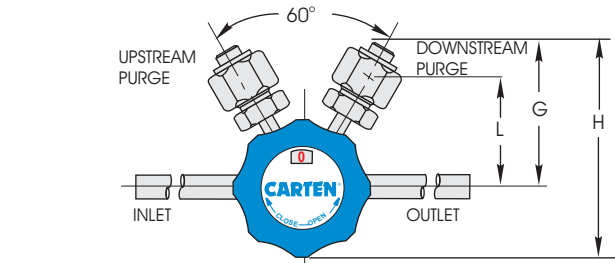
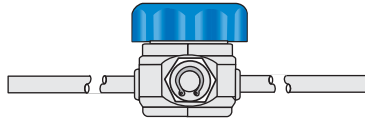
\*\*The open/close indicator provides open/close status at the fully open or closed positions. It is not intended to act as a metering or proportioning system.

# SPDS and SPDST SERIES - Valve Dimensions (1/4" To 3/4")

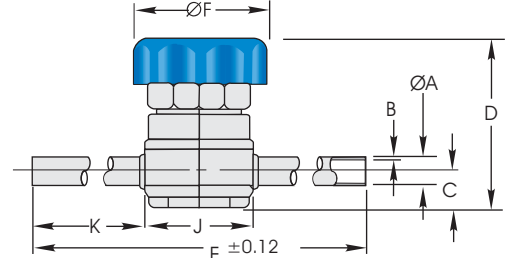
## SPDS CONFIGURATIONS



**SPDS 250 & 375 - PC2**

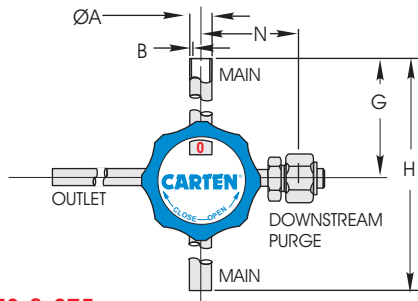


**SPDS 500 & 750 - PC2**

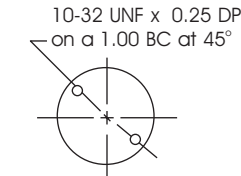
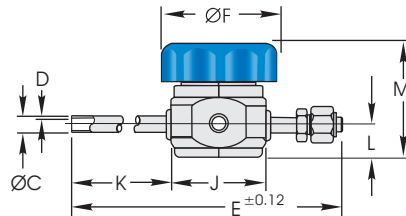


CAT. NO.	A*	B*	C	D	E	F	G	H	J	K	L	Weight Approx.
SPDS 250	0.250	0.035	0.500 (12.7mm)	2.22 (56.4mm)	7.34 (186.4mm)	2.00 (50.8mm)	2.37 (60.2mm)	3.87 (98.3mm)	1.27 (32.3mm)	3.03 (77.0mm)	1.94 (49.3mm)	1 Lb 0.5 Kg
SPDS 375	0.375	0.035	0.500 (12.7mm)	2.22 (56.4mm)	7.34 (186.4mm)	2.00 (50.8mm)	2.37 (60.2mm)	3.87 (98.3mm)	1.27 (32.3mm)	3.03 (77.0mm)	1.94 (49.3mm)	1 Lb 0.5 Kg
SPDS 500	0.500	0.049	0.463 (11.8mm)	2.84 (72.1mm)	8.08 (205.2mm)	2.50 (63.5mm)	2.47 (62.7mm)	3.72 (94.5mm)	2.00 (50.8mm)	3.04 (77.2mm)	2.01 (51.1mm)	1.5 Lb 0.8 Kg
SPDS 750	0.750	0.065	0.463 (11.8mm)	2.84 (72.1mm)	10.06 (255.5mm)	2.50 (63.5mm)	2.47 (62.7mm)	3.72 (94.5mm)	2.00 (50.8mm)	4.03 (102.4mm)	2.01 (51.1mm)	1.6 Lb 0.8 Kg

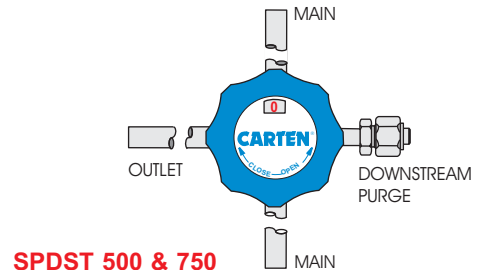
## SPDST CONFIGURATIONS



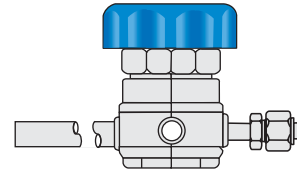
**SPDST 250 & 375**



Mounting option  
Bottom view  
(SPDST 250, 375 ONLY)



**SPDST 500 & 750**



Catalog Number	A*	B*	C*	D*	E	F	G	H	J	K	L	M	N	Weight Approx.
SPDST 250x035-250x035	0.250	0.035	0.250	0.035	6.07 (154.2mm)	2.00 (50.8mm)	3.67 (93.2mm)	7.34 (186.4mm)	1.27 (32.6mm)	3.03 (77.0mm)	0.500 (12.7mm)	2.22 (56.4mm)	1.94 (49.3mm)	1 LB 0.5Kg
SPDST 375x035-375x035	0.375	0.035	0.375	0.035	6.07 (154.2mm)	2.00 (50.8mm)	3.67 (93.2mm)	7.34 (186.4mm)	1.27 (32.6mm)	3.03 (77.0mm)	0.500 (12.7mm)	2.22 (56.4mm)	1.94 (49.3mm)	1 LB 0.5 Kg
SPDST 500x049-375x035	0.500	0.049	0.375	0.035	6.81 (173.0mm)	2.50 (63.5mm)	4.04 (102.6mm)	8.08 (205.2mm)	2.00 (50.8mm)	3.04 (77.2mm)	0.463 (11.8mm)	2.84 (72.1mm)	2.30 (58.4mm)	1.5 LB 0.8 Kg
SPDST 500x049-500x049	0.500	0.049	0.500	0.049	6.81 (173.0mm)	2.50 (63.5mm)	4.04 (102.6mm)	8.08 (205.2mm)	2.00 (50.8mm)	3.04 (77.2mm)	0.463 (11.8mm)	2.84 (72.1mm)	2.30 (58.4mm)	1.5 Lb 0.8 Kg
SPDST 750x065-500x049	0.7500	0.065	0.500	0.049	6.81 (173.0mm)	2.50 (63.5mm)	5.03 (127.8mm)	10.06 (255.5mm)	2.00 (50.8mm)	3.04 (77.2mm)	0.463 (11.8mm)	2.84 (72.1mm)	2.30 (58.4mm)	1.6 Lb 0.8 Kg

\*Metric tube sizes and wall thicknesses are available on request.

NOTE 1: All tolerances are  $\pm 0.06$  in. unless otherwise stated

NOTE 2: Dimensional drawings shown are for reference only. Please contact the manufacturer for customer drawings showing updated dimensions.

REV. 99-1

CARTEN CONTROLS INC.