



# **BULK GAS VALVES**

Microelectronics Product Line

Catalog 4507/USA  
*October 2003*



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# VERIFLO DIVISION



**V**eriflo Division, Parker Hannifin Corporation is a leading manufacturer of precision valves, regulators and surface mount components for the control and application of liquids and gases used in the fabrication of semiconductors, as well as in the chemical and petrochemical industries.

## A Leading Manufacturer Of Precision Valves, Regulators & Surface Mount Components

Veriflo has maintained industry leadership over the past 95 years through innovative engineering, manufacturing and by placing a premium on quality customer care.

The division maintains two state-of-the-art Class 10 Clean Rooms at its Richmond, CA, facility and has adopted a corporate wide "Lean Manufacturing" philosophy, which is delivering greater value to the customer by eliminating wasteful steps through continuous improvement activities.

Veriflo Division's two manufacturing facilities develop and manufacture applications for the Semiconductor/High Purity and Instrument/Analyzer industries.

With the focus of maintaining the highest industry standards,

## Maintained Industry Leadership By Placing A Premium On Quality Customer Care

Veriflo Division has achieved an ISO 9001 registration at both its Richmond, CA manufacturing plant and at its Carson City, NV facility. This certification confirms Veriflo's commitment to quality and excellence as recognized by the international community.

The Instrumentation Group of Parker Hannifin specializes in high quality, critical flow components for world-wide process instrumentation, ultra-high-purity, medical, analytical and biopharmaceutical applications.

Parker's Instrumentation Group has ten manufacturing plants and over 300 authorized distributor locations around the world to provide local inventory and technical support. Key markets for the Instrumentation Group include: Chemical Process, Power Generation, Oil and Gas Exploration, Semiconductor Manufacturing, Biomedical, and Analytical Equipment.

*Note: For further information on Veriflo Division and or its product line visit the division web site at [www.veriflo.com](http://www.veriflo.com). For more information on Parker Hannifin Corporation visit the corporation's web site at [www.parker.com](http://www.parker.com).*



# CyMax Series

## Manually & Pneumatic Operated Diaphragm Valve



Parker Hannifin Corporation's Veriflo Division presents the CyMax manual & pneumatic operated diaphragm valves. The patented, all welded CyMax diaphragm valve offers maximum reliability for your critical applications.



### features

- ▶ Tied diaphragm for positive retraction.
- ▶ Multiple diaphragms for maximum cycle life.
- ▶ Elimination of bonnet threads provides compact valve.
- ▶ Heat code traceability on valve bodies, tube stubs and purge ports.
- ▶ Minimal PCTFE seat surface to reduce outgassing, moisture absorption and particle generation.
- ▶ Open/Close indicator standard on manual and pneumatic valves.

### options

- ▶ Multiple handle colors available for gas differentiation.
- ▶ Purge Connections in VacuSeal™, UltraSeal™ or A-LOK® compression.
- ▶ Pneumatic Actuators available with Normally Open, Double Acting and Normally Closed configurations in all sizes.
- ▶ Expanded tube ends offered for low flow applications. VacuSeal™, UltraSeal™ and Compression ends available.
- ▶ Vespel® seat optional.

### ▶ materials of construction

#### Wetted

Body . . . . . "VeriClean", Veriflo's custom high purity type 316L Stainless Steel™  
Tubing . . . . . 316L Stainless Steel  
Seat . . . . . PCTFE, optional Vespel®  
Diaphragm . . . . . 316L Stainless Steel,  
Upper Stem . . . . . 303 Stainless Steel

#### Non-wetted

Cap screw . . . . . Alloy steel  
Handle . . . . . Aluminum (option color coded)  
Bonnet . . . . . 316L Stainless Steel  
Bearing . . . . . Bronze Alloy  
Driver . . . . . Bronze Alloy

### ▶ operating conditions

Maximum Pressure . . . . . 275 psig (19 barg)

Maximum operating temperature:  
. . . . . 230°F (110°C)

#### Design Leak Rate:

Inboard . . . . .  $1 \times 10^{-10}$  scc/sec He  
Outboard . . . . .  $1 \times 10^{-5}$  scc/sec He  
Across the seat . . . . .  $1 \times 10^{-10}$  scc/sec He

### ▶ surface finishes

Standard Ra . . . . . 10 micro inch Ra  
optional 5 Ra and 20 Ra (electropolished)

### ▶ functional performance

Flow capacity . . . . .  $C_v$  2.5

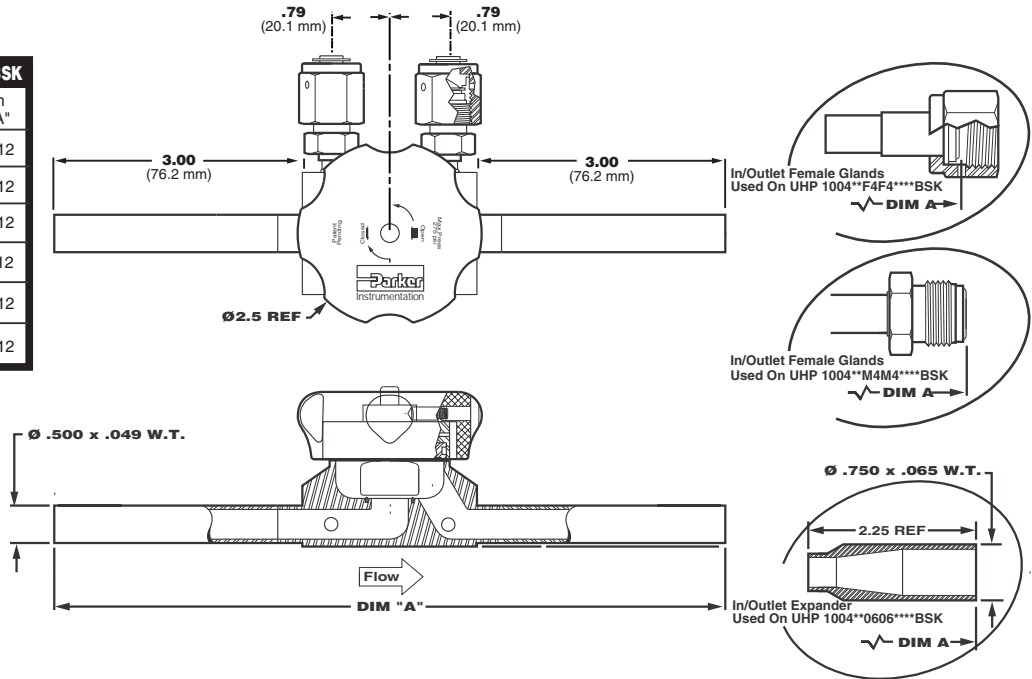


# CyMax Series

## Dimensional Drawings

**PARTIAL TABULATION FOR UHP1004\*\*\*\*\*BSK**

End Designator	Inlet/Outlet Connections	Length DIM "A"
M4M4	1/2" Male Face Seal	6.56 ± .12
M6M6	3/4" Male Face Seal	7.04 ± .12
F4F4	1/2" Female Face Seal	6.56 ± .12
F6F6	1/2" Female	6.56 ± .12
0404	1/2" x .049 WT Tube Stub	8.98 ± .12
0606	3/4" x .065 WT Tube Stub	7.48 ± .12



## Ordering Information

**UHP 10 04 C 1 04 04 10 B S K**

**CONFIGURATION**  
UHP = Straight Valve

**SERIES**  
10 = 1000 Series

**BODY SIZE**  
04 = 1/4"

**PURGE PORT**  
A = None  
B = Upstream  
C = Up & Downstream  
D = Downstream

**ACTUATION**  
*Manual (handle color)*  
1 = Blue    6 = Purple  
2 = Pink    7 = Black  
3 = Yellow    8 = Gold  
4 = Green    9 = Clear  
5 = Red    0 = White  
*Pneumatic*  
A = Fail Close Actuation  
B = Double Acting Actuation  
F = Fail Open Actuation

**SEAT SEAL MATERIALS**  
K = PCTFE  
V = Vespe®

**PURGE PORT TYPE**  
S = Standard VacuSeal™ Fitting  
L = VacuSeal™ Fitting With Left Hand Threads  
U = Standard UltraSeal™ fitting  
Y = UltraSeal™ Fitting With Left Hand Threads  
Note: Use "S" when no purge ports are specified

**GENERATION**  
B = Second Generation

**INTERNAL SURFACE FINISH**  
05 = 5 Ra  
10 = 10 Ra  
20 = 20 Ra (electropolished)

**INLET/OUTLET TUBE SIZE & TYPE**  
04 = 1/2" Tube Stub  
[ ] 04 = 1/2" Optional Fitting End  
06 = 3/4" Expanded Tube Stub  
[ ] 06 = 3/4" Optional Fitting End  
08 = 1" Expanded Tube Stub  
[ ] 08 = 1" Optional Fitting End  
*Optional Fitting Ends*  
M = Male face seal  
F = Female face seal  
C = Compression  
Q = Male Ultra Seal  
U = Female Ultra Seal

- "Switch Ready" actuators are provided as standard.
- Non "Switch Ready" actuators are available.
- Metric sizes are available.

*For special configurations or options please contact factory for available.*

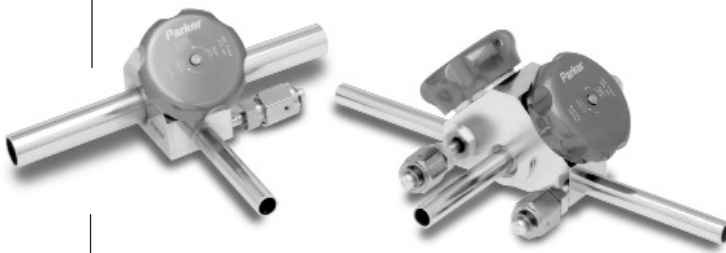
Vespe® is a registered trademark of DuPont Company.





Parker Hannifin Corporation's Veriflo Division presents the CyMax Single Integrated Component Diaphragm Valves.

Integrated Components reduce the number of welds and eliminate dead legs in your UHP gas delivery system. The compact designs allow multiple drops from a single vertical or horizontal main, without restriction to flow in the main.



### features

- ▶ Tied diaphragm for positive retraction.
- ▶ Multiple diaphragms for maximum cycle life.
- ▶ Elimination of bonnet threads provides compact valve.
- ▶ Heat code traceability on valve bodies, tube stubs and purge ports.
- ▶ Minimal PCTFE seat surface to reduce outgassing, moisture absorption and particle generation.
- ▶ Open/Close indicator standard on manual valves.

### options

- ▶ Multiple handle colors available for gas differentiation.
- ▶ Purge Connections in VacuSeal™, UltraSeal™ or A-LOK® compression.
- ▶ Expanded tube ends offered for low flow applications. VacuSeal™, UltraSeal™ and Compression ends available.
- ▶ Vespe!® seat optional.

### materials of construction

#### Wetted

Body . . . . . "VeriClean", Veriflo's custom high purity type 316L Stainless Steel™  
 Tubing . . . . . 316L Stainless Steel  
 Seat . . . . . PCTFE, optional Vespe!®  
 Diaphragm . . . . . 316L Stainless Steel  
 Upper Stem . . . . . 303 Stainless Steel

#### Non-wetted

Cap screw . . . . . Alloy steel  
 Handle . . . . . Aluminum (option color coded)  
 Bonnet . . . . . 316L Stainless Steel  
 Bearing . . . . . Bronze Alloy  
 Driver . . . . . Bronze Alloy

### operating conditions

Maximum Pressure . . . . . 275 psig (19 barg)

Maximum operating temperature:  
 . . . . . 230°F (110°C)

#### Design Leak Rate:

Inboard . . . . .  $1 \times 10^{-10}$  scc/sec He  
 Outboard . . . . .  $1 \times 10^{-5}$  scc/sec He  
 Across the seat . . . . .  $1 \times 10^{-10}$  scc/sec He

### surface finishes

Standard Ra . . . . . 10 micro inch Ra  
 optional 5 Ra and 20 Ra (electropolished)

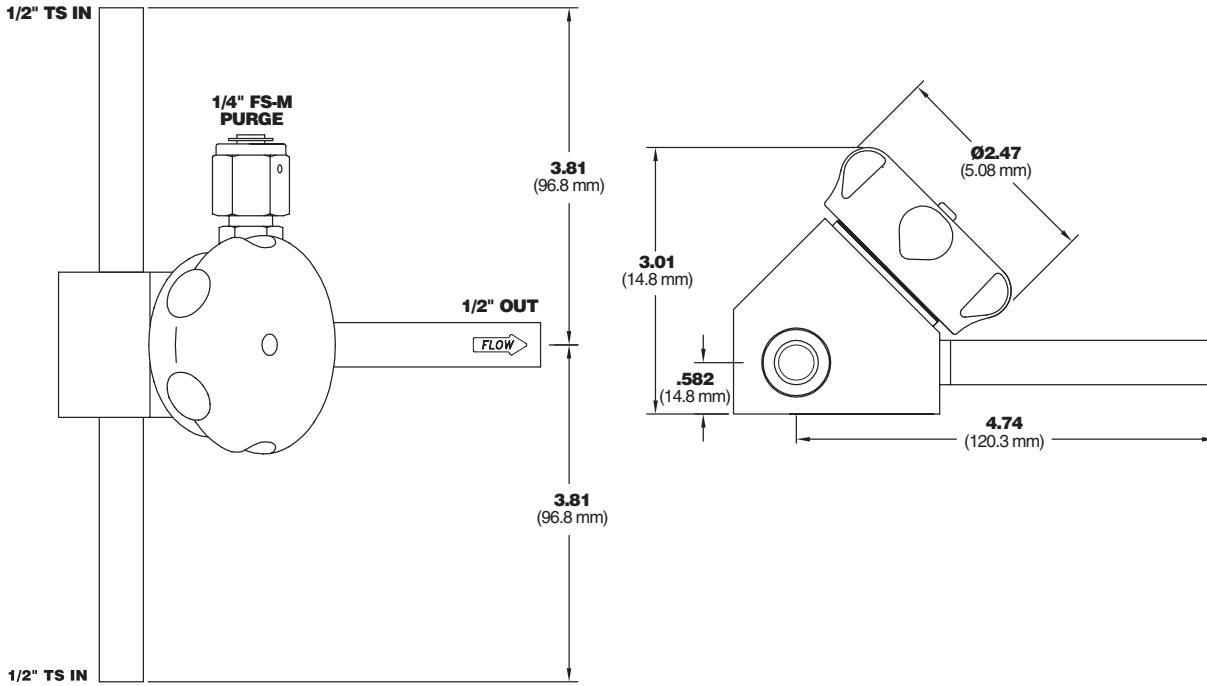
### functional performance

. . . . .  $C_v = 2.5$

# CyMax Series

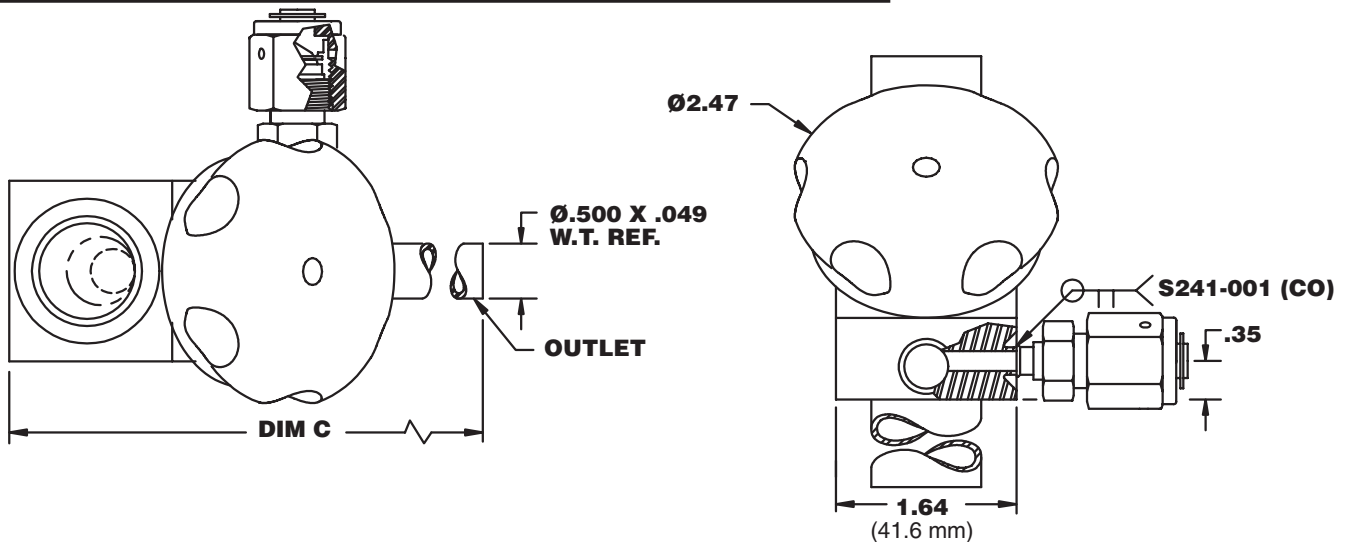
## Dimensional Drawings

### SHC



### SVC

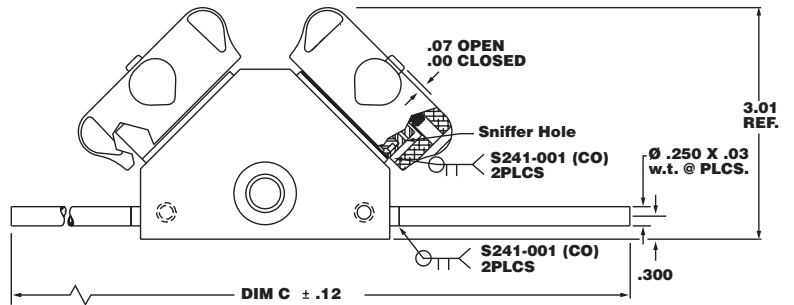
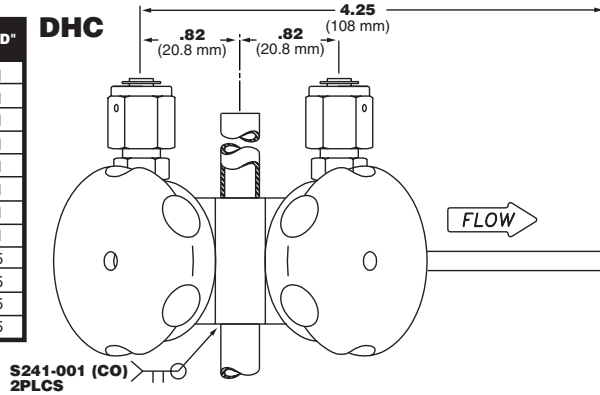
Part Number	Dim "A"	Dim "B"	Dim "C"	
			Tube Stub	Face Seal
SVC1004**04*2**BSK	0.50 Dia X 0.049 WT	0.940	6.04	4.74
SVC1004**04*4**BSK	0.50 Dia X 0.049 WT	0.940	6.04	4.83
SVC1004**06*2**BSK	0.75 Dia X 0.065 WT	0.831	6.04	4.74
SVC1004**06*4**BSK	0.75 Dia X 0.065 WT	0.831	6.04	4.83
SVC1004**08*2**BSK	1.00 Dia X 0.065 WT	0.706	6.04	4.74
SVC1004**08*4**BSK	1.00 Dia X 0.065 WT	0.706	6.04	4.83



# CyMax Series

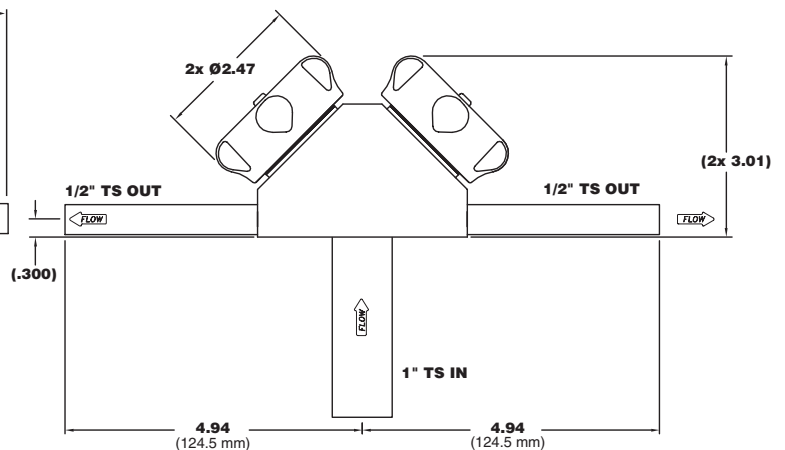
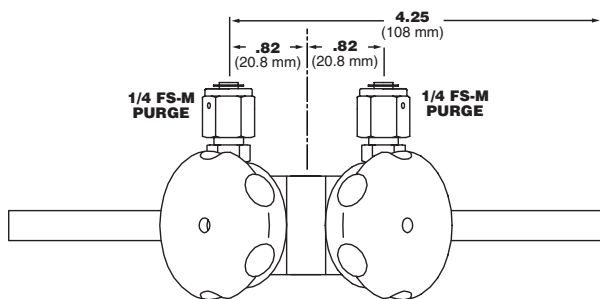
## Dimensional Drawings

Part Number	Dim "A"	Dim "B"	Dim "C"		Dim "D"
			Tube Stub	Face Seal	
DHC1004**04*2**BSK	0.50 Dia X 0.049 WT	0.597	9.48	6.88	3.01
DHC1004**04*4**BSK	0.50 Dia X 0.049 WT	0.597	9.88	7.46	3.01
DHC1004**06*2**BSK	0.75 Dia X 0.065 WT	0.597	9.48	6.88	3.01
DHC1004**06*4**BSK	0.75 Dia X 0.065 WT	0.597	9.88	7.46	3.01
DHC1004**06*6**BSK	0.75 Dia X 0.065 WT	0.597	8.38	N/A	3.01
DHC1004**08*2**BSK	1.00 Dia X 0.065 WT	0.722	9.48	6.88	3.01
DHC1004**08*4**BSK	1.00 Dia X 0.065 WT	0.722	9.88	7.46	3.01
DHC1004**08*6**BSK	1.00 Dia X 0.065 WT	0.722	8.38	N/A	3.01
DHC1004**12*4**BSK	1.50 Dia X 0.065 WT	1.130	10.28	7.86	3.65
DHC1004**12*6**BSK	1.50 Dia X 0.065 WT	1.130	8.78	N/A	3.65
DHC1004**16*4**BSK	2.00 Dia X 0.065 WT	1.325	10.28	7.86	3.65
DHC1004**16*6**BSK	2.00 Dia X 0.065 WT	1.325	8.78	N/A	3.65



## DVT

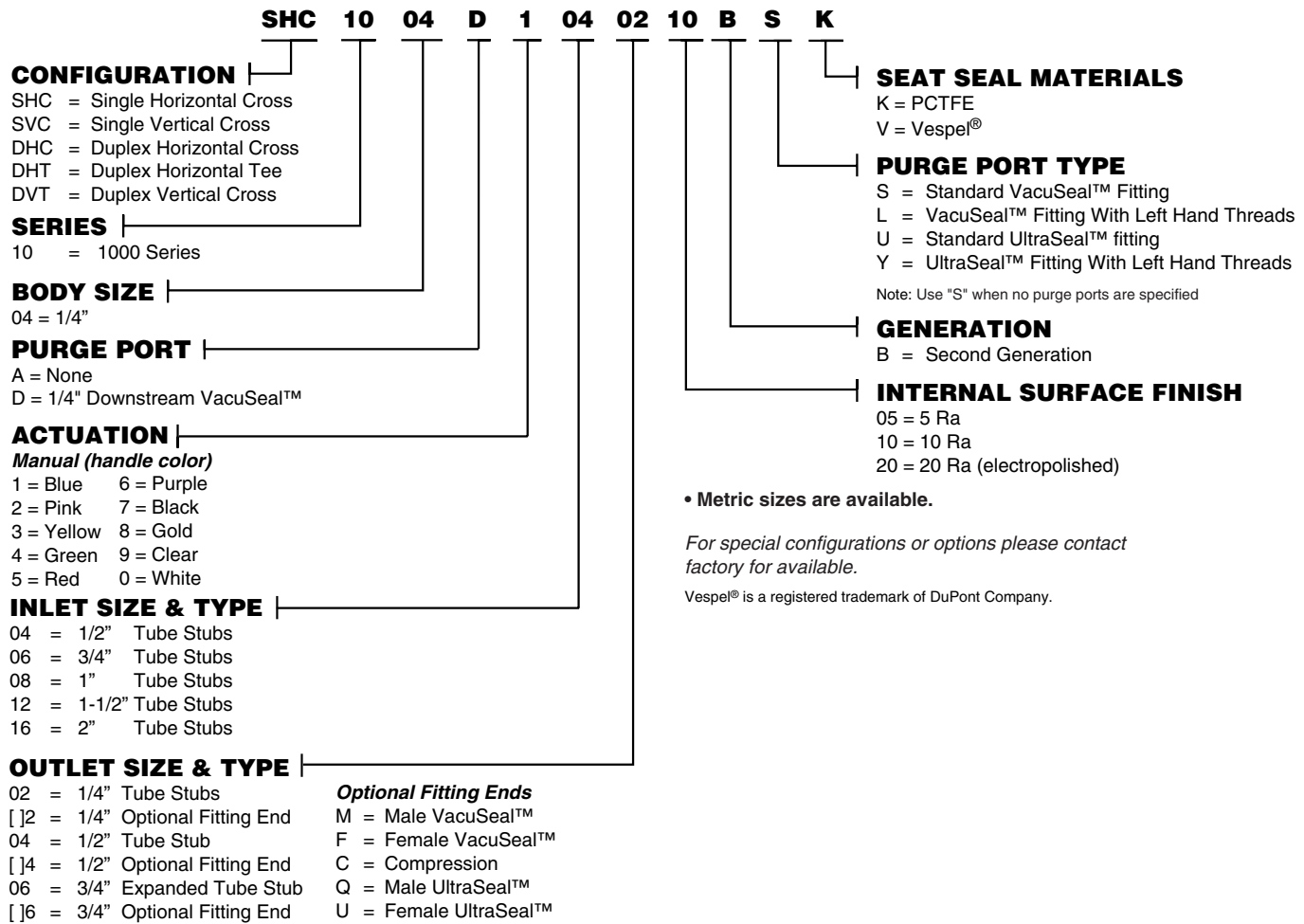
Part Number	Dim "A"	Dim "B"	Dim "C"		Dim "D"
			Tube Stub	Face Seal	
DVT1004**04*2**BSK	0.50 Dia X 0.049 WT	1.640	9.48	6.88	3.01
DVT1004**04*4**BSK	0.50 Dia X 0.049 WT	1.640	9.88	7.46	3.01
DVT1004**06*2**BSK	0.75 Dia X 0.065 WT	1.640	9.48	6.88	3.01
DVT1004**06*4**BSK	0.75 Dia X 0.065 WT	1.640	9.88	7.46	3.01
DVT1004**08*2**BSK	1.00 Dia X 0.065 WT	1.640	9.48	6.88	3.01
DVT1004**08*4**BSK	1.00 Dia X 0.065 WT	1.640	9.88	7.46	3.01
DVT1004**12*4**BSK	1.50 Dia X 0.065 WT	1.900	9.88	7.46	3.01





# CyMax Series

## Ordering Information



# CvMax Series

## Manual & Pneumatic Operated Bellows Valve



Parker Hannifin Corporation's Veriflo Division presents the CvMax 600 Series Bellows Valves. These valves are manufactured specifically for Ultra High Purity Gas Systems.

Parker Bellows Valves are designed with the industry's leading straight-through full flow. There are no restricted paths or bends that would reduce flow and generate particulate. These features provide the highest gas flow with minimal pressure drop.



### features

- ▶ Multi-Ply Inconel 625 bellows for maximum cycle life in a small envelope.
- ▶ Minimal PCTFE to reduce outgassing and moisture absorption.
- ▶ Heat code traceability on valve bodies, tube stubs and purge ports.
- ▶ Non-Rising handwheel for optimal clearance.
- ▶ Open/Close Indicators on manual valve.
- ▶ Optimum purge port location.

### options

- ▶ Multiple handle colors available for gas differentiation.
- ▶ Purge Connections in VacuSeal™, UltraSeal™ or A-LOK® compression.
- ▶ Multiple Pneumatic Actuators available on most sizes (contact factory).
- ▶ Expanded tube ends offered for low flow applications.
- ▶ Vespel® seat optional.

### materials of construction

#### Wetted

Body . . . . . "VeriClean", Veriflo's custom high purity type 316L Stainless Steel™  
 Tube Ends . . . . . 316L Stainless Steel  
 Stem . . . . . 316L Stainless Steel  
 Seat Holder . . . . . 316L Stainless Steel  
 Bellows Adapter . . . . . 316L Stainless Steel  
 Bellows . . . . . Inconel®  
 Seat . . . . . PCTFE, optional Vespel®  
 Bonnet Gasket . . . . . Nickel

#### Non-wetted

Handle . . . . . Aluminum  
 Interior Stem . . . . . 300 Series Stainless Steel or 17-4 Stainless Steel  
 Driver . . . . . Bronze  
 Guide . . . . . Brass  
 Bonnet . . . . . Aluminum or 316 Series Stainless Steel

### operating conditions

Maximum Pressure . . . . . 375 psig (25.9 barg)  
 Minimum operating pressure . . . . . Vacuum

Maximum operating temperature:

Closed . . . . . 140°F (60°C)  
 Open . . . . . 230°F (110°C)

Design Leak Rate:

Inboard . . . . .  $1 \times 10^{-10}$  scc/sec He  
 Outboard . . . . .  $1 \times 10^{-5}$  scc/sec He  
 Across the seat . . . . .  $1 \times 10^{-10}$  scc/sec He

### surface finishes

Standard Ra . . . . . 10 micro inch Ra  
 optional 5 Ra and 20 Ra (electropolished)

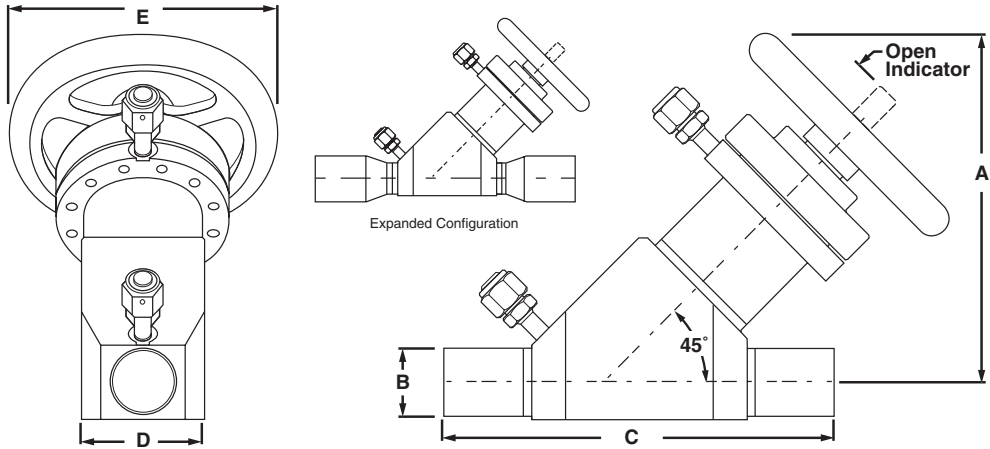
### functional performance

Flow capacity . . . . . see Dimensional Drawings



# CvMax Series

## Dimensional Drawings



Part Number	Cv	Xt	A (Height)		B (Tube O.D.)		B (Tube Wall)		C (Length)		D (Body Width)		E (Handle Dia.)		Body Tube		Straight Expanded
			Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	
UHP0608**0808**ASK	35	.236	5.7	144	1.00	25.4	0.065	1.65	10.1	257	2.00	51	3.75	95	1.00	25.4	St
UHP0608**1212**ASK	28	.319	5.7	144	1.50	38.1	0.065	1.65	12.1	308	2.00	51	3.75	95	1.00	25.4	Ex
UHP0612**1212**ASK	81	.241	8.0	203	1.50	34.1	0.065	1.65	16.11	409	3.12	74	6.00	152	1.50	38.1	St
UHP0612**1616**ASK	91	.183	8.0	203	2.00	50.8	0.065	1.65	16.11	409	3.12	79	6.00	152	1.50	38.1	Ex
UHP0616**1616**ASK	178	.193	10.3	261	2.00	50.8	0.065	1.65	13.9	353	3.67	93	8.00	203	2.00	50.8	St
UHP0616**2424**ASK	134	.225	14.0	356	3.00	76.2	0.065	1.65	17.1	435	3.67	93	8.00	203	2.00	50.8	Ex
UHP0624**2424**ASK	413	.183	14.0	356	3.00	76.2	0.065	1.65	15.5	394	5.60	142.2	10.00	254	3.00	76.2	St
UHP0624**3232**ASK	354	.240	14.1	358	4.00	101.6	0.083	2.11	18.5	470	5.60	142.2	10.00	254	3.00	76.2	St
UHP0636**3232**ASK	779	.189	19.5	495	4.00	101.6	0.083	2.11	20.4	518	8.00	203.2	14.00	356	4.00	101.6	Ex
UHP0636**4848**ASK	814	.307	22.4	569	6.00	152.4	0.109	2.77	26.3	668	8.00	203.2	14.00	356	4.50	114.3	Ex

Note: Cv and Xt calculated per SEMI Flow Coefficient Standard Test Method

## Ordering Information

**UHP 06 08 C 1 08 08 10 A S K**

**CONFIGURATION**  
UHP = Straight Valve

**SERIES**  
06 = 600 Series

**BODY SIZE**  
08 = 1"  
12 = 1 1/2"  
16 = 2"  
24 = 3"  
36 = 4 1/2"

**PURGE PORT**  
A = None  
B = Upstream  
C = Up & Downstream  
D = Downstream  
J = Purge Valves Up & Downstream

**ACTUATION**  
*Manual (handle color)*  
1 = Blue 6 = Purple  
2 = Pink 7 = Black  
3 = Yellow 8 = Gold  
4 = Green 9 = Clear  
5 = Red 0 = White  
*Pneumatic*  
A = Fail Close Actuation  
B = Double Acting Actuation  
F = Fail Open Actuation

**SEAT SEAL MATERIALS**  
K = PCTFE  
V = Vespel®

**PURGE PORT TYPE**  
S = Standard face seal fitting  
L = Face seal fitting with left hand threads  
U = Ultra seal fitting  
Y = Ultra seal fitting with left hand threads  
Note: Use "S" when no purge ports are specified

**GENERATION**  
A = First Generation

**INTERNAL SURFACE FINISH**  
05 = 5 Ra  
10 = 10 Ra  
20 = 20 Ra (electropolished)

**INLET/OUTLET TUBE SIZE & TYPE**  
08 = 1" Tube Stub  
[08 = 1" Optional Fitting End  
12 = 1.5" Expanded Tube Stub  
[12 = 1.5" Optional Fitting End  
16 = 2" Expanded Tube Stub  
[16 = 2" Optional Fitting End  
24 = 3" Expanded Tube Stub  
[24 = 3" Optional Fitting End  
32 = 4" Expanded Tube Stub  
[32 = 4" Optional Fitting End  
48 = 4" Expanded Tube Stub  
[48 = 4" Optional Fitting End

**Optional Fitting Ends**  
M = Male face seal  
F = Female face seal  
C = Compression  
Q = Male Ultra Seal  
U = Female Ultra Seal

**\* "Switch Ready" actuators are provided as standard.**  
**• Non "Switch Ready" actuators are available.**  
**• Metric sizes are available.**

*For special configurations or options please contact factory for availability.*

Vespel® is a registered trademark of DuPont Company.

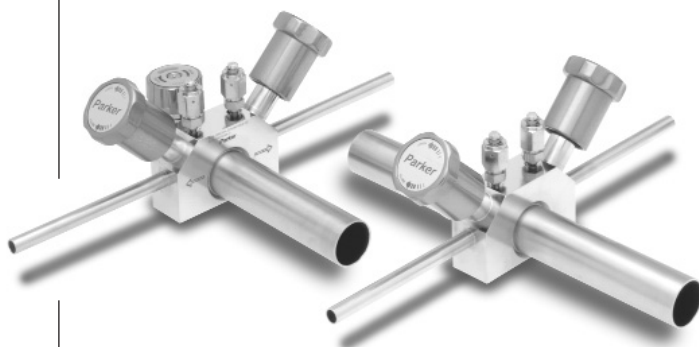
# 500 Series

## Single & Duplex Integrated Component Bellows Valve



Parker Hannifin Corporation's Veriflo Division presents the 500 Series Single Integrated Component Bellows Valves.

Integrated Components reduce the number of welds and eliminate dead legs in your UHP gas delivery system. The compact designs allow multiple drops from a single vertical or horizontal main, without restriction to flow in the main.



### features

- ▶ Multi-Ply Inconel 625 bellows for maximum cycle life in a small envelope.
- ▶ Minimal PCTFE to reduce outgassing and moisture absorption.
- ▶ Heat code traceability on valve bodies, tube stubs and purge ports.
- ▶ Non-Rising handwheel for optimal clearance
- ▶ Open/Close Indicators on manual valve.
- ▶ Optimum purge port location.

### options

- ▶ Multiple handle colors available for gas differentiation.
- ▶ Purge Connections in VacuSeal™, UltraSeal™ or A-LOK® compression.
- ▶ Multiple Pneumatic Actuators available on most sizes (contact factory).
- ▶ Expanded tube ends offered for low flow applications.

### materials of construction

#### Wetted

Body . . . . . "VeriClean", Veriflo's custom high purity type 316L Stainless Steel™  
 Tube Ends . . . . . 316L Stainless Steel  
 Stem . . . . . 316L Stainless Steel  
 Seat Holder. . . . . 316L Stainless Steel  
 Bellows Adapter. . . . . 316L Stainless Steel  
 Bellows . . . . . Inconel®  
 Seat . . . . . PCTFE  
 Bonnet Gasket . . . . . Nickel

#### Non-wetted

Handle. . . . . Aluminum  
 Interior Stem. . . . . 300 Series Stainless Steel or 17-4 Stainless Steel  
 Driver . . . . . Bronze  
 Guide . . . . . Brass  
 Bonnet . . . . . Aluminum or 316 Series Stainless Steel

### operating conditions

Maximum Pressure . . . . . 250 psig (17.2 barg)  
 Minimum operating pressure. . . . . Vacuum

Maximum operating temperature:  
 . . . . . 212°F (100°C)

Design Leak Rate:  
 Inboard . . . . .  $1 \times 10^{-10}$  scc/sec He  
 Outboard . . . . .  $1 \times 10^{-5}$  scc/sec He  
 Across the seat . . . . .  $1 \times 10^{-10}$  scc/sec He

### surface finishes

Standard Ra . . . . . 10 micro inch Ra  
 optional 5 Ra and 20 Ra (electropolished)

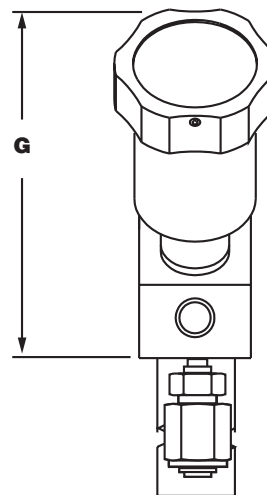
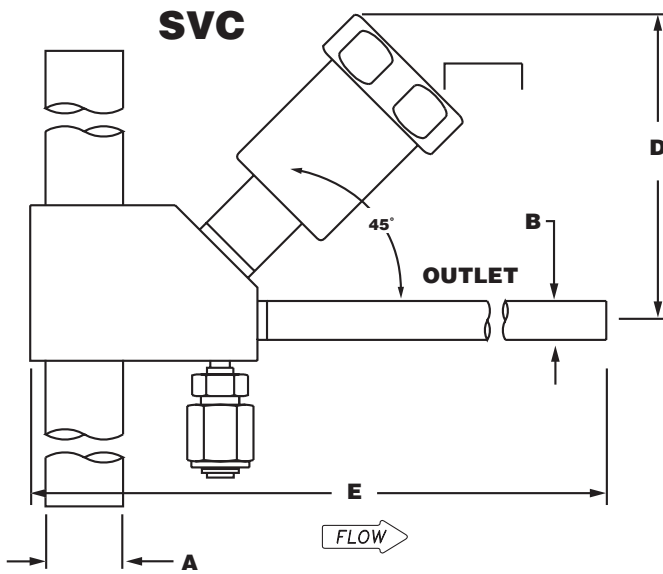
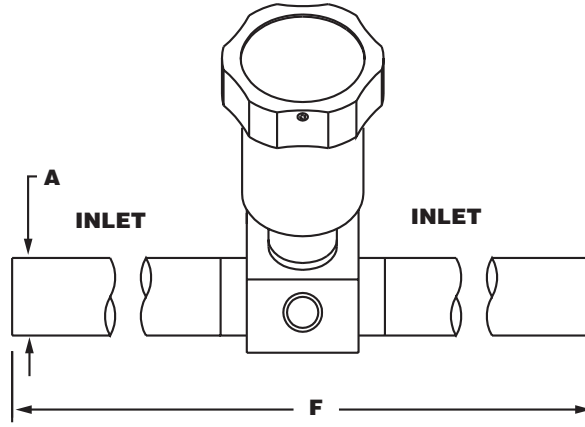
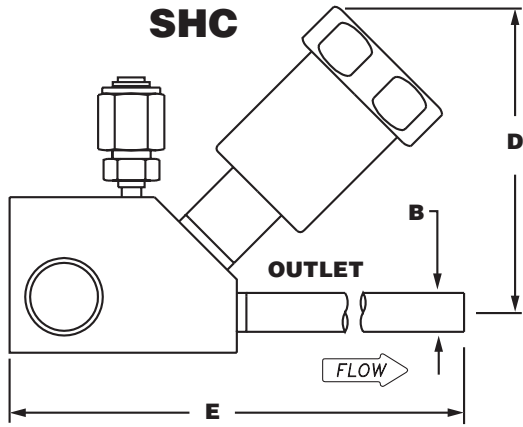
### functional performance

Flow capacity:  
 UHP504. . . . .  $C_V = 15$   
 UHP506. . . . .  $C_V = 20$



# 500 Series

## Dimensional Drawings

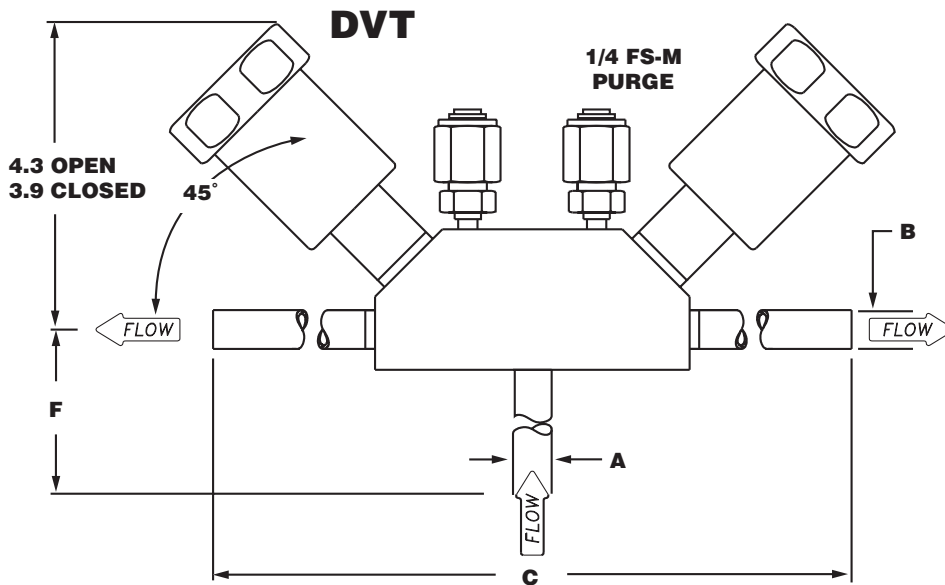
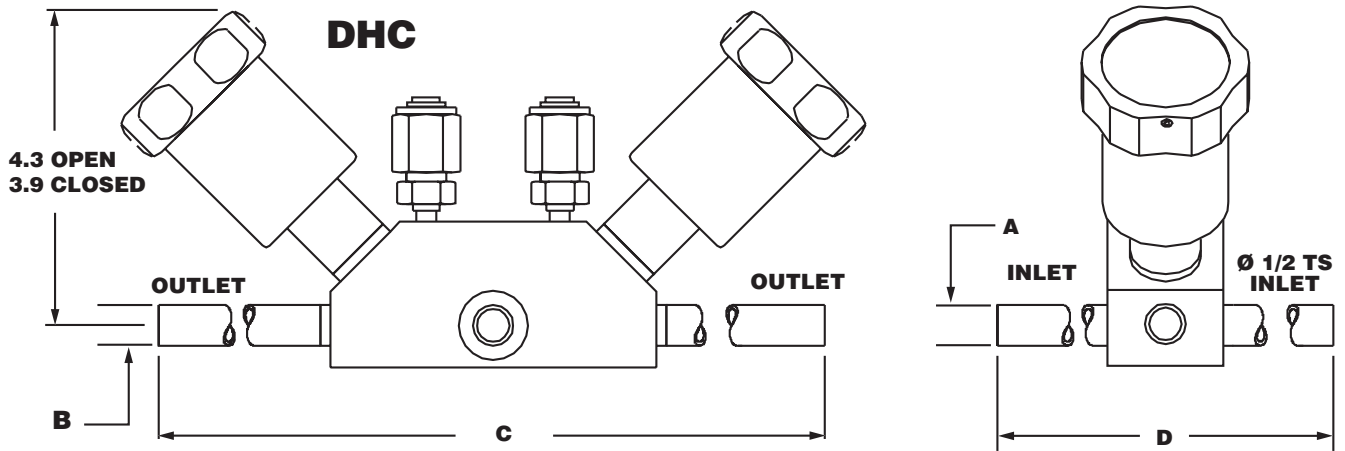


Part Number (SVC and SHC)	A (size x wall)	B (size x wall)	C (open/close)	D (open/close)	E (SVC/SHC)	F (SHC)	G (SVC)	Straight or Tube Exp.
504**0404-*	0.50 x .049	0.50 x .049	5.2/4.6	4.3/3.9	8.5	12.4	13.0	Straight
504**0604-*	0.75 x .065	0.50 x .049	5.2/4.6	4.3/3.9	8.5	12.4	13.0	Straight
504**0804-*	1.00 x .065	0.50 x .049	5.2/4.6	4.3/3.9	8.5	12.4	13.0	Straight
504**0806-*	1.00 x .065	0.75 x .065	5.2/4.6	4.3/3.9	9.8	12.4	13.0	Tube Exp.
504**0808-*	1.00 x .065	1.00 x .065	5.2/4.6	9.5/8.6	10.4	13.4	13.9	Straight
504**1208-*	1.50 x .065	1.00 x .065	11.5/10.3	9.5/8.6	10.4	14.4	14.9	Straight
504**1608-*	2.00 x .065	1.00 x .065	11.5/10.3	9.5/8.6	10.4	14.4	14.9	Straight

**Note:** Metric tube sizes and wall thickness available upon request.  
 Tube stub expanders and pneumatic actuation available.  
 Larger valve bodies and end connections available.  
 Dimensions in inches.

# 500 Series

## Dimensional Drawings

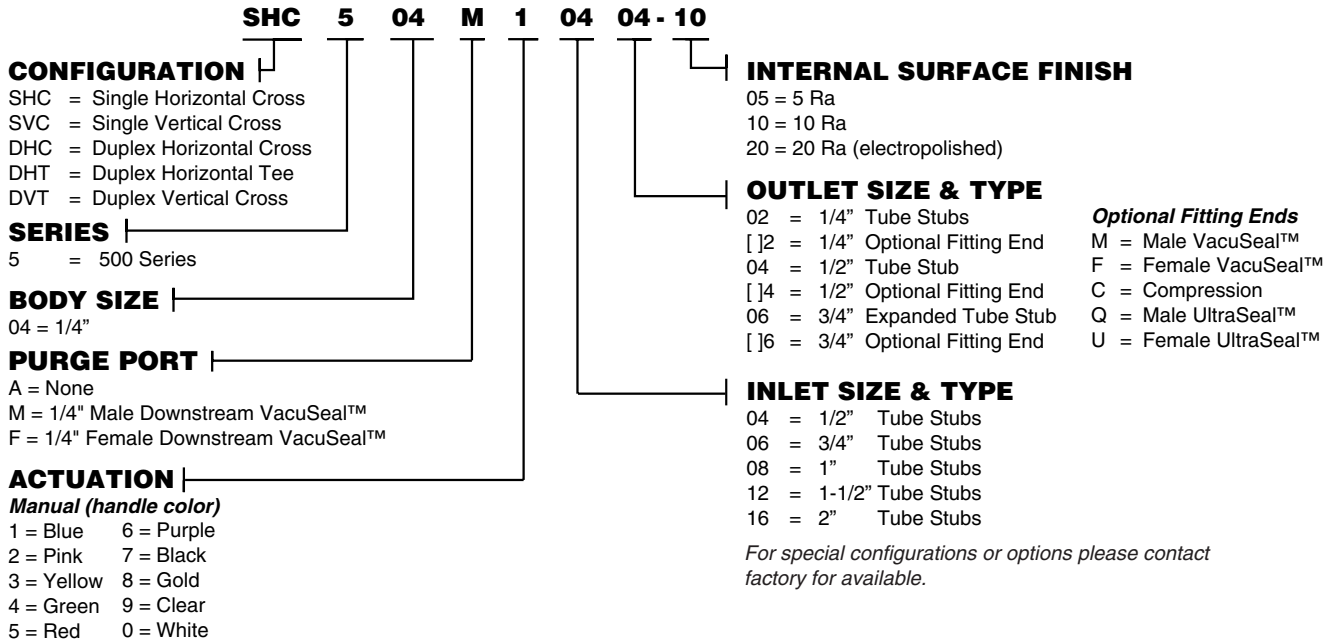


Part Number (DHC, DHT and DVT)	A (size x wall)	B (size x wall)	C	D (DHC)	E (DHT)	F (DVT)	Straight or Tube Exp.
504**0404-*	0.50 x .049	0.50 x .049	15.3	12.4	6.9	6.0	Straight
504**0604-*	0.75 x .065	0.50 x .049	15.3	12.4	6.9	6.0	Straight
504**0804-*	1.00 x .065	0.50 x .049	15.3	12.4	6.9	6.0	Straight
504**0806-*	1.00 x .065	0.75 x .065	17.7	12.4	6.9	6.0	Tube Exp.
504**1204-*	1.50 x .065	0.50 x .049	15.3	13.4	7.4	NA	Straight
504**1206-*	1.50 x .065	0.75 x .065	17.7	13.4	7.4	NA	Tube Exp.
504**1604-*	2.00 x .065	0.50 x .049	15.5	13.4	7.4	NA	Straight
504**1606-*	2.00 x .065	0.75 x .065	18.0	13.4	7.4	NA	Tube Exp.

**Note:** Metric tube sizes and wall thickness available upon request. Tube stub expanders and pneumatic actuation available. Larger valve bodies and end connections available. Dimensions in inches.

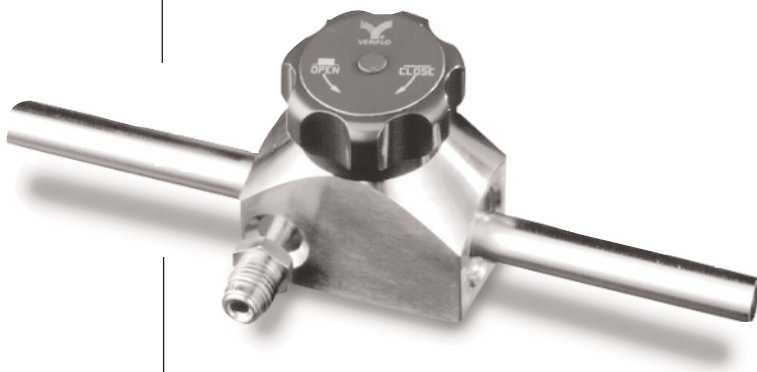
# 500 Series

## Ordering Information





Parker Hannifin Corporation's Veriflo Division presents the 935 Series 1/2" valve. The 935 provides superior control of gases and liquids under high flow, low pressure conditions where absolute purity is essential. The 935 is a "positive retraction" diaphragm valve — an engineered feature which has reduced the surface area and entrapment potential inherent in bellows valves.



There are no springs or retaining clips in the gas stream. This pure design yields a valve with neither entrapment zones nor particle generating surfaces.

The body of the 935 valve is machined from "Vericlean", Veriflo's low sulfur 316L Stainless Steel™. This proprietary alloy has a higher level of corrosion resistance than either cast or forged metals and provides maximum system integrity and superior surface finishes with enhanced electropolishing. A 10 micro inch Ra or less (.25 micro meter) finish is standard on the 935 and a 5 micro inch or less Ra, (.13 micron) finish is available as an option.

### ▶ materials of construction

#### Wetted

Body . . . . . "VeriClean", Veriflo's custom high purity type 316L Stainless Steel™  
Diaphragm . . . . . 316L Stainless Steel  
Seal . . . . . PCTFE, optional Vespe<sup>l</sup>

#### Non-wetted

Knob (Blue) . . . . . Aluminum  
Stem . . . . . 416 Stainless Steel  
Bushing . . . . . Aluminum Silicon Bronze

### ▶ operating conditions

Maximum operating pressure . . . . . 300 psig  
(21 barg)  
Minimum operating pressure . . . . . Vacuum

#### Temperature:

PCTFE . . . . . -40°F to 150°F (-40°C to 66°C)  
Vespe<sup>l</sup> . . . . . -40°F to 350°F (-40°C to 177°C)

#### Bake out (in open position):

PCTFE . . . . . 250°F(121°C)  
Vespe<sup>l</sup> . . . . . 350°F(177°C)

### ▶ functional performance

Flow capacity . . . . .  $C_v = 2.8$  (orifice size = .5")  
(SEMI Flow Coefficient Test #F-32-0998)

Design Proof Pressure . . . . . 450 psig (31 barg)  
Design Burst Pressure . . . . . 900 psig (62 barg)

#### Design Leak Rate:

Outboard . . . . .  $2 \times 10^{-9}$  scc/sec He  
Inboard . . . . .  $2 \times 10^{-10}$  scc/sec He  
Across seat . . . . .  $4 \times 10^{-9}$  scc/sec He

### ▶ internal volume

16.2 cc

### ▶ standard configurations

See ordering information.

### ▶ surface finishes

Standard . . . . . 10 Ra micro inch  
(.25 micro meter) or less  
Optional . . . . . EV= 5 Ra micro inch  
(.13 micro meter) or less



# QUANTUM 935

## Construction

The 935 diagram (Fig.1) illustrates the minimal number of wetted parts in this "positive retraction" style valve. The standard seat is PCTFE, with Vespel® available as an option.

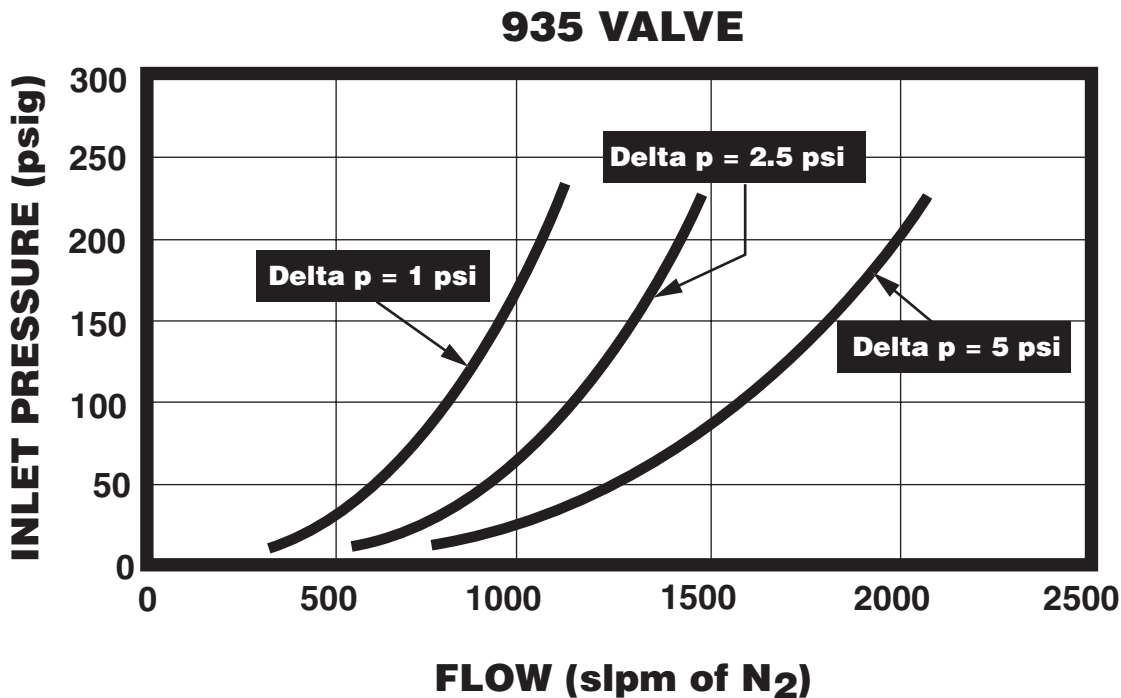
## Diaphragm Assembly

The heart of the 935 is the diaphragm assembly, to which a seal carrier has been laser-welded. The diaphragm creates a metal-to-metal seal to the body, the only seal to atmosphere other than the port connection. The seal carrier is connected to the knob stem for positive retraction. The domed diaphragm design allows for maximum stroke while maintaining low stress on the diaphragm weld area.

## Features

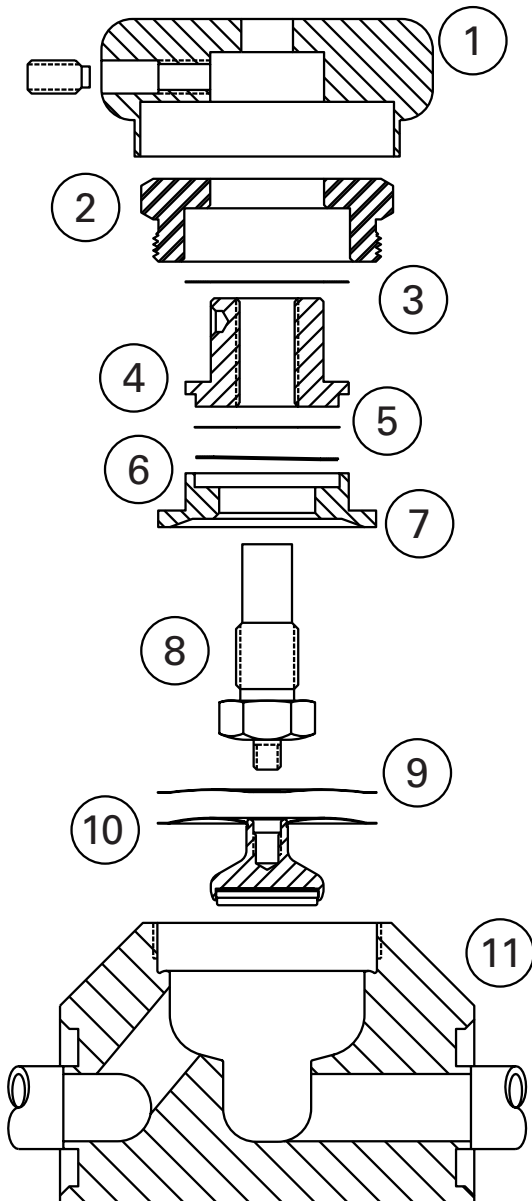
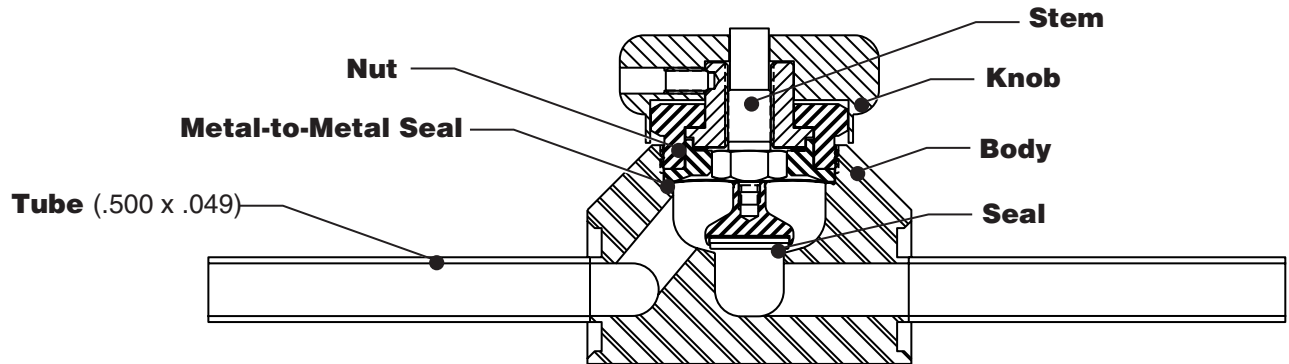
- ▶ "Vericlean", Veriflo's low sulfur high purity 316L material which enhances electropolishing, welding, and corrosion resistance
- ▶ Internally threadless and springless
- ▶ Fully functional from a vacuum to 300 psig (20.7 barg)
- ▶ Aerodynamic, fully swept flow passages
- ▶ Minimum particle generation and particle entrapment areas
- ▶ 100% Helium leak tested
- ▶ "Hurricane" cleaning, Veriflo's standard proprietary cleaning process, removes metallic ions, organic films and surface adhering particles

## Flow Curve



# QUANTUM 935

## Cross Sectional Drawings



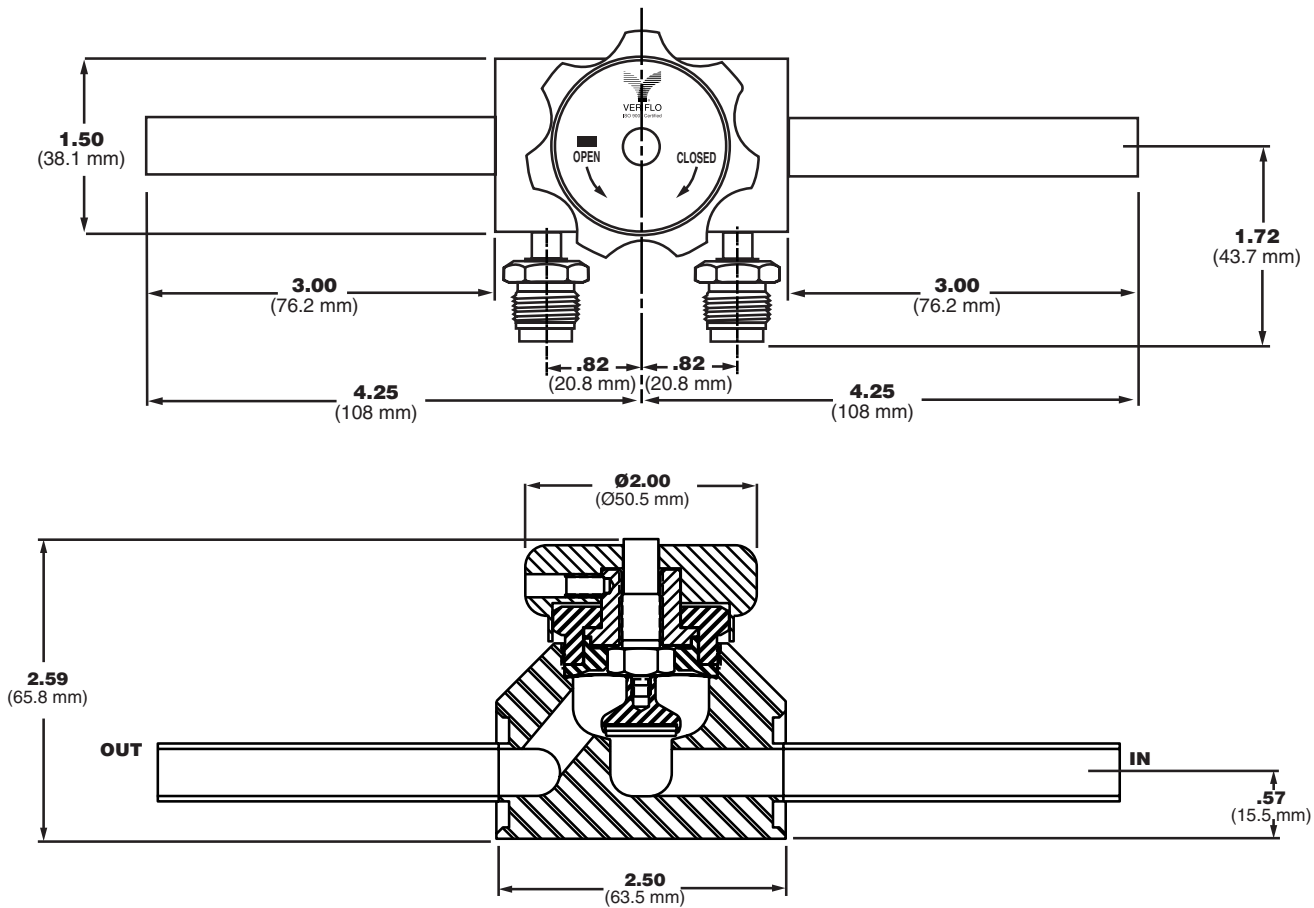
### List of Components

1. Knob
2. Nut
3. Washer
4. Bushing
5. Bearing plate
6. Wave spring washer
7. Diaphragm plate
8. Stem
9. Backup Diaphragm
10. Welded diaphragm/seat assembly
11. Body - "VeriClean" 316L Stainless Steel

Fig.1

# QUANTUM 935

## Cross Sectional Drawings



## Ordering Information

935		FS8	MM	P2	FSM	VESP	
<b>BASIC SERIES</b>							<b>OPTIONAL FEATURES</b>
935							VESP = Vespel® Seat**
<b>CONNECTIONS</b>							C1 = Purge Port capped and leak tested-per port
TS = 1/4" Tube							C2 = Face Seal Outlet port capped and leak tested
TS6 = 3/8" Tube							<b>PURGE PORT CONNECTIONS</b>
TS8 = 1/2" Tube							FSM = 1/4" Face Seal Male
TS12 = 3/4" Tube							FSF = 1/4" Face Seal Female
TS16 = 1.0" Tube							<b>PURGE PORT LOCATIONS</b>
TS12MM = 12 mm x 1 mm x 76 mm Tube*							P1 = Outlet Side
TS18MM = 18 mm x 1.5 mm x 76 mm Tube*							P2 = Inlet and Outlet
FS = 1/4" Face Seal							P3 = Inlet Side
FS8 = 1/2" Face Seal							XY = No purge port
FS12 = 3/4" Face Seal							
<b>PORT CONFIGURATION</b>							
M = Male							
F = Female							

\* mm is a measurement in millimeters.  
 \*\* Recommended for Nitrous Oxide (N<sub>2</sub>O) Service  
**NOTE: Different colored knobs are available upon request.  
 Contact factory for available colors.**

Vespel® is a registered trademark of DuPont Company.





Parker Hannifin Corporation's Veriflo Division presents the 935T Series (horizontal cross) 1/2" valve. The 935T provides superior control of gases and liquids under high flow, low pressure conditions where absolute purity is essential. The 935T is a "positive retraction" diaphragm valve — an engineered feature which has reduced the surface area and entrapment potential inherent in bellows valves.

There are no springs or retaining clips in the gas stream. This pure design yields a valve with neither entrapment zones nor particle generating surfaces.



### features

- ▶ "Vericlean", Veriflo's low sulfur high purity 316L material which enhances electropolishing, welding, and corrosion resistance.
- ▶ Internally threadless and springless.
- ▶ Fully functional from a vacuum to 300 psig (21 barg).
- ▶ Aerodynamic, fully swept flow passages.
- ▶ Minimum particle generation and particle entrapment areas.
- ▶ 100% Helium leak tested.
- ▶ "Hurricane" cleaning, standard proprietary cleaning process, removes metallic ions, organic films and surface adhering particles.

### materials of construction

#### Wetted

Body . . . . . "VeriClean", Veriflo's high purity type 316L VAR Stainless Steel™  
 Diaphragm . . . . . 316L VAR Stainless Steel  
 Seal . . . . . PCTFE, optional Vespel®

#### Non-wetted

Knob . . . . . Aluminum  
 Stem . . . . . 416 Stainless Steel  
 Bushing . . . . . Aluminum Silicon Bronze

### operating conditions

Maximum operating pressure . . . . . 300 psig (21 barg)  
 Minimum operating pressure . . . . . Vacuum

#### Temperature:

PCTFE . . . . . -40° F to 150° F (-40° C to 65° C)  
 Vespel® . . . . . -40° F to 350° F (-40° C to 177° C)

#### Bake out (in open position)

PCTFE . . . . . 250°F (121° C)  
 Vespel® . . . . . 350°F (177° C)

### functional performance

Flow capacity . . . . .  $C_v = 2.8$  (orifice size = .5")  
 (SEMI Flow Coefficient Test #F-32-0998)

Design Proof Pressure . . . . . 450 psig (31 barg)  
 Design Burst Pressure . . . . . 900 psig (62 barg)

#### Design Leak Rate:

Outboard . . . . .  $2 \times 10^{-9}$  scc/sec He  
 Inboard . . . . .  $2 \times 10^{-10}$  scc/sec He  
 Across seat . . . . .  $4 \times 10^{-9}$  scc/sec He

### standard configurations

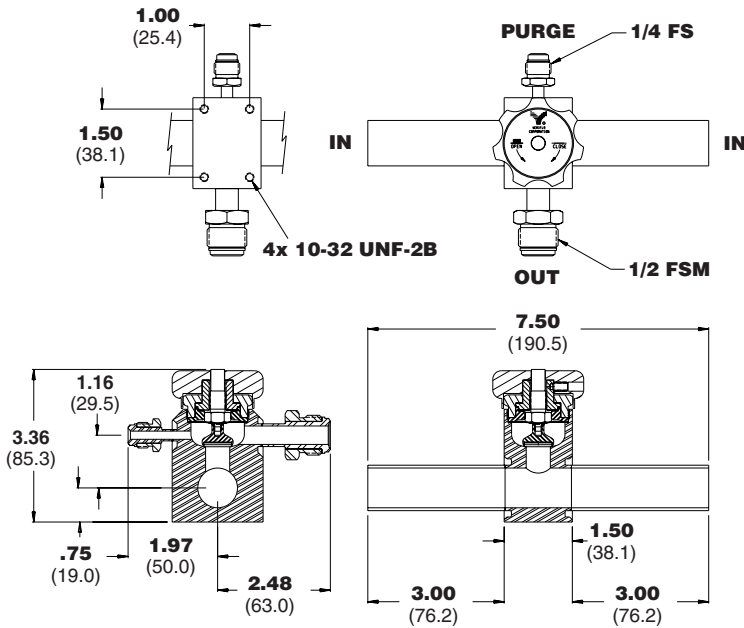
See ordering information.

### surface finishes

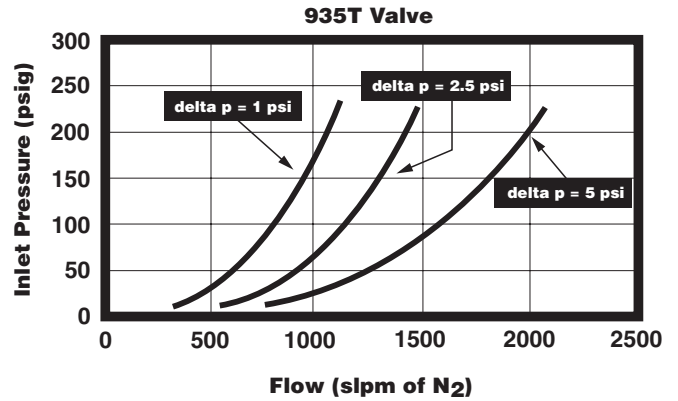
Standard . . . . . 10 Ra micro inch (.25 micro meter) or less  
 Optional . . . . . EV = 5 Ra micro inch (.13 micro meter) or less

# QUANTUM 935T

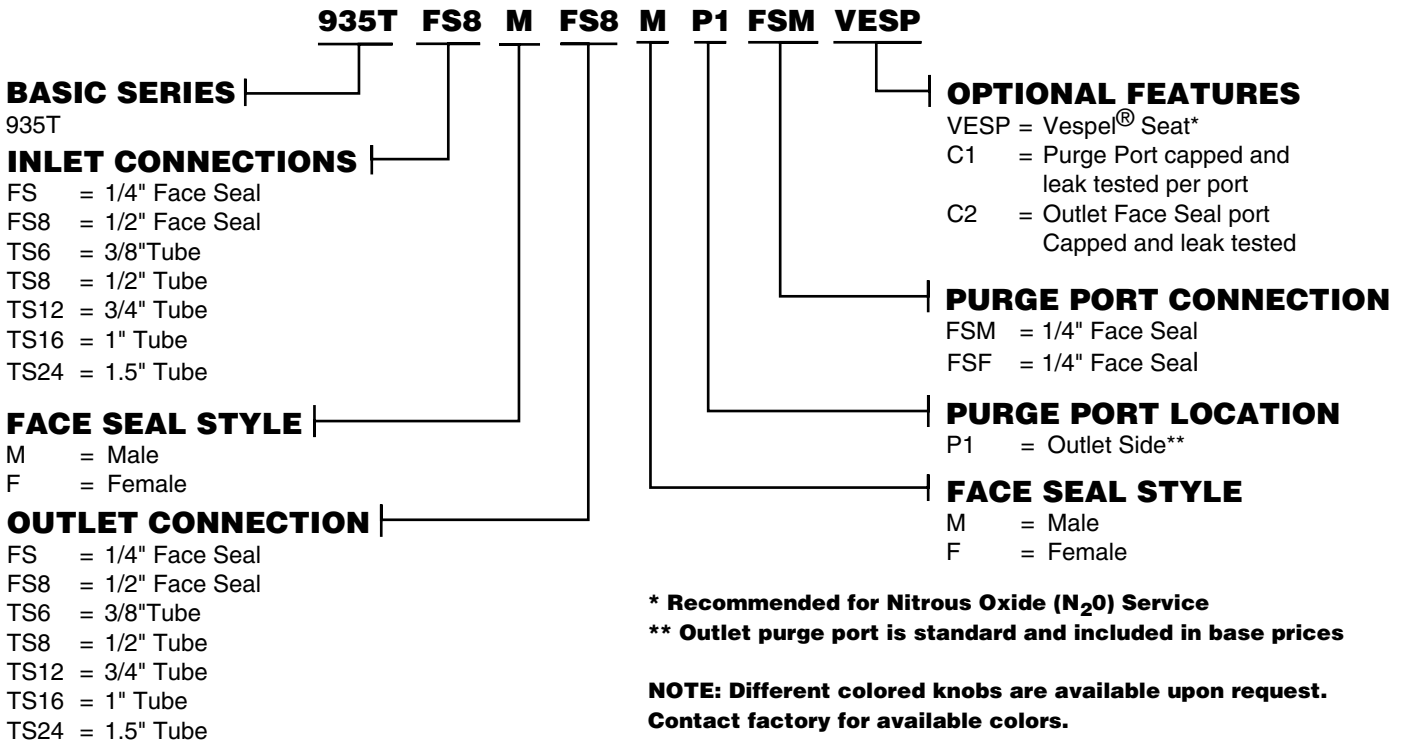
## Dimensional Drawings



## Flow Curve



## Ordering Information



\* Recommended for Nitrous Oxide (N<sub>2</sub>O) Service  
\*\* Outlet purge port is standard and included in base prices

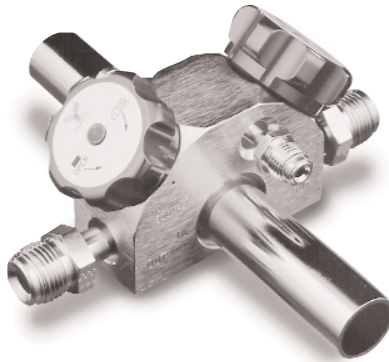
**NOTE: Different colored knobs are available upon request. Contact factory for available colors.**

Vespel® is a registered trademark of Dupont.



Parker Hannifin Corporation's Veriflo Division presents the 935Y 1/2" valve. The 935Y provides superior control of gases and liquids under high flow, low pressure conditions where absolute purity is essential. The 935Y is a "positive retraction" diaphragm valve - an engineered feature which has reduced the surface area and entrapment potential inherent in bellows valves.

There are no springs or retaining clips in the gas stream. In fact, there are no superfluous parts. This pure design yields a valve with neither entrapment zones nor particle generating surfaces.



### features

- ▶ "Vericlean" low sulfur high purity 316L material which enhances electropolishing, welding, and corrosion resistance
- ▶ Internally threadless and springless
- ▶ Fully functional from a vacuum to 300 psig
- ▶ Aerodynamic, fully swept flow passages
- ▶ Minimum particle generation and particle entrapment areas
- ▶ Standard surface finish is 10 Ra micro inch (.254 micro meter) 5 Ra micro inch or less option available
- ▶ 100% Helium leak tested
- ▶ "Hurricane" cleaning, standard proprietary cleaning process, removes metallic ions, organic films and surface adhering particles

### materials of construction

#### Wetted

Body . . . . . "VeriClean" Veriflo's custom high purity Type 316L Stainless Steel™  
 Diaphragm . . . . . 316L Stainless Steel  
 Seal . . . . . PCTFE, optional Vespel®

#### Non-wetted

Knob (blue) . . . . . Aluminum  
 Stem . . . . . 416 Stainless Steel  
 Bushing . . . . . Aluminum silicon bronze

### operating conditions

Maximum operating pressure . . . . . 300 psig (20.7 barg)  
 Minimum operating pressure . . . . . Vacuum  
 Temperature . . . . . PCTFE  
 -40°F to 165°F (-40°C to 73°C)  
 Vespel® . . . . . -40°F to 350°F (-40°C to 177°C)

#### Bake out in open position:

PCTFE . . . . . 250°F (121°C)  
 Vespel® . . . . . 350°F (176°C)

### flow capacity

$C_v$  . . . . . 2.8 (orifice size = 0.5")  
 (SEMI Flow Coefficient Test #F-32-0998)

#### Design leak rate

Outboard . . . . .  $2 \times 10^{-9}$  scc/sec He  
 Inboard . . . . .  $2 \times 10^{-10}$  scc/sec He  
 Across seat . . . . .  $4 \times 10^{-9}$  scc/sec He

### standard configurations

Any combination of FS male and/or female fittings.  
 Other configurations are 1/2" up to 1.5" tube

### surface finish

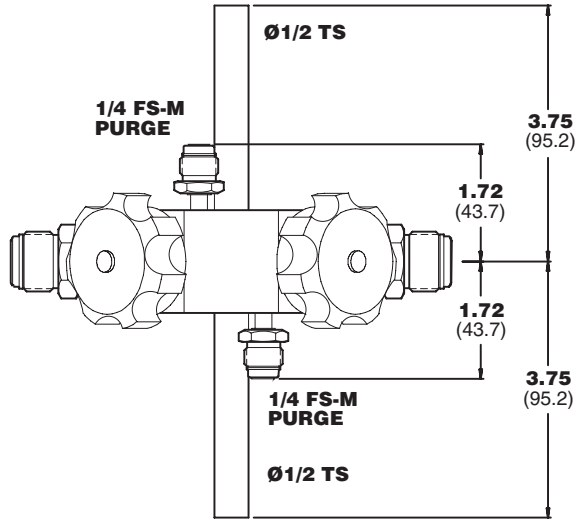
Standard . . . . . 10 Ra micro inch  
 (.25 micro meter) or less  
 Optional . . . . . 5 Ra micro inch  
 (.13 micro meter) or less



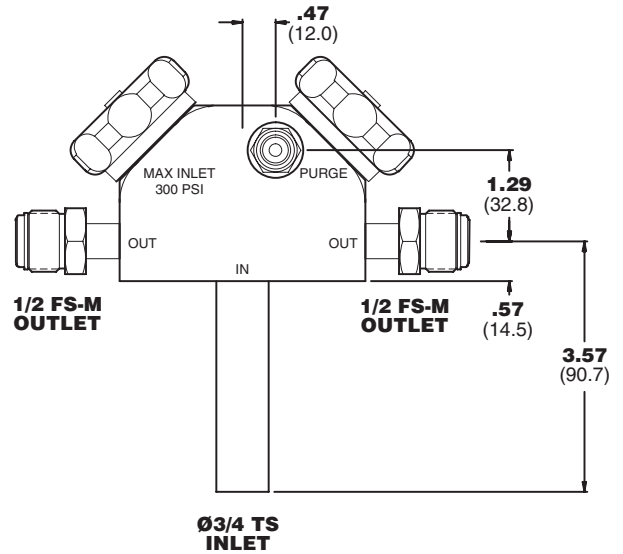
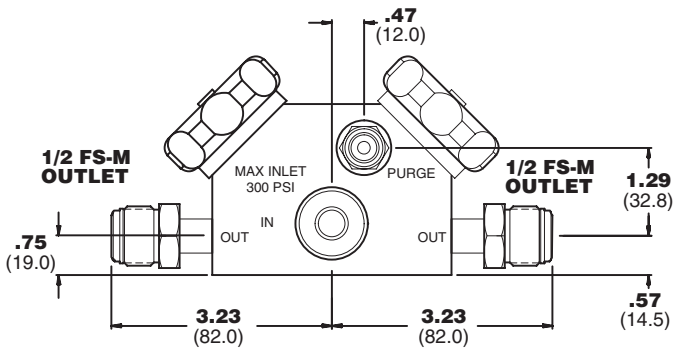
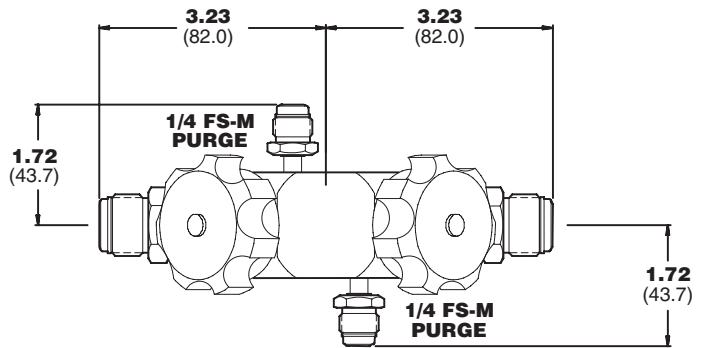
# QUANTUM 935Y

## Dimensional Drawing

**935Y1  
Horizontal Cross**



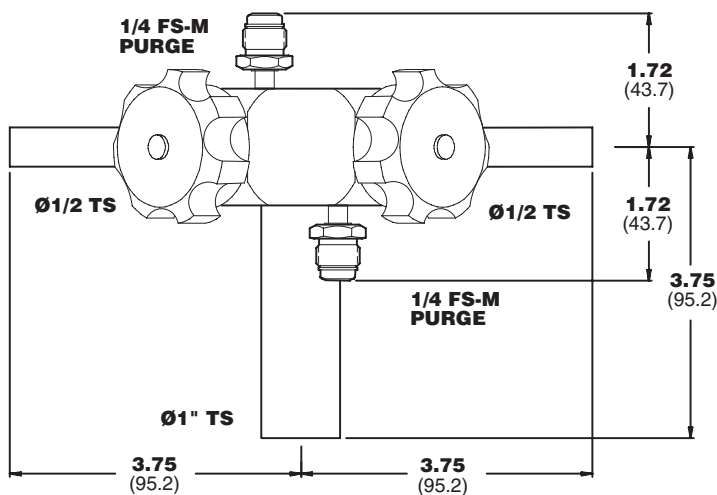
**935Y2  
Vertical Tee**



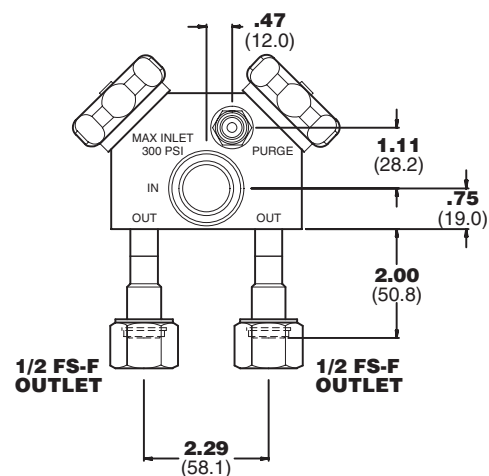
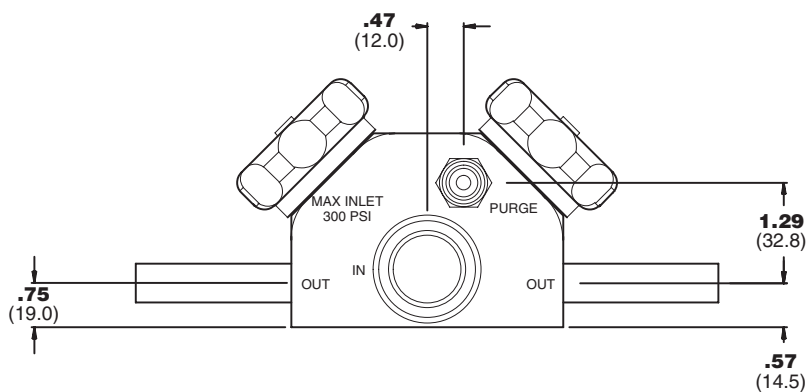
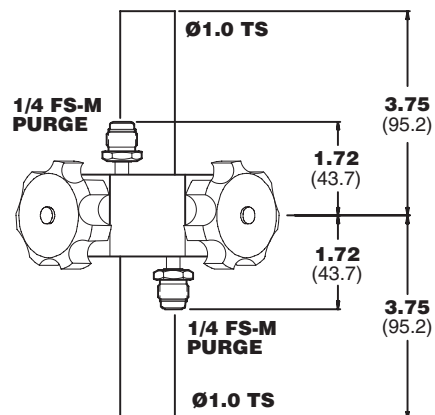
# QUANTUM 935Y

## Dimensional Drawing

**935Y3  
Horizontal Tee**



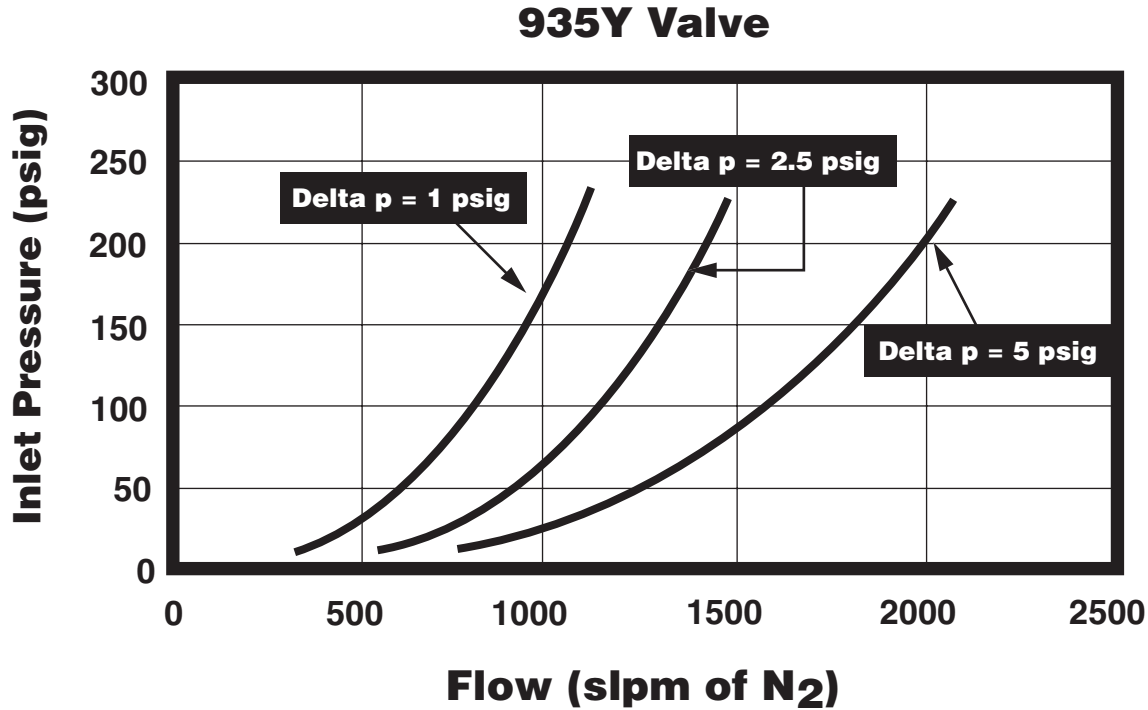
**935Y4  
Horizontal Angled Cross**





# QUANTUM 935Y

## Flow Curve



## Ordering Information

	<b>935Y</b>	<b>1</b>	<b>TS8</b>	<b>FS8</b>	<b>MM</b>	<b>P1</b>	<b>FSM</b>	<b>VESP</b>	
<p><b>BASIC SERIES</b>  </p> <p>935Y</p> <p><b>FLOW PATH</b>  </p> <p>1 = Horizontal Cross</p> <p>2 = Vertical Tee</p> <p>3 = Horizontal Tee</p> <p>4 = Horizontal Angled Cross</p> <p><b>INLET CONNECTION</b>  </p> <p>TS8 = 1/2" Tube</p> <p>TS12 = 3/4" Tube</p> <p>TS16 = 1" Tube</p> <p>TS24 = 1.5" Tube</p> <p><b>* Recommended for Nitrous Oxide (N<sub>2</sub>O) Service.</b></p> <p><b>** Includes 2 purge ports, one for each valve as standard.</b></p>	<p><b>OPTIONAL FEATURES</b></p> <p>C1 = Purge Port capped and leak tested-per port</p> <p>C2 = Outlet Face Seal Capped and leak tested</p> <p>VESP = Vespe<sup>l</sup>® Seals*</p> <p><b>PURGE PORT CONNECTIONS</b></p> <p>FSM = 1/4" Face Seal Male</p> <p>FSF = 1/4" Face Seal Female</p> <p><b>PURGE PORT**</b></p> <p>P1 = Down Steam Purge Port</p> <p><b>OUTLET CONNECTION STYLE</b></p> <p>M = Male Face Seal</p> <p>F = Female Face Seal</p> <p>Blank = Tube Stub</p> <p><b>OUTLET CONNECTION</b></p> <p>TS8 = 1/2" Tube</p> <p>TS12 = 3/4" Tube</p> <p>TS16 = 1" Tube</p> <p>FS8 = 1/2" Face Seal</p> <p>FS12 = 3/4" Face Seal</p>								

Vespe<sup>l</sup>® is a registered trademark of DuPont Company.



# 18 Series

## High Flow/Bulk System Diaphragm Valve



Parker Hannifin Corporation's Veriflo Division presents the 18 Series valves. The 18 Series provide a high-flow, positive shut off for high purity gas/fluid systems. This 1/2" and 3/8" spring type diaphragm valve offers superior leak integrity for Manually and Pneumatically Actuated applications with pressure ranges from vacuum to 1500 psig.



### features

- ▶ Spring type design.
- ▶ Metal diaphragm sealed.
- ▶ Minimal particle generation.
- ▶ Minimal contributions of moisture, oxygen and hydrocarbons.
- ▶ High cycle life
- ▶ Available with inlet and outlet purge ports.

### materials of construction

#### Wetted

Body . . . . . 316L Stainless Steel™ VIM/VAR  
 optional Nickel 200 or Hastelloy® C-22  
 Seat . . . . . PCTFE  
 Diaphragm . . . . . Elgiloy®  
 Lower Stem . . . . . 316L Stainless Steel VIM/VAR  
 Spring . . . . . 316L Stainless Steel

#### Non-wetted

Stem Button . . . . . 303 Stainless Steel  
 Upper Stem . . . . . AL-SI Bronze  
 Bonnet . . . . . 303 Stainless Steel  
 Screw . . . . . 18-8 Stainless Steel  
 Set Screw . . . . . Alloy Steel  
 Actuator Housing . . . . . Aluminum  
 Handle . . . . . Aluminum

### operating conditions

Pressure rating  
 Manually Actuated . . . . . Vacuum to 1500 psig  
 Pneumatically Actuated . . . . . Vacuum to  
 1200 psig at 70°F  
  
 Actuator Pressure to open . . . . . 70 psig min.  
 to 125 psig max.

Temperature:  
 PCTFE . . . . . -65°F to 150°F (-54°C to 65°C)

### surface finish

Standard Ra . . . . . 10 Ra electropolished (EP)

### functional performance

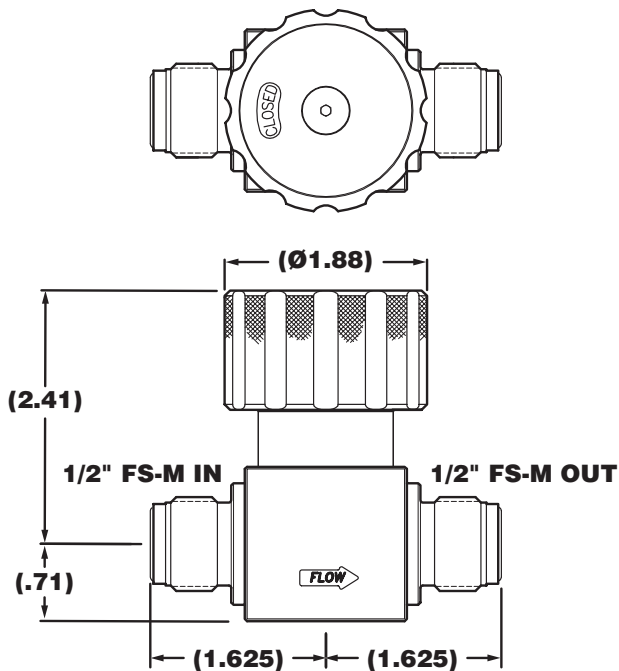
Flow Capacity  
 Manually Actuated . . . . . C<sub>v</sub> 1.3  
 Pneumatically Actuated . . . . . C<sub>v</sub> 1.0  
  
 Design Leak Rate  
 Outboard . . . . . 1 x 10<sup>-10</sup> scc./sec He  
 Inboard less than . . . . . 2 x 10<sup>-10</sup> scc./sec He  
 Across seat\* less than . . . . . 4 x 10<sup>-9</sup> scc./sec He

\*Excluding permeation of PCTFE

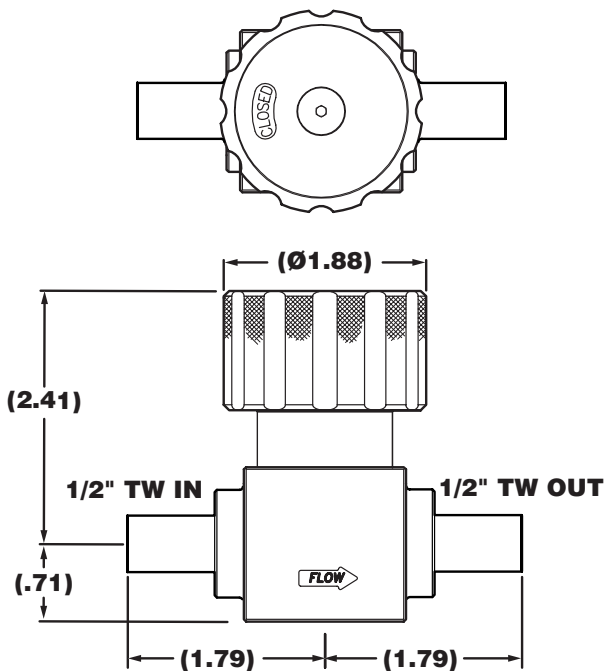


# 18 Series

## Dimensional Drawings

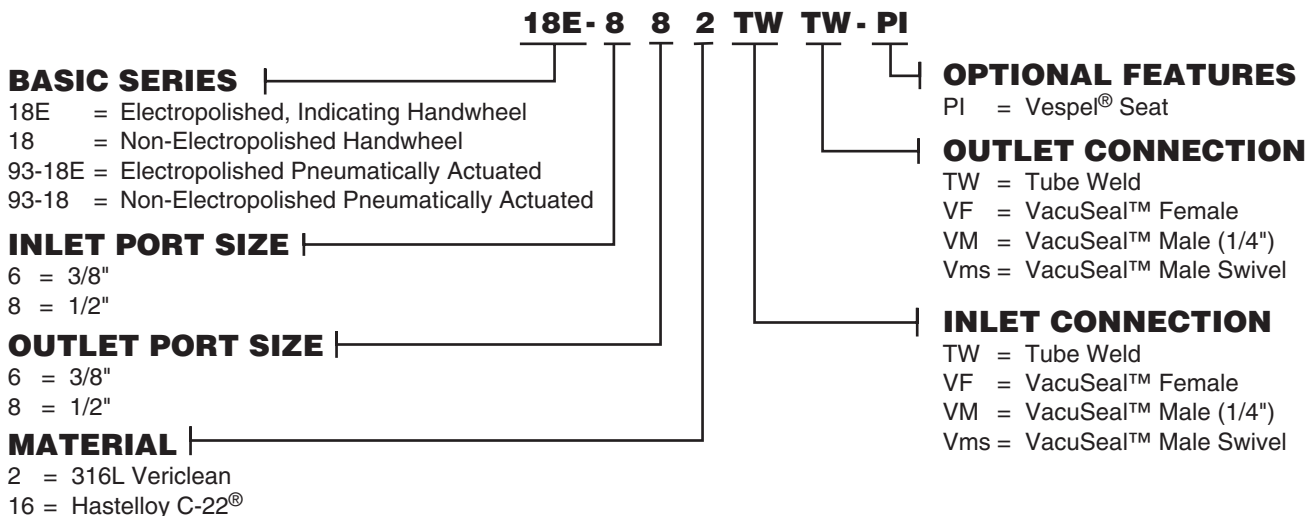


**18E Series VacuSeal**



**18E Series Tubestub**

## Ordering Information



Hastelloy C-22® is a registered trademark of Hayes International, Inc.  
 Vespel® is a registered trademark of DuPont Company.  
 A-LOK® is a registered trademark of Parker Hannifin Corporations.



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## Parker Hannifin Corporation

### About Parker Hannifin Corporation

Parker Hannifin is a leading global motion-control company dedicated to delivering premier customer service. A Fortune 500 corporation listed on the New York Stock Exchange (PH), our components and systems comprise over 1,400 product lines that control motion in some 1,000 industrial and aerospace markets. Parker is the only manufacturer to offer its customers a choice of hydraulic, pneumatic, and electromechanical motion-control solutions. Our Company has the largest distribution network in its field, with over 7,500 distributors serving nearly 400,000 customers worldwide.

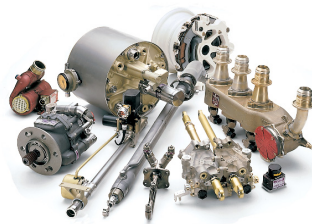
### Parker's Charter

To be a leading worldwide manufacturer of components and systems for the builders and users of durable goods. More specifically, we will design, market and manufacture products controlling motion, flow and pressure. We will achieve profitable growth through premier customer service.

### Product Information

North American customers seeking product information, the location of a nearby distributor, or repair services will receive prompt attention by calling the Parker Product Information Center at our toll-free number: 1-800-C-PARKER (1-800-272-7537). In Europe, call 00800-C-PARKER-H (00800-2727-5374).

**The Aerospace Group** is a leader in the development, design, manufacture and servicing of control systems and components for aerospace and related high-technology markets, while achieving growth through premier customer service.



**The Climate & Industrial Controls Group** designs, manufactures and markets system-control and fluid-handling components and systems to refrigeration, air-conditioning and industrial customers worldwide.



**The Fluid Connectors Group** designs, manufactures and markets rigid and flexible connectors, and associated products used in pneumatic and fluid systems.



**The Seal Group** designs, manufactures and distributes industrial and commercial sealing devices and related products by providing superior quality and total customer satisfaction.



**The Hydraulics Group** designs, produces and markets a full spectrum of hydraulic components and systems to builders and users of industrial and mobile machinery and equipment.



**The Filtration Group** designs, manufactures and markets quality filtration and clarification products, providing customers with the best value, quality, technical support, and global availability.



**The Automation Group** is a leading supplier of pneumatic and electromechanical components and systems to automation customers worldwide.



**The Instrumentation Group** is a global leader in the design, manufacture and distribution of high-quality critical flow components for worldwide process instrumentation, ultra-high-purity, medical and analytical applications.





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