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TECHNOLOGY GROUP

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We buy your excess, underutilized, and idle equipment
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so your equipment works exactly as you specify.

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Quantum Valve & TITAN II PLUS Valve Selection Guide

Microelectronics Product Line

Catalog 4504/USA

October 2003



VERIFLO

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Quantum Valve & TITAN II PLUS Valve Selection Guide

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Safe Valve Selection

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

Selection Guide

Customize a valve to meet your system requirements. Your choice of Valve Actuation, End Connections and Flow Path are described in this section. The model designation options start with selection of the actuator in Figure #1.

Valve Actuation - Figure #1

Actuator Style	Pressure Range Vacuum to...	Description of Actuator	Actuator Designator
Manual 930,955 917 945	250 psig (17 barg) 3000 psig (207 barg)[1] 3500 psig (240 barg)[1]	Round handwheel 1/4 Turn Lever Indicating Handwheel Mini 1/4 turn lever	S L I M
Pneumatic (low pressure)	125 psig (8.6 barg)	Normally Closed[2] Normally Open[2]	AOPLP1NC[4] AOPLPNC AOPLP1NO[4] AOPLPNO
Pneumatic (high pressure)	3500 psig (240 barg)[1]	Normally Closed[2]	AOPHPNC[3] AOPHP1NC[3,4]

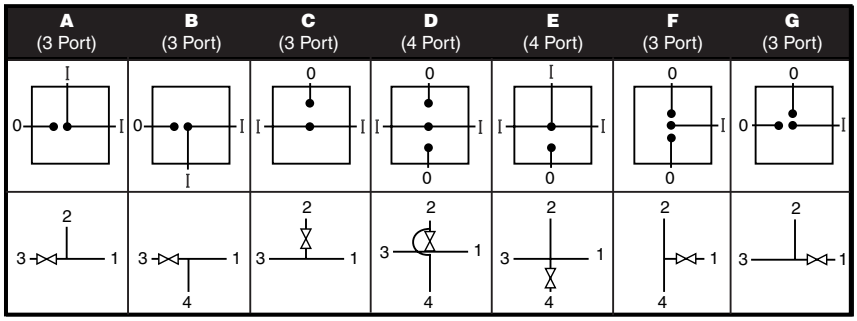
1. For oxygen: 2200 psig (150 bar) • 2. Actuation pressure - 75 psig nominal (60-120 psig) • 3. 945 Only • 4. "1" Designates Integral Cartridge Fitting for 1/8" O.D. Plastic Tube.

Note: Use 930 or 945 to replace 944 valves

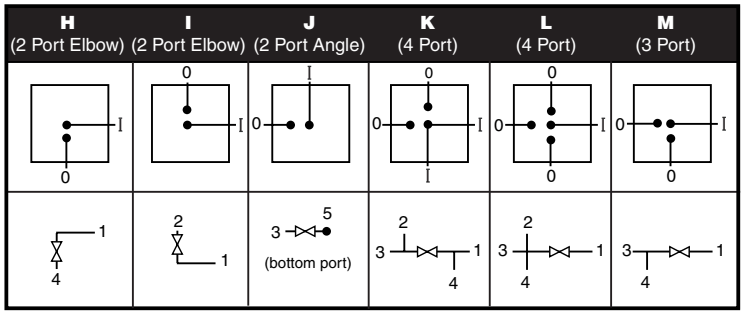
Flow Path

Select a body configuration with the desired internal flow path in Figure #2. The flow path is shown as viewed from the top of the body.

Flow Path Designator - Figure #2



Although high purity valves will operate in either flow direction, the "O" port is generally used as the outlet or downstream port and the "I" port is normally used as the inlet or upstream port. The Flow Path Designator letter will be used in the Valve Ordering Information.



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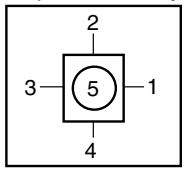
Port Numbering/ End Connections

Starting with Port 1 and continuing in numerical sequence with Ports 2, 3, 4, and 5 as shown in Figure #3, select a designator for each port that will be used, i.e. two designators for a two port body, three designators for a three port body, and so on, even if the connections are identical. Select the desired End Connection using the End Connection Style Chart (Figure #4) for each port on the body.

Figure #3

Port Numbering Sequence

Top View of Body



5 = bottom port

Figure #4

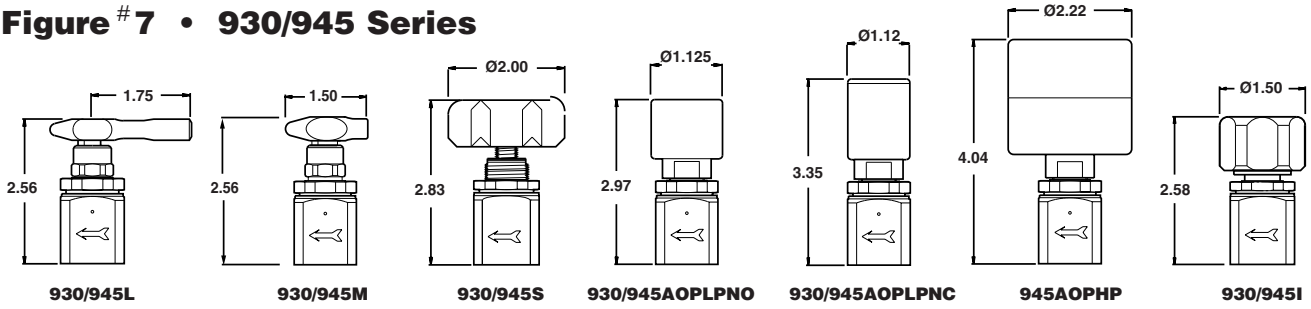
End Connection Size/Style	Designator
1/ 4" Tube Stub (.250 x .035)	1
1/4" Face Seal Male Swivel	2
1/4" Face Seal Female Swivel	3
3/8" Tube Stub (.375 x .035)	4
1/2" Face Seal Male Swivel	5
1/2" Face Seal Female Swivel	6
1/2" Tube Stub (.500 x .049)	7
1/8" Tube Stub* (.125 x .028)	A1
1/8" Face Seal Male*	A2
1/8" Face Seal Female*	A3

* 917 Series Only

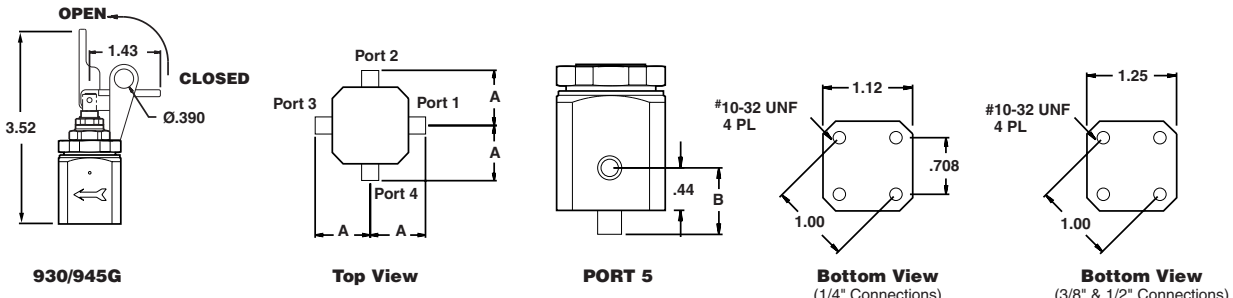
930/945 Dimensions

Overall height and actuator dimensions are shown in Figure #7. Centerline to port dimensions are shown in Figure #8. Port to port dimensions are determined by adding the "A" dimensions together.
Note: *All dimensions are in inches. For reference only.*

Figure #7 • 930/945 Series



Note: Standard Lever And Handwheel Color Is Blue



Note: Standard Indicating Handwheel And Toggle Handle Color Is Black

Figure #8

Standard Dimensions (inches)				Dimension Tolerance ± 0.03			
End Connection	A	B	Designator		A	B	Designator
1/4" Tube Stub (.250 x .035)	0.875	0.69	1	3/8" Tube Stub (.375 x .035)[1]	1.12	.94	4
1/4" Face Seal Male Swivel (.347 O.D. Gland)	1.39	1.26	2	1/2" Face Seal Male Swivel[1]	2.07	1.89	5
1/4" Face Seal Female Swivel (.347 O.D. Gland)	1.39	1.26	3	1/2" Face Seal Female Swivel[1]	2.07	1.89	6
				1/2" Tube Stub (.500 x .049)	1.12	.94	7

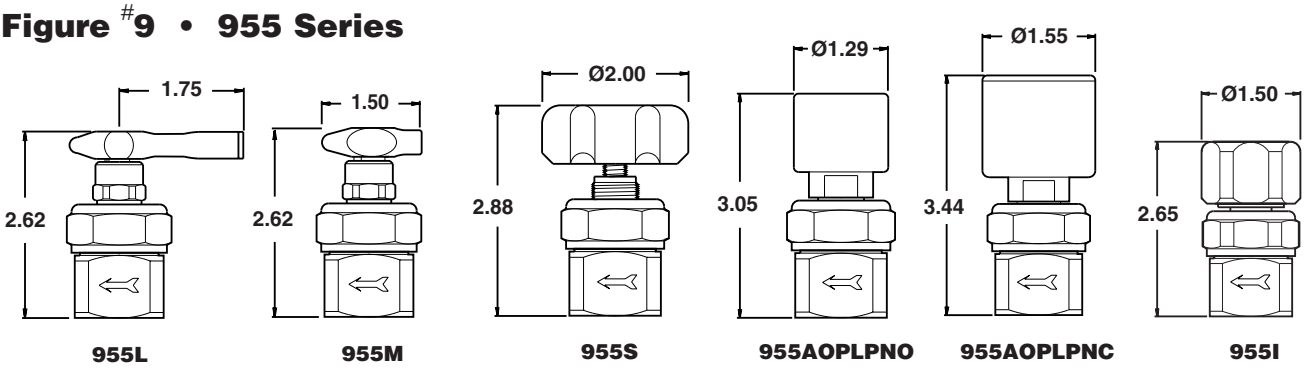
1. 3/8" & 1/2" connections use 1.250" square body

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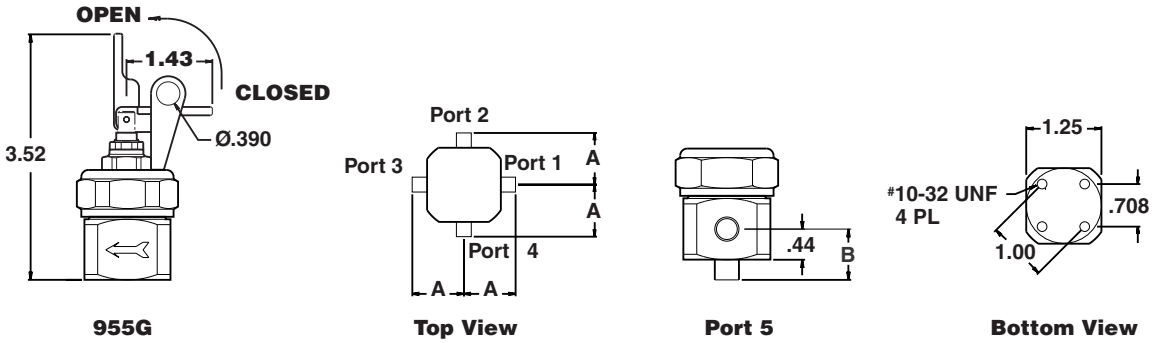
955 Dimensions

Overall height and actuator dimensions are shown in Figure #9. Centerline to port dimensions are shown in Figure #10. Port to port dimensions are determined by adding the "A" dimensions together.
Note: *All dimensions are in inches. For reference only.*

Figure #9 • 955 Series



Note: Standard Lever And Handwheel Color Is Blue



Note: Standard Indicating Handwheel And Toggle Handle Color Is Black

Figure #10

Standard Dimensions (inches)				Dimension Tolerance ± 0.03			
End Connection	A	B	Designator		A	B	Designator
1/4" Tube Stub (.250 x .035)	1.12	0.94	1	3/8" Tube Stub (.375 x .035)	1.12	.94	4
1/4" Face Seal Male Swivel (.347 O.D. Gland)	1.48	1.26	2	1/2" Face Seal Male Swivel	2.10	1.89	5
1/4" Face Seal Female Swivel (.347 O.D. Gland)	1.48	1.26	3	1/2" Face Seal Female Swivel	2.10	1.89	6
				1/2" Tube Stub (.500 x .049)	1.12	.94	7

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Ordering Information

Build or configure a valve to your specifications using the ordering information below. Complete the configuration by combining the modular designators in the sequence shown below.

QUANTUM VALVES L S C 323 VESP

BASIC SERIES
917, 930, 945, 955

TYPE

AOPHPNC†	=	Air Operated, High Pressure, Normally Closed
AOPHP1NC†	=	Air Operated, High Pressure, Normally Closed with Internal Cartridge Fitting
AOPLPNC	=	Air Operated, Low Pressure, Normally Closed
AOPLP1NC	=	Air Operated, Low Pressure, Normally Closed with Cartridge Fitting
AOPLPNO	=	Air Operated, Low Pressure, Normally Open
AOPLP1NO	=	Air Operated, Low Pressure, Normally Open with Cartridge Fitting
G	=	Toggle
I	=	Indicating Handwheel
L	=	Lever
LL	=	Locking Lever
M	=	Mini Lever
S	=	Handwheel

Note: "1" Designates Integral Cartridge Fitting for 1/8" O.D. Plastic Tube

MATERIAL

S	=	316L Stainless Steel
H	=	Hastelloy C-22®

OPTIONAL FEATURES

BL008	=	Bleed Valve .008 Orifice
BL015	=	Bleed Valve .015 Orifice
LK	=	LockOut-TagOut*
PM	=	Panel Mount**
VESP	=	Vespel® Seat***
PEEK	=	PEEK™ Seat
2.3	=	2.3" End-To-End Fixed Male Face Seals
2.78	=	2.78" End-To-End (1/4" FS, 955 Valve Only)

Note: Consult Factory For Additional Handle Colors

END CONNECTIONS
Port 1
Port 2 (Refer to Figure #3 and #4)
Port 3
Port 4
Port 5

FLOW PATH
A, B, C, D, E, F, G, H, I, J, K, L, M
(Refer to Figure #2)

*** LockOut-TagOut Clamp for M Type Valves**
LockOut-TagOut Bracket for G Type Valves

**** Not available with Indicating Handwheel (I), or AOP types**

***** Recommended for Nitrous Oxide (N_20) Service**

† Available only with 945 Series.

Note: 1/2" connectors are not available on the 917 Series

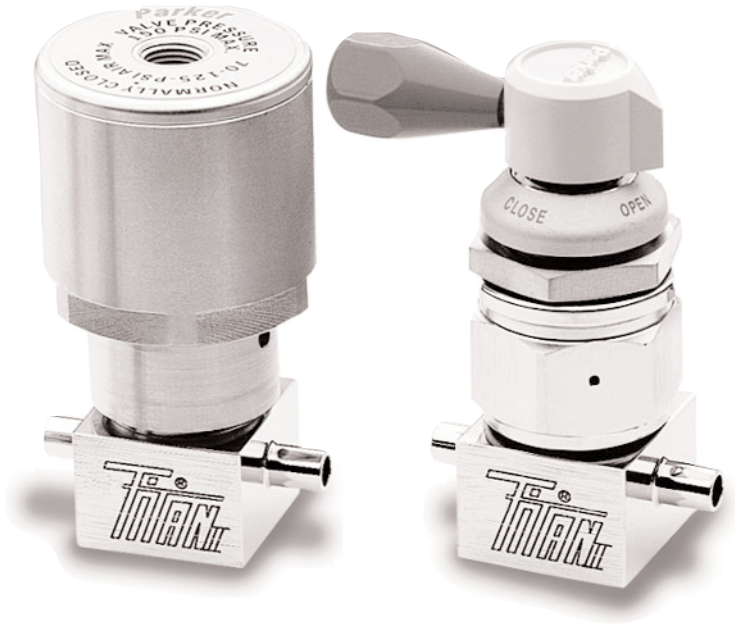
Hastelloy C-22® is a registered trademark of Haynes International, Inc.
Vespel® is a registered trademark of DuPont Company.
PEEK™ is a registered trademark of Victrex plc.

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Parker Hannifin Corporation's Veriflo Division presents the TITAN II® Valve Selection Guide. The TITAN II® Springless Diaphragm Valves are specifically designed for high pressure, high cycle, ultra high purity applications.



features

- "VeriClean", Veriflo's custom high purity Type 316L Stainless Steel ™
- Springless, stemless design.
- Metal diaphragm sealed.
- Back panel mounting capabilities.
- High cycle life.
- Fully swept flow path.
- Standard 6 micro inch Ra (0.15 micro meter), EP Surface Finish.
- 100% Helium leak tested.
- Reduced seat volume.

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materials of construction

Wetted

Body . . . . . "VeriClean", Veriflo's custom high purity Type 316L Stainless Steel ™ optional Hastelloy C-22® or Nickel 200
Seat . . . . . PCTFE, optional Vespel®

Non-wetted

Bonnet . . . . . 303 Stainless Steel
Bonnet nut . . . . . 303 Stainless Steel

operating conditions

Maximum operating pressure. . . . . 3000 psig (207 barg)
90 Series . . . . . 150 psig (10 barg)
92 Series . . . . . 300 psig (20.1 barg)

Temperature:
PCTFE Seat . . . . . -65°F to 150°F (-54°C to 65°C)
Vespel® Seat . . . . -65°F to 250°F (-54°C to 121°C)

functional performance

Flow Capacity. . . . . C_V 0.25, X_T=0.51

Design Leak Rate:
Outboard . . . . . $1x10^{-9}$ scc/sec He
Inboard . . . . . $1x10^{-9}$ scc/secHe
Across seat . . . . . $1x10^{-9}$ scc/secHe

internal volume

1.55 cc

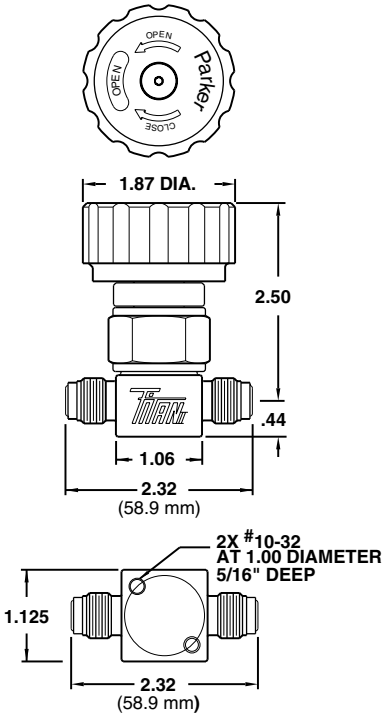
surface finishes

Standard Ra . . . . . 6 micro inch Ra (0.15 micro meter) EP surface finish

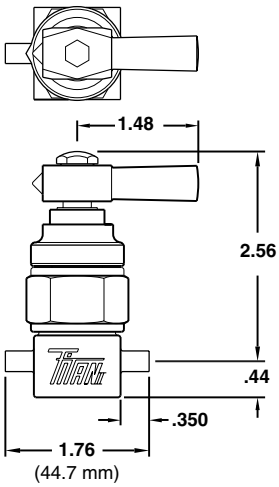
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Dimensional Drawings

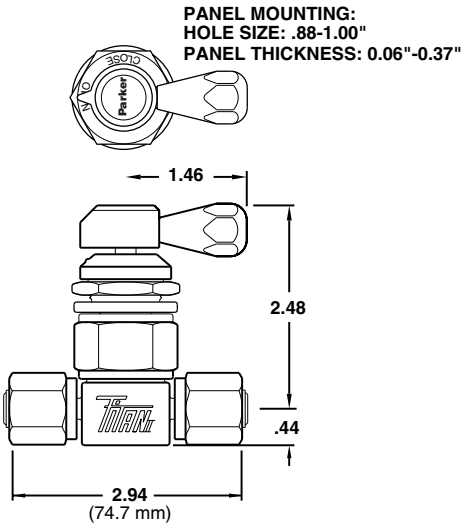
06 + Series
1/2 & 1/4 Turn
Round Handle



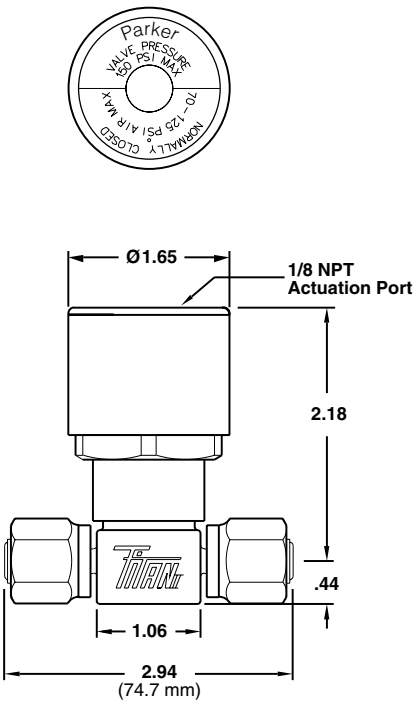
07 + Series:
1/4 Turn Lever Handle



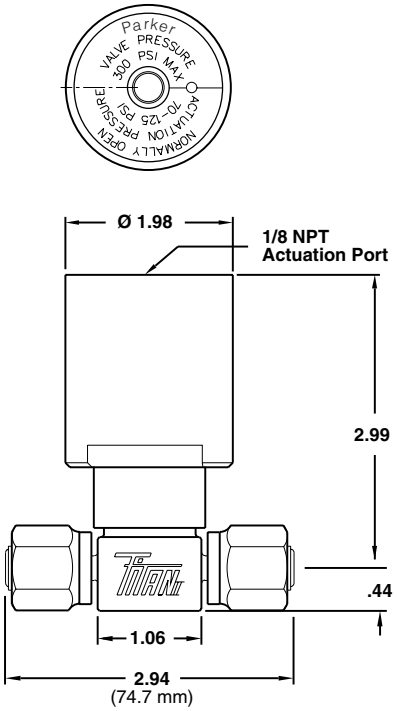
07L + Series:
1/4 Turn Lever Indicator
Positional Handle



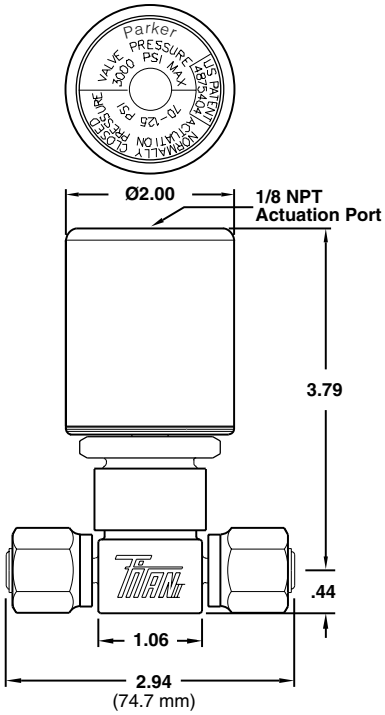
90+06 Series:
Pneumatic 150 psig (10.5 bar)



92+06 Series:
Pneumatic 300 psig (20.7 barg)



94+06 Series:
Pneumatic 3000 psig (207 barg)

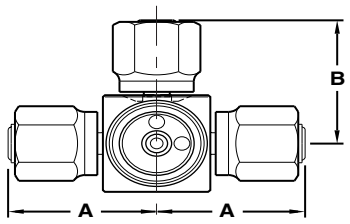


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End Connections	Dimensions "A" Inches (mm)	Dimensions "B" Inches (mm)
1/4" Tube/weld (TW)	0.88 (22.4)	0.88 (22.4)
1/4" VacuSeal (VF)	1.47 (37.3)	1.36 (34.5)
1/4" VacuSeal (VM)	1.16 (29.5)	-
1/4" VacuSeal (VMS)	1.97(50.0)	1.62 (41.2)

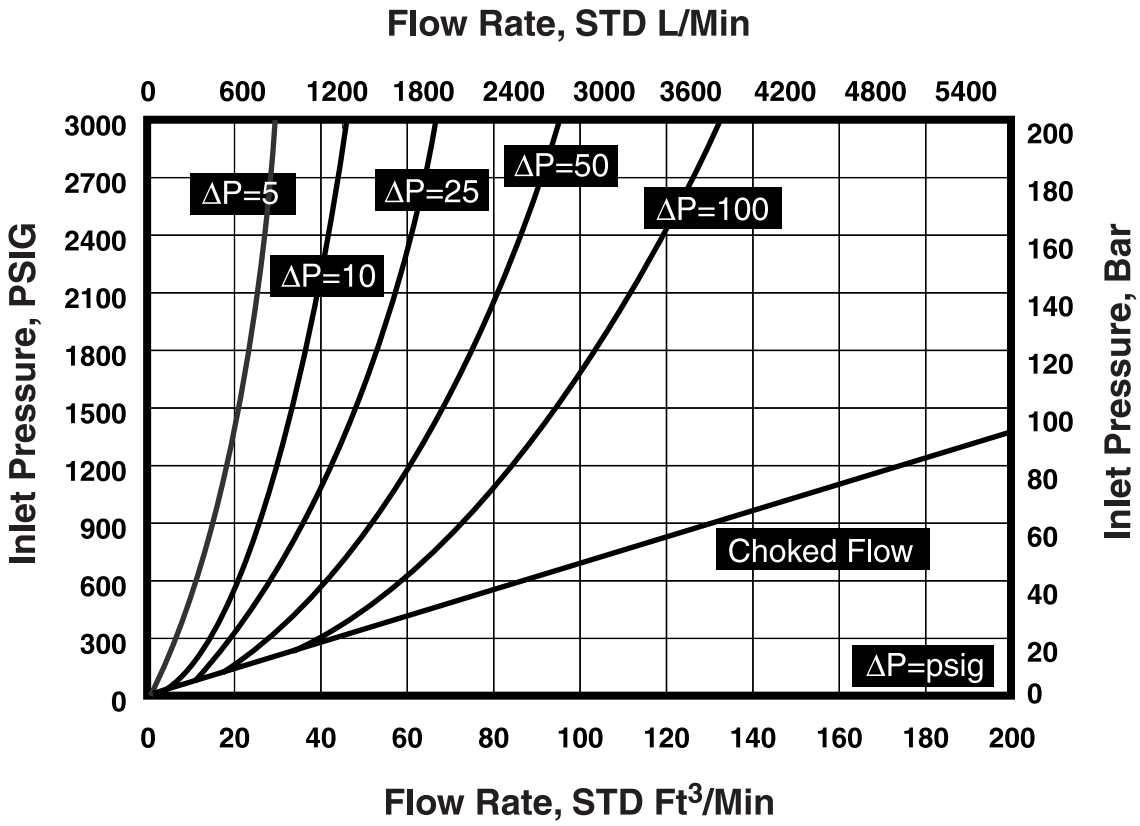
Dimensions are for reference only.

Top View - Female VacuSeal



Part Number	Port Position 1	Port Position 2	Port Position 3	Port Position 4	Dimensions "A" Inches(mm)	Dimensions "B" Inches(mm)
07+4442TWTSITW	1/4" Inlet	1/4" Inlet	1/4" Outlet	None	0.88 (22.4)	0.88 (22.4)
07+4442TWXTWTWI	1/4" Inlet	None	1/4" Outlet	1/4" Inlet	0.88 (22.4)	0.88 (22.4)
06+44442TWTWITWTW-P	1/4" Inlet	1/4" Inlet	1/4" Outlet	1/4" Outlet	0.88 (22.4)	0.88 (22.4)
06+4442TWXTWTW	1/4" Inlet	None	1/4" Outlet	1/4" Outlet	0.88 (22.4)	0.88 (22.4)
06+4442VMSVMSVMSI	1/4" Inlet	1/4" Outlet	1/4" Inlet	None	1.97 (50.0)	1.62 (41.2)
94+0644442TWTWITWTW	1/4" Inlet	1/4" Inlet	1/4" Outlet	1/4" Outlet	0.88 (22.4)	0.88 (22.4)
07+4442VFVFVF	1/4" Inlet	1/4" Outlet	1/4" Outlet	None	1.47 (37.3)	1.36 (34.5)
92+06442TWXXTW	1/4" Inlet	None	None	1/4" Outlet	0.88 (22.4)	0.88 (22.4)

Flow Curves



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Ordering Information

90+06 4 4 4 2 TW TSI TW - NO

Series
- 06 + Series = Manual Round Handle 1/2 Turn (3000 psig)
- 06I + Series = Manual Round Handle 1/4 Turn (3000 psig)
- 07 + Series = Manual Lever Indicating 1/4 Turn (3000 psig)
- 07L + Series = Manual Lever Handle 1/4 Turn (3000 psig)
- 90+06 Series = Pneumatic Actuated (150 psig)
- 92+06 Series = Pneumatic Actuated (300 psig)
- 94+06 Series = Pneumatic Actuated (3000 psig)

Inlet Port Size (Port Position 1)
- 4 = 1/4"
- 6 = 3/8" (Not available for VacuSeal™ connections)

Additional Ports and Sizes
(Ports positions 2,3,4, & 5)
- 4 = 1/4"
- 6 = 3/8" (Not available for VacuSeal™ connections)

Material
- 2 = SS 316L Stainless Steel
- 16 = Hastelloy C-22®
- 31 = Nickel

Inlet Connection (Port 1)
- TW = Tube Weld
- VF = VacuSeal™ Female
- VM = VacuSeal™ Male
- VMS = VacuSeal™ Male Swivel
- Q = UltraSeal™ Male
- C = Compression

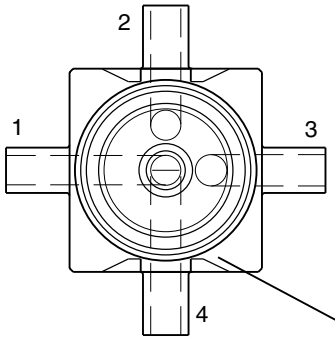
Optional Features
- CB1 = Constant Bleed 1 slpm
- CB3 = Constant Bleed 3 slpm
- PCTFE Seat (Standard) Leave Blank
- PI = Vespel® Seat†
- NO = Normally Open Actuator
- NC Actuator (Standard) Leave Blank
- RD = Red Handle
- BLK = Black Handle

Additional Ports Connection
Ports position 2,3,4 & 5 (Always identify if an inlet, "I")
- TW = Tube Weld
- TS = Tube Stub (on side ports)
- VF = VacuSeal™ Female
- VM = VacuSeal™ Male
- VMS = VacuSeal™ Male Swivel
- Q = UltraSeal™ Male
- C = Compression
- X = No Port

†**Recommended for Nitrous Oxide (N_2O) Service**

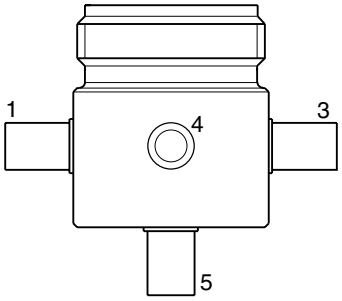
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UltraSeal™ is a trademark of Parker Hannifin Corporation.
Elgiloy® is a registered trademark of Elgiloy Corporation.
Hastelloy® is a registered trademark of Haynes International.
A-LOK® is a registered trademark of Parker Hannifin Corporation.
Vespel® is a registered trademark of DuPont Company.

Port Position Top View



Front Face

Side View



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Revision: A • 10/03



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