



# Packless Valves

Instrument / Analyzer Products

Catalog 4515/USA  
January 2006



# NV55 Series High Flow Diaphragm Valves

Parker Hannifin Corporation’s Veriflo Division presents the NV55. The NV55 is an economical, general purpose, high flow diaphragm valve ideally suited for use when flowing large volumes of corrosive and non-corrosive fluids. Standard construction includes 316L Stainless Steel body, various seat materials, and an Elgiloy® diaphragm with an outboard metal-to-metal seal for leak integrity.



## Features

- ▶ High Cycle Life
- ▶ Compact Size
- ▶ Positive, consistent shutoff
- ▶ Metal-to-metal seal to atmosphere
- ▶ O<sub>2</sub> cleaned
- ▶ Ideal for high flow applications
- ▶ Fully functional from vacuum to 125 psig for AOP valves and 250 psig for manual valves
- ▶ The closed position does not vary with the life of the product

## Specifications

### Materials of Construction

#### Wetted

Body ..... 316L Stainless Steel  
 Seat ..... PCTFE, optional PEEK™, Vespel®  
 Diaphragm ..... Elgiloy® or equivalent

#### Non-wetted

Nut ..... 316L Stainless Steel  
 Cap ..... 316L Stainless Steel

### Actuation Devices

AOP ..... Aluminum  
 Indicator knob (Black) ..... Aluminum  
 Levers (Blue) ..... Aluminum, Powder Coated  
 Handwheel (Blue) ..... ABS Plastic

### Operating Conditions

Maximum operating pressure:

AOP ..... 125 psig (8.6 barg)  
 Manual ..... 250 psig (17.2 barg)  
 Minimum operating pressure ..... Vacuum  
 Actuator pressure ..... 70-125 psig (4.8-8.6 barg)

Temperature ..... -15°F to 150°F (-26°C to 66°C)  
 Bake out in the open position ..... 250°F (121°C)

Design Proof Pressure ..... 375 psig (26 barg)  
 Design Burst Pressure ..... 750 psig (52 barg)

### Functional Performance

Flow capacity:

AOP, Indicator Knob, Handwheel ..... C<sub>v</sub> = .55  
 Lever Versions ..... C<sub>v</sub> = .48  
 (SEMI Flow Coefficient Test# F-32-0998)

Maximum Inboard Design

Leak Rate ..... Bubble Tight

### Standard Connections

1/4" Compression, Male NPT, Female NPT  
 3/8" Compression, Male NPT, Female NPT  
 1/2" Compression, Male NPT, Female NPT

### Internal Volume

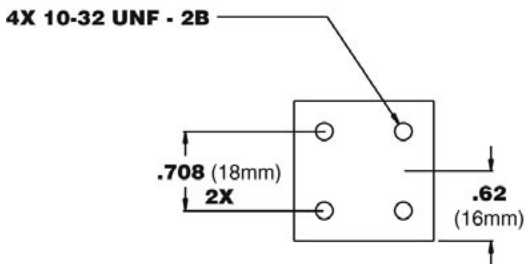
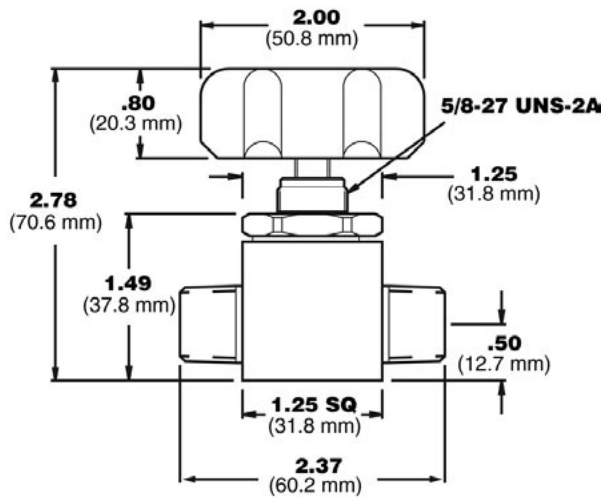
3.29cc

### Approximate Weight

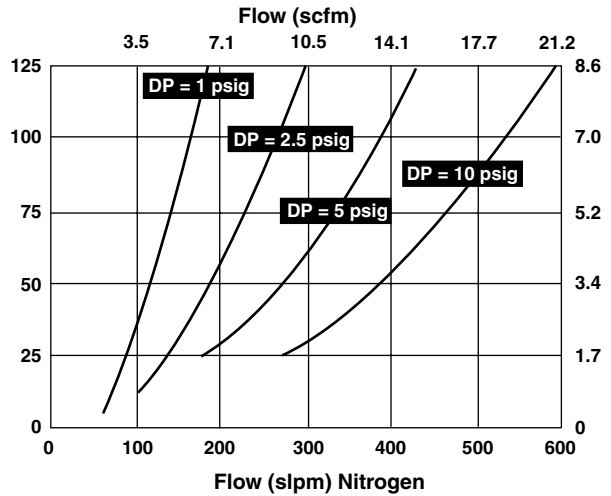
0.81 lbs (0.36 kgm)

Elgiloy® is a registered trademark of Elgiloy Company.  
 Vespel® is a registered trademark of DuPont Company.  
 PEEK™ is a registered trademark of Victrex plc.

## Dimensional Data



## Flow Curve



Connection	End to End Dimension
44MM	2.37
44FF	2.37
44TT	2.06
66MM	2.37
66FF	2.37
66TT	2.19
88MM	2.75
88FF	2.59
88TT	2.19

Dimensions for the Compression Fitting Connections ( \_\_TT) do not include nuts and ferrules.

## Ordering Information

<b>NV55</b>	<b>S</b>	<b>S</b>	<b>44MM</b>	<b>PM</b>
<b>Basic Series</b> NV55		<b>Materials</b> S 316L Stainless Steel		<b>Optional Features</b> PM Panel Mount PEEK PEEK™ Seat VESP Vespel® Seat
<b>Type</b> AOPLPNC Air Operated Low Pressure, Normally Closed AOPLPNO Air Operated Low Pressure, Normally Open I Indicator Knob L Lever LL Locking Lever M Mini-Lever S Handwheel		<b>Connections</b> 44MM 1/4" Male NPT In and 1/4" Male Out 44FF 1/4" Female NPT In and 1/4" Female Out 44TT 1/4" Compression In and 1/4" Compression Out 66MM 3/8" Male NPT In and 3/8" Male NPT Out 66FF 3/8" Female NPT In and 3/8" Female NPT Out 66TT 3/8" Compression In and 3/8" Compression In Out 88MM 1/2" Male NPT In and 1/2" Male NPT Out 88FF 1/2" Female NPT In and 1/2" Female NPT Out 88TT 1/2" Compression In and 1/2" Compression In Out		

**Notes:**

Panel Mount Option is not available with Indicating Handwheel (I) or AOP units.

Vespel® Seat Material is recommended for Nitrous Oxide (N<sub>2</sub>O) service.

Compression Ends include Nuts and Ferrules.

## Nova Series Diaphragm Valves

Parker Hannifin Corporation's Veriflo Division presents the NOVA. The NOVA is an economical, general purpose diaphragm valve for regulator outlet valve, gas control panels, & analyzer sampling system applications. Standard construction includes 316L Stainless Steel or Brass body, various seat materials, and an Elgiloy® diaphragm with an outboard metal-to-metal seal for leak integrity.



### Features

- ▶ High Cycle Life
- ▶ Compact Size
- ▶ Positive, consistent shutoff
- ▶ Metal-to-metal seal to atmosphere
- ▶ O<sub>2</sub> cleaned
- ▶ Low internal volume
- ▶ The closed position does not vary with the life of the product

### Specifications

#### Materials of Construction

##### Wetted

Body ..... 316L Stainless Steel or Brass  
 Seat ..... PCTFE, optional PEEK™, Vespel®  
 Diaphragm ..... Elgiloy® or equivalent

##### Non-wetted

Nut ..... 316L Stainless Steel  
 Handwheel (black) ..... ABS Plastic  
 Indicator Knob (black) ..... Aluminum

#### Operating Conditions

Operating Pressure ..... Vacuum to  
 3500 psig (241 barg)  
 Design Proof Pressure ..... 5250 psig (362 barg)  
 Design Burst Pressure ..... 10,500 psig (724 barg)  
 Temperature ..... -15°F to 150°F (-26°C to 66°C)  
 Bake Out in the open position ..... 250°F (121°C)

#### Functional Performance

Flow Capacity .....  $C_v = 0.17$   
 (SEMI Flow Coefficient Test# F-32-0998)  
 Maximum Inboard Design  
 Leak Rate ..... Bubble Tight

#### Standard Connections

1/4 inch NPT male and female, compression fitting

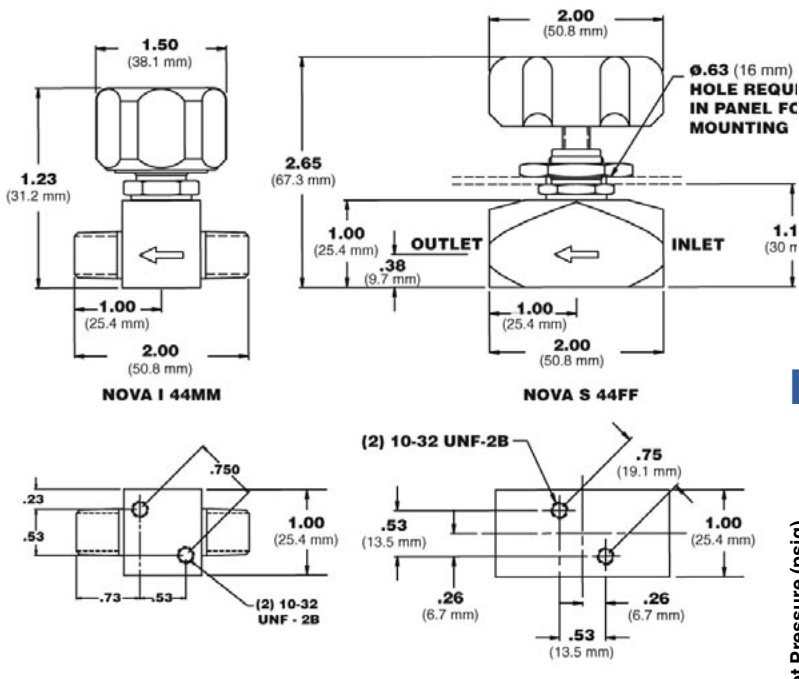
#### Internal Volume

Less than 1.0cc

#### Approximate Weight

9 oz. (0.26 kg)

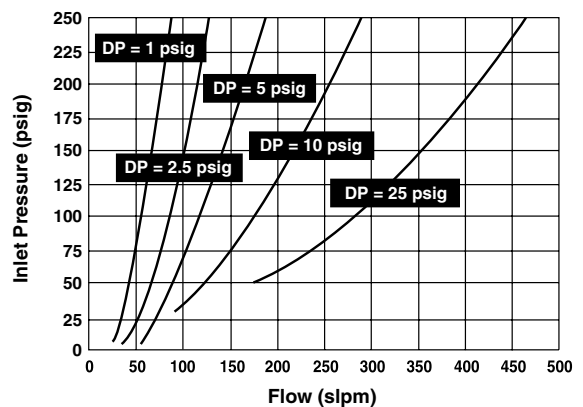
## Dimensional Data



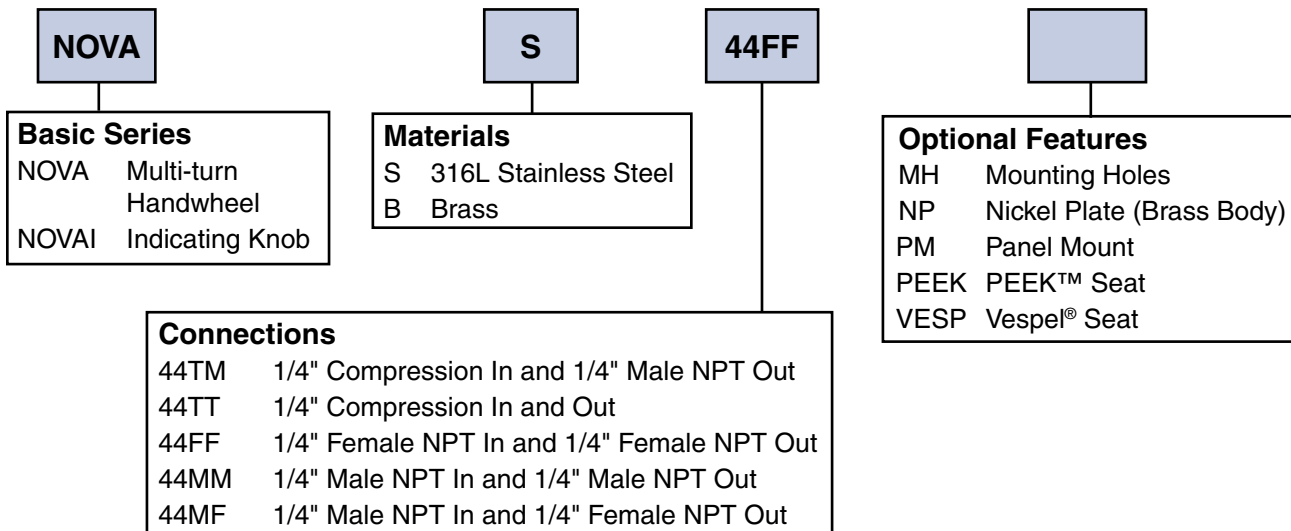
Connection	End to End Dimension
44TM	2.79
44TT	1.71
44FF	2.00
44MM	2.00
44MF	3.15

Dimensions for the Compression Fitting Connections do not include nuts and ferrules.

## Flow Curve



## Ordering Information



**Notes:**

Panel Mount Option is not available with Indicating Knob (I).  
 Vespel® Seat Material is recommended for Nitrous Oxide (N<sub>2</sub>O) service.  
 Compression Ends include Nuts and Ferrules.

# NOVAAOP Series Air Actuated Diaphragm Valves

Parker Hannifin Corporation’s Veriflo Division presents the NOVAAOP. The NOVAAOP is an economical, general purpose diaphragm valve for gas control panels & analyzer sampling system applications. Standard construction includes 316L Stainless Steel or Brass body, various seat materials, and an Elgiloy® diaphragm with an outboard metal-to-metal seal for leak integrity.

The NOVAAOP Series diaphragm valve is a derivative of the NOVA manually operated valve and Veriflo’s time-proven air actuated valves. The AOP is available in normally open (NO) or normally closed (NC) configurations. A choice of two line pressures are available, 250 psig and 500 psig.



## Features

- ▶ High Cycle Life
- ▶ Compact Size
- ▶ Positive, consistent shutoff
- ▶ Metal-to-metal seal to atmosphere
- ▶ O<sub>2</sub> cleaned
- ▶ Low internal volume
- ▶ Low actuation pressure

## Specifications

### Materials of Construction

#### Wetted

Body ..... 316L Stainless Steel or Brass  
 Seat ..... PCTFE, optional PEEK™, Vespel®  
 Diaphragm ..... Elgiloy® or Equivalent

#### Non-wetted

Nut ..... 316 Stainless Steel  
 Actuator Housing ..... Aluminum

### Operating Conditions

Operating Pressure:  
 AOP1, AOP3 ..... Vacuum to 250 psig  
 AOP2, AOPNO ..... Vacuum to 500 psig  
 Actuation Pressure:  
 See AOP Actuation Pressure Chart  
 Temperature ..... -15°F to 150°F (-26°C to 66°C)  
 Bake Out in the open position ..... 250°F (121°C)  
 Design Proof Pressure:  
 AOP1, AOP3 ..... 375 psig  
 AOP2, AOPNO ..... 750 psig  
 Design Burst Pressure:  
 AOP1, AOP3 ..... 750 psig  
 AOP2, AOPNO ..... 1,500 psig

### Functional Performance

Flow capacity ..... C<sub>v</sub> = .17  
 (SEMI Flow Coefficient Test# F-32-0998)  
 Maximum Inboard Design  
 Leak Rate ..... Bubble Tight

### Standard Connections

1/4 " NPT male or female, compression fittings

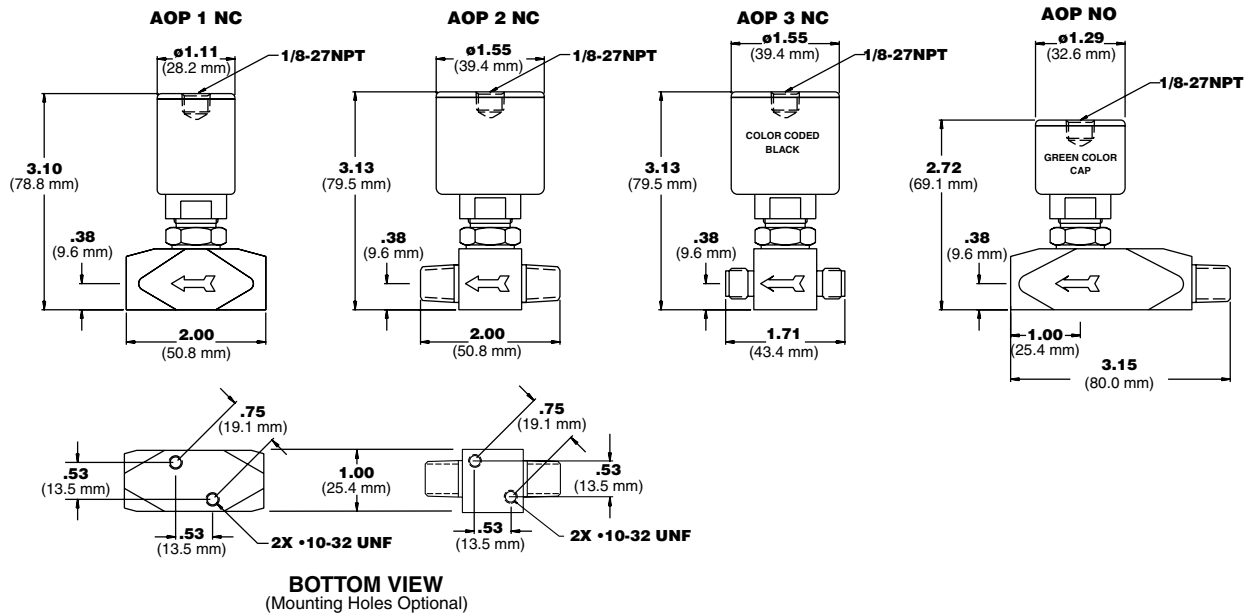
### Internal Volume

Less than 1.0 cc

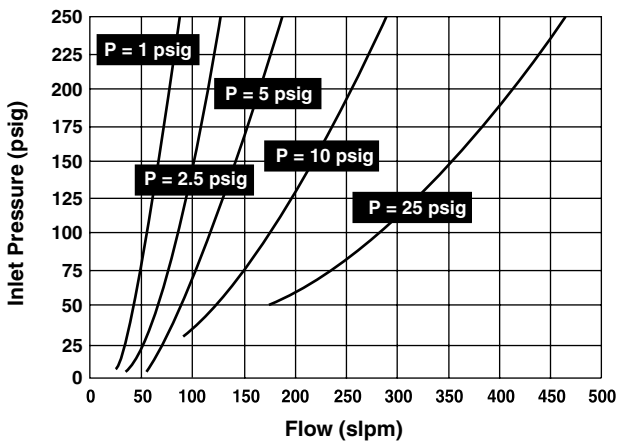
### Approximate Weight

9 oz. (0.26 kg)

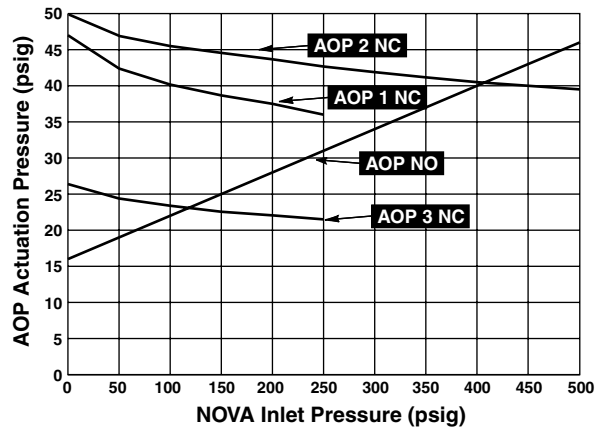
# Dimensional Data



# Flow Curves



**NOVA AOP Series**  
**AOP Actuation Pressure vs. NOVA Inlet Pressure**



# Ordering Information

<b>NOVA AOP</b>	<b>1</b>	<b>S</b>	<b>44TT</b>	
<b>Basic Series</b> NOVA AOP Air Operated		<b>Materials</b> B Brass S 316L Stainless Steel		<b>Optional Features</b> MH Mounting Holes NP Nickel Plate (Brass Body) PEEK PEEK™ Seat VESP Vespe® Seat
<b>Style</b> 1 Normally Closed - 250 psig 2 Normally Closed - 500 psig 3 Normally Closed - 250 psig NO Normally Open - 500 psig			<b>Connections</b> 44TM 1/4" Compression In x 1/4" NPT Male Out 44FF 1/4" NPT Female In x 1/4" NPT Female Out 44MM 1/4" NPT Male In x 1/4" NPT Male Out 44MF 1/4" NPT Male In x 1/4" NPT Female Out 44TT 1/4" Compression In x 1/4" Compression Out	

**Notes:**

Vespe® Seat Material is recommended for Nitrous Oxide (N<sub>2</sub>O) service.

Compression Ends include Nuts and Ferrules.



## NOVAL Series Diaphragm Valves

Parker Hannifin Corporation’s Veriflo Division presents the NOVAL. The NOVAL is an economical, general purpose diaphragm valve for regulator outlet valve, gas control panels, & analyzer sampling system applications. Standard construction includes 316L Stainless Steel or Brass body, various seat materials, and an Elgiloy® diaphragm with an outboard metal-to-metal seal for leak integrity.



### Features

- ▶ High Cycle Life
- ▶ Compact Size
- ▶ Positive, consistent shutoff
- ▶ Metal-to-metal seal to atmosphere
- ▶ O<sub>2</sub> cleaned
- ▶ Low internal volume
- ▶ The closed position does not vary with the life of the product

### Specifications

#### Materials of Construction

##### Wetted

Body ..... 316L Stainless Steel or Brass  
 Seat ..... PCTFE optional PEEK™, Vespel®  
 Diaphragm ..... Elgiloy® or equivalent

##### Non-wetted

Nut ..... 316L Stainless Steel  
 Lever (blue)..... Aluminum Powder Coated

#### Operating Conditions

Operating Pressure ..... Vacuum to 3500 psig (241 barg)  
 Design Proof Pressure ..... 5250 psig (362 barg)  
 Design Burst Pressure..... 10,500 psig (724 barg)  
 Temperature ..... -15°F to 150°F (-26°C to 66°C)  
 Bake Out in the open position ..... 250°F (121°C)

#### Functional Performance

Flow capacity..... C<sub>v</sub> = .17  
 (SEMI Flow Coefficient Test# F-32-0998)  
 Maximum Inboard Design  
 Leak Rate ..... Bubble Tight

#### Standard Connections

1/4 " NPT male and female, compression fittings

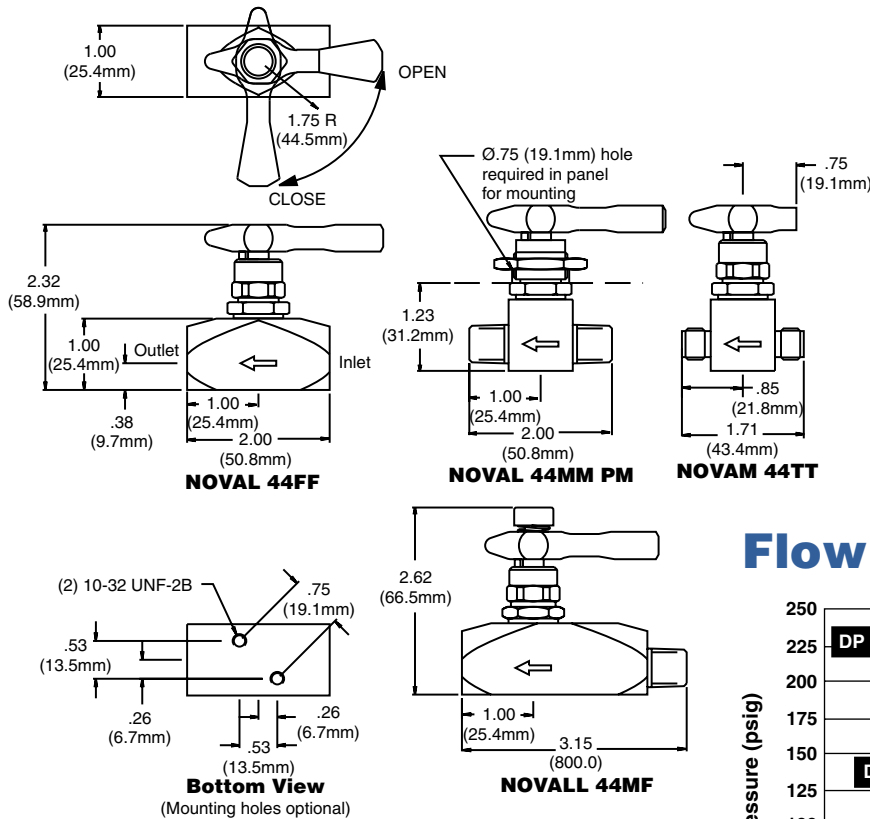
#### Internal Volume

Less than 1.0 cc

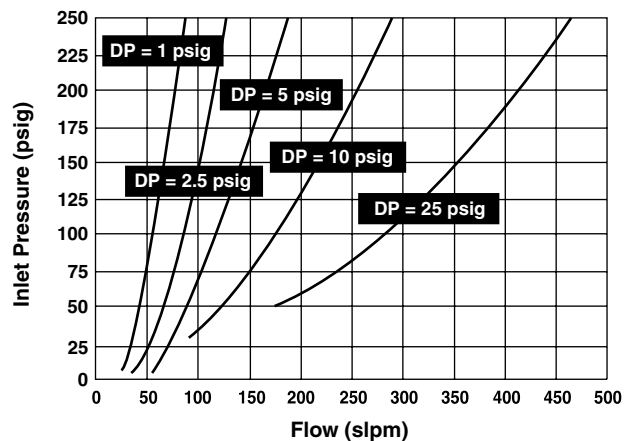
#### Approximate Weight

9 oz. (.26 kg)

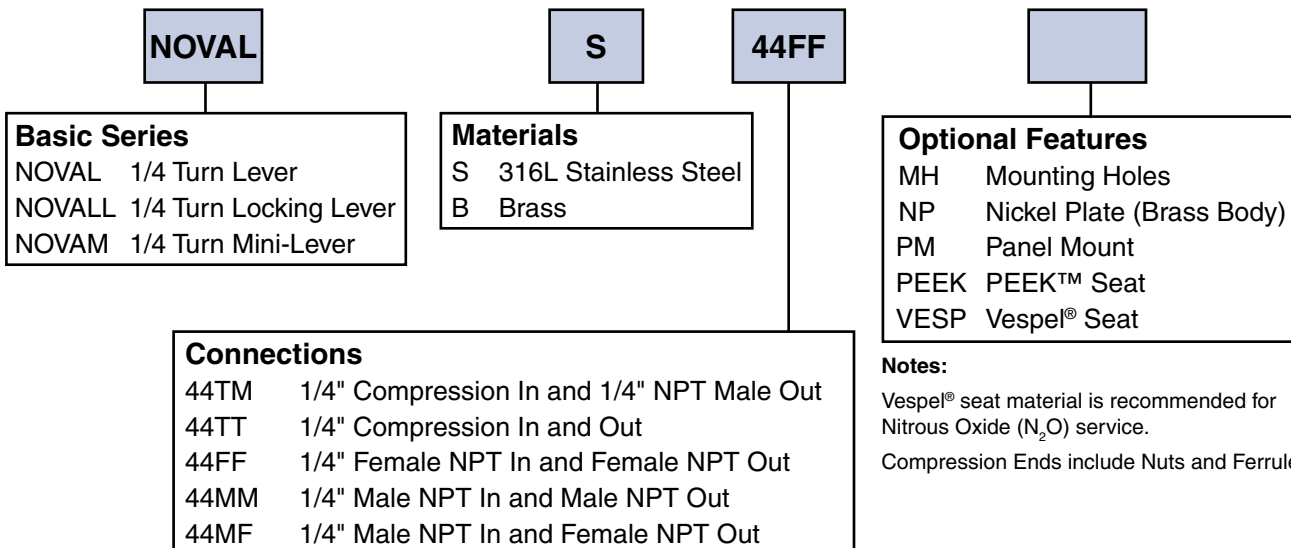
## Dimensional Data



## Flow Curve



## Ordering Information



# QUANTUM 944AOPHP Air Operated High Pressure Diaphragm Valve

The 944AOPHP is an exceptionally clean, air-actuated valve engineered to provide reliable, accurate performance from vacuum to 3,500 psig. The air actuator is a dual-piston design, which is spring-loaded to the “normally closed” position. The unique feature is that the opening function incorporates the use of hydraulics.



## Features

- ▶ Pressures up to 3500 psig.
- ▶ Internally threadless and springless.
- ▶ A unique patented compression member that holds the seat can be replaced without special tools, allowing ease of full field serviceability.

## Specifications

### Materials of Construction

#### Wetted

Body ..... 316L Stainless Steel  
 Seat ..... PCTFE, optional PEEK™, Vespel®  
 Diaphragm ..... Elgiloy® or equivalent  
 Compression Member ..... 316L Stainless Steel, Hastelloy C-22®

#### Non-wetted

Nut ..... 316L Stainless Steel  
 Cap ..... 316L Stainless Steel

### Actuator Materials

Body ..... Anodized Aluminum  
 Pistons ..... Brass  
 Actuator stem ..... 316L Stainless Steel  
 Hydraulic fluid ..... High viscosity synthetic oil  
 O-ring seals ..... Fluorocarbon  
 Internal Springs ..... 1075 spring steel

### Operating Conditions

Operating Pressure ..... Vacuum to 3,500 psig (241 barg)  
 Design Proof Pressure ..... 5,250 psig (362 barg)  
 Design Burst Pressure ..... 10,500 psig (724 barg)  
 Temperature ..... -40°F to 150°F (-40°C to 66°C)  
 Bake Out in the open position ..... 250° (121°C)

### Functional Performance

Flow capacity .....  $C_v = .25$   
 (SEMI Flow Coefficient Test #F-32-0998)

#### Leak Rate:

Dynamic .....  $< 4 \times 10^{-9}$  scc/sec He  
 Static Inboard .....  $2 \times 10^{-10}$  scc/sec He

### Standard Configuration

1/4 inch female pipe threads inlet and outlet  
 End to end length ..... 1.25 inches (31.75 mm)

### Internal Volume

2.18 cc

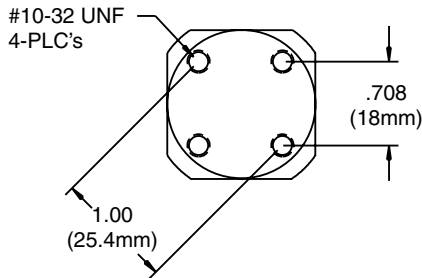
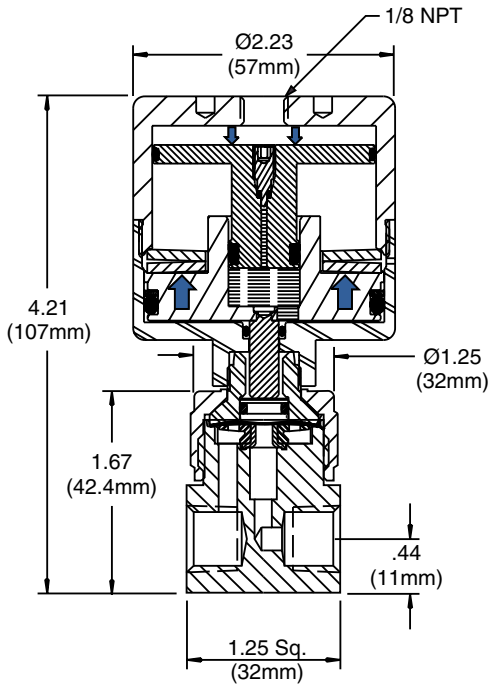
### Surface Finish

Standard Ra ..... 32 micro inch or less

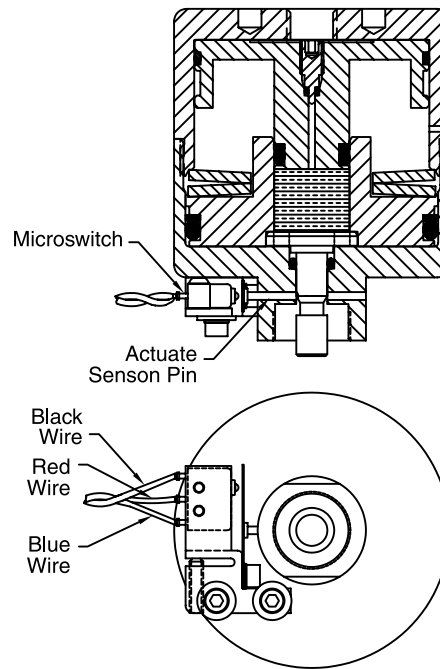
### Approximate Weight

1.75 lb. (.80 kg)

# Dimensional Data

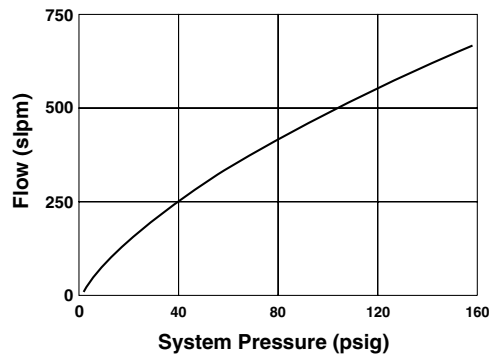


## Limit Switch Option

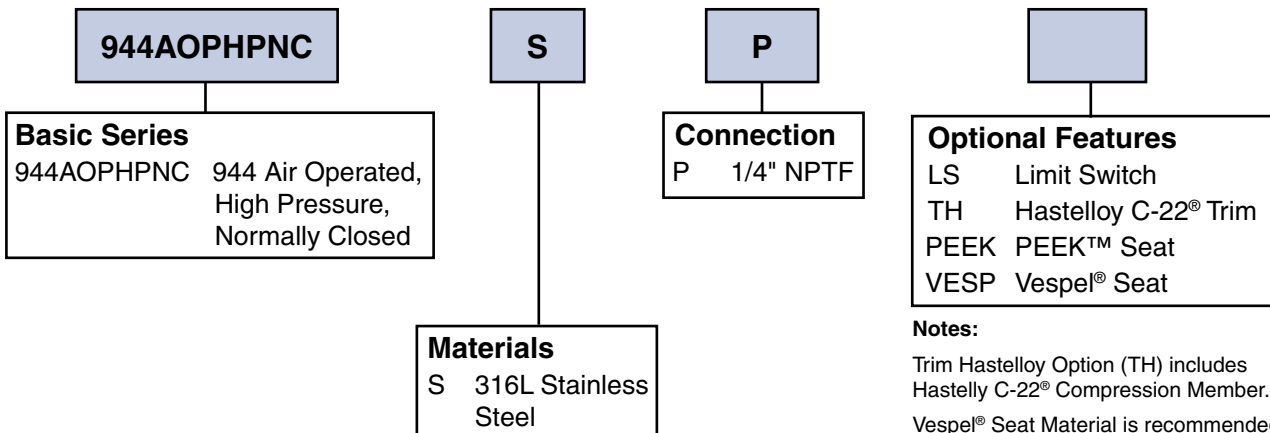


Switch Type: Subminiature  
 Circuitry: Single Pole Double Throw (SPDT)  
 Sealed: No  
 Voltage: 250 VAC  
 Amperage Rating: 5 A  
 Approvals: CE, CSA DEMKO, UL  
 Actuator: Pin Plunger  
 Wires: Red: Normally Open  
 Black: Common  
 Blue: Normally Closed

# Flow Curve



# Ordering Information



**Notes:**  
 Trim Hastelloy Option (TH) includes Hastelloy C-22<sup>®</sup> Compression Member.  
 Vespel<sup>®</sup> Seat Material is recommended for Nitrous Oxide (N<sub>2</sub>O) service.

# QUANTUM 928AOP Series Pressure Reducing Air Operated Valve

The Quantum 928AOP is a poppet-style diaphragm valve for remote control of low pressure gases or liquids. The 928AOP serves two functions: it acts as the system inlet valve, and it reduces the system pressure to a safer working range.



## Features

- ▶ Improves system safety by lowering or regulating system pressure to 350 psig.
- ▶ Fully functional from a vacuum to 3500 psig inlet and outlet.
- ▶ Aerodynamic, smooth flow passages.
- ▶ Minimum particle generation and entrapment.
- ▶ 100% Helium leak tested.
- ▶ A unique patented compression member which loads the seal uniformly without the need for threaded components or crimping operations.

## Specifications

### Materials of Construction

#### Wetted

Body .....	316L Stainless Steel
Seal .....	PCTFE , optional Vespel®
Diaphragm .....	Elgiloy® or equivalent
Poppet .....	316L Stainless Steel, Hastelloy C-22®
Compression Member .....	316L Stainless Steel, Hastelloy C-22®
Spring .....	Hastelloy C-22®
Screen .....	Hastelloy C-22®

#### Non-wetted

Nut .....	316L Stainless Steel
Cap .....	316L Stainless Steel

#### Actuator Materials

Body .....	Nickel Plated Brass
Diaphragm .....	Fairprene®

### Operating Conditions

Maximum inlet pressure .....	3500 psig (240 barg)
Minimum operating pressure .....	Vacuum
Nominal outlet pressure.....	350 psig (24 barg) with 2000 psig (138 barg) inlet pressure and 80 psig (5.5 barg) actuator pressure
Outlet pressure varies with inlet and actuator pressure	
Temperature .....	-40°F to 150°F (-40°C to 66°C)
Bake out .....	250°F (121°C) in the open position
Design Proof Pressure .....	5,250 psig (362 barg)
Design Burst Pressure.....	10,500 psig (724 barg)

### Functional Performance

Flow capacity.....	$C_v = .04$
Leak Rate:	
Dynamic.....	$< 4 \times 10^{-9}$ scc/sec He
Static Inboard .....	$2 \times 10^{-10}$ scc/sec He

### Standard Configurations

1/4 inch female pipe threads inlet and outlet	
End to end length .....	1.25 in. (31.75 mm)

### Internal Volume

1.54 cc

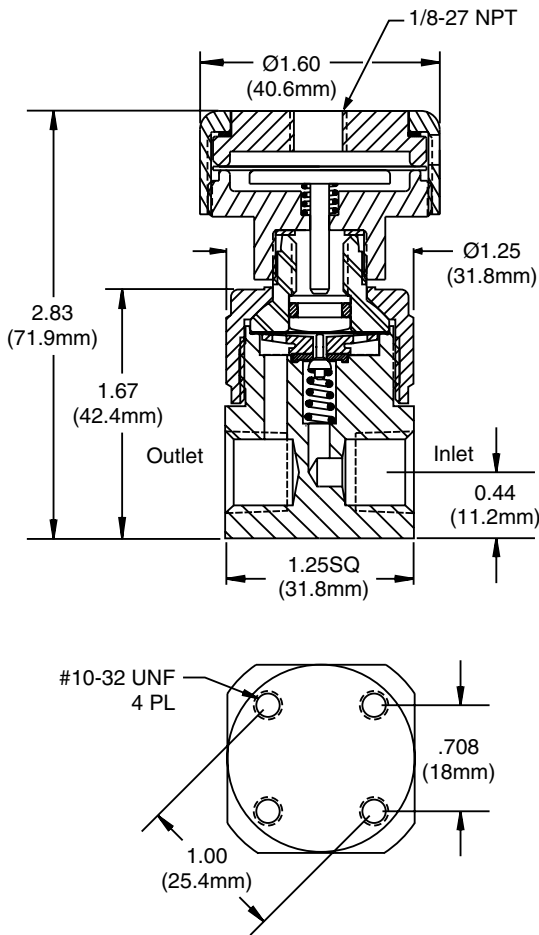
### Surface Finishes

Standard Ra .....	32 micro inch or less
-------------------	-----------------------

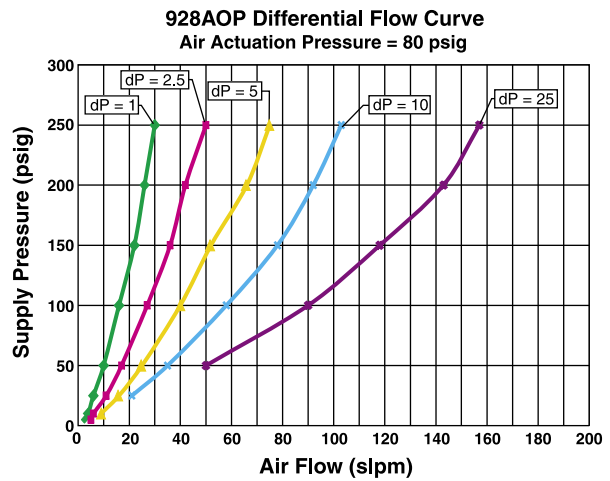
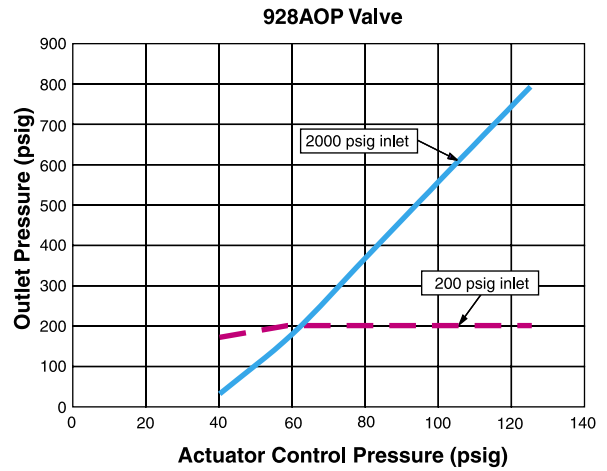
### Approximate Weight

0.95 lbs (0.43 kgm)

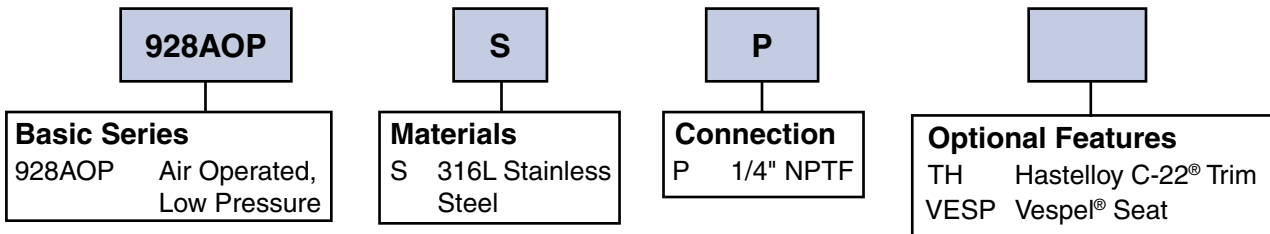
## Dimensional Data



## Flow Curves



## Ordering Information



**Notes:**

Trim Hastelloy Option (TH) includes Hastelloy C-22® Compression Member, Poppet, Spring, and Screen.

Vespel® Seat Material is recommended for Nitrous Oxide (N<sub>2</sub>O) service.

# QUANTUM FS190 Excess Flow Shut-Off Valve

Parker Hannifin Corporation’s Veriflo Division presents the FS190. The FS190 is a non-attitude sensitive, excess flow shut-off valve designed to operate with a wide range of inlet pressures.

The capability of operating from 10 to 3500 psig allows it to be used either between a high pressure source at the inlet to the pressure regulator or in the low pressure delivery line to a process. In both applications, this control valve will automatically shut off the delivery of gas if the flow exceeds a preset limit.

The functional components of the FS190 are incorporated within the body style of a 1-1/4 inch Quantum valve. An actuating knob has been designed to manually reset the valve and clearly indicate the relative operating position — either “Open (Reset)” or “Auto (Shut Off).” A pneumatic actuator is available, which will allow resetting of the valve from a remote source.

The FS190 is offered with six different pressure/flow limits: A,B,C,D,E, and F (see Sizing Chart). The operation of the valve is not affected by mounting orientation (non-attitude sensitive).



## Specifications

### Materials of Construction

#### Wetted

Body .....	“VeriClean,” Veriflo’s custom high purity type 316L Stainless Steel™
Compression member .....	316L Stainless Steel
Seat .....	PCTFE
Diaphragm .....	Elgiloy® or equivalent
Spring .....	Hastelloy C-22®
Poppet .....	316L Stainless Steel
Orifice .....	316L Stainless Steel

#### Non-wetted

Knob .....	Anodized Aluminum (Red)
Stem .....	416 Stainless Steel (lubricated)
Cap .....	316L Stainless Steel

### Operating Conditions

#### Pressure Requirements:

A - D .....	20 psig (min) to 3,500 psig (1.4 barg to 241 barg)
E - F .....	30 psig (min) to 3,500 psig (2 barg to 241 barg)
Differential Pressure .....	5 psig or 12 psig (.3 barg or .8 barg)
Flow Limit Settings .....	6 available
Temperature .....	-10F° to 150°F (-23°C to 66°C)

### Functional Performance

#### Design Leak Rate:

Inboard .....	2 x 10 <sup>-10</sup> scc/sec He
---------------	----------------------------------

### Internal Volume

1.86 cc (including face seal fittings)

### Surface Finishes

Standard Ra .....	15-20 micro in. (.38 to .5 micrometer) or less
Optional Ra.....	EX = 10 micro in. (.25 micrometer) or less Welded units only

### Standard Configuration

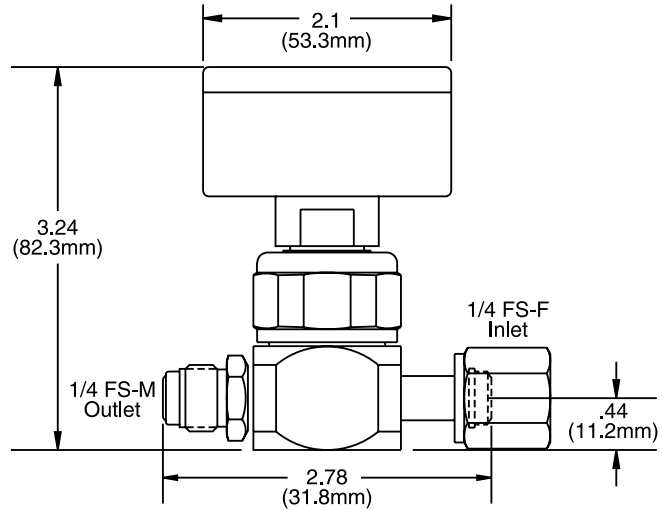
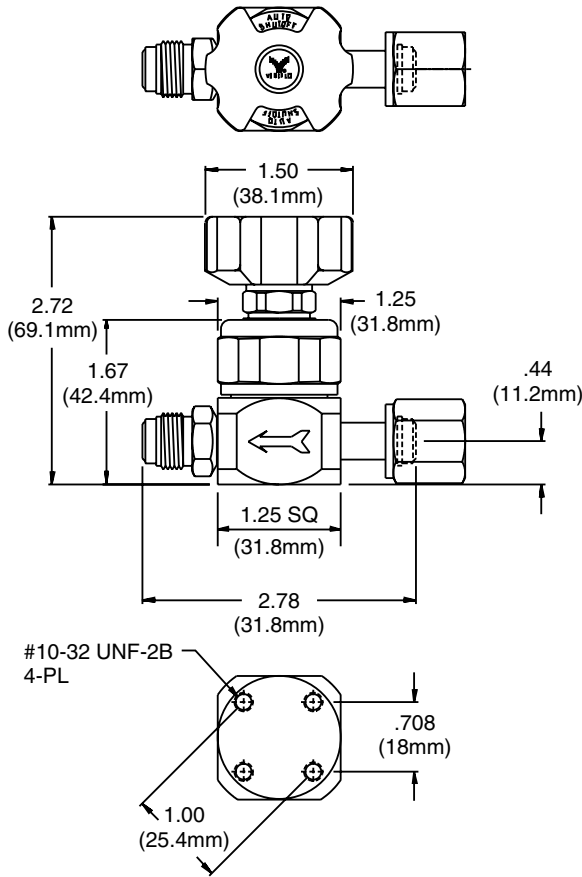
1/4" NPT female, 1/4" face seals or 1/4" tube stubs

### Approximate Weight

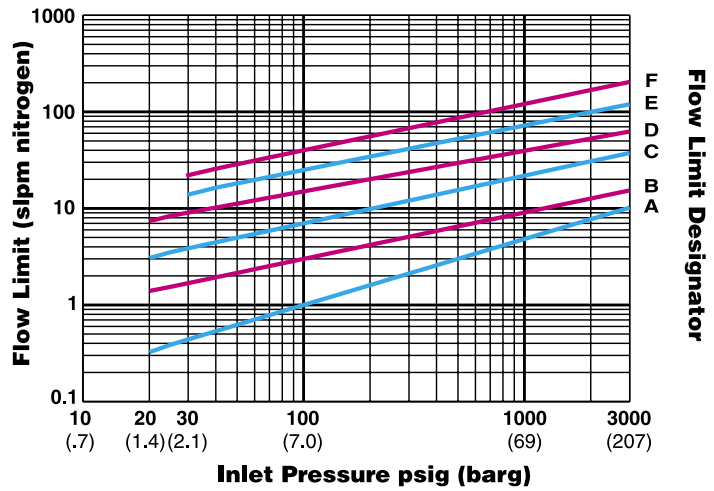
12.5 oz. (0.32 kg)

### O<sub>2</sub> Cleaned

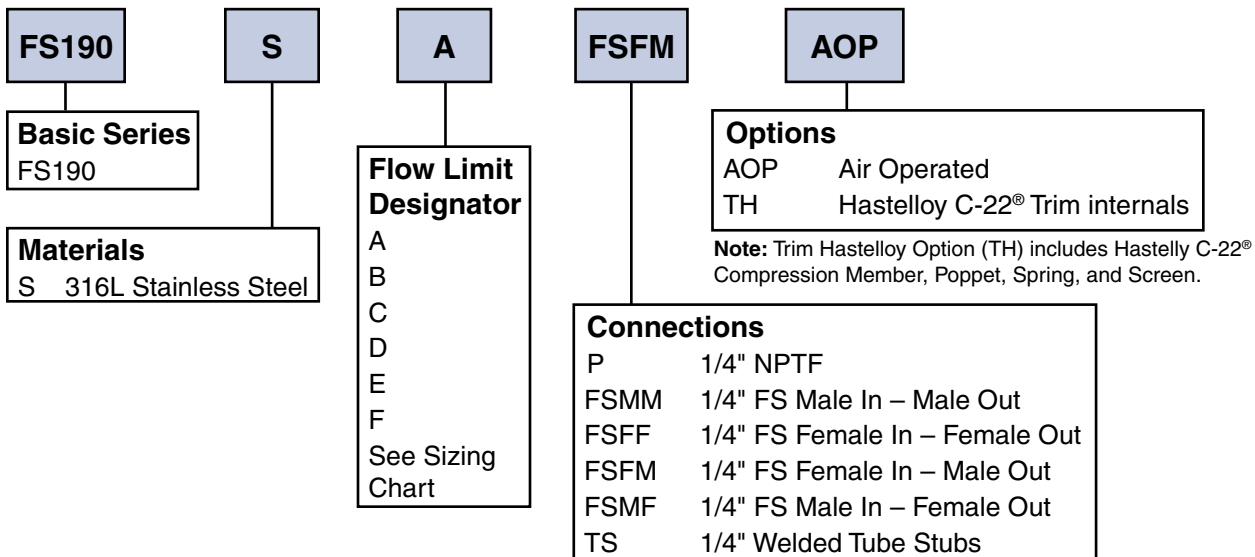
## Dimensional Data



## Sizing Chart



## Ordering Information





**Parker Hannifin Corporation**  
Veriflo Division  
250 Canal Boulevard  
Richmond, CA 94804-0034  
Telephone: 510.235.9590  
Fax: 510.232.7396  
[www.veriflo.com](http://www.veriflo.com)

Catalog 4515, 01/06