



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
- ▶ O₂ 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_v = .55
 Lever Versions C_v = .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

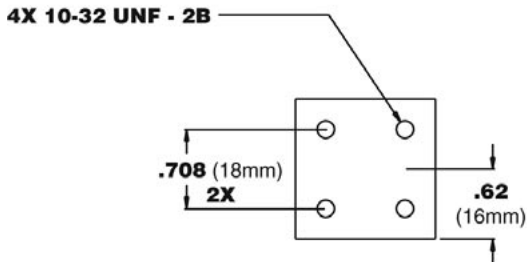
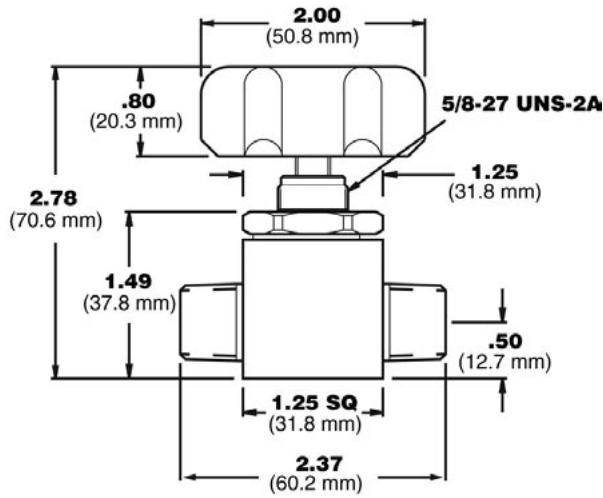
3.29cc

Approximate Weight

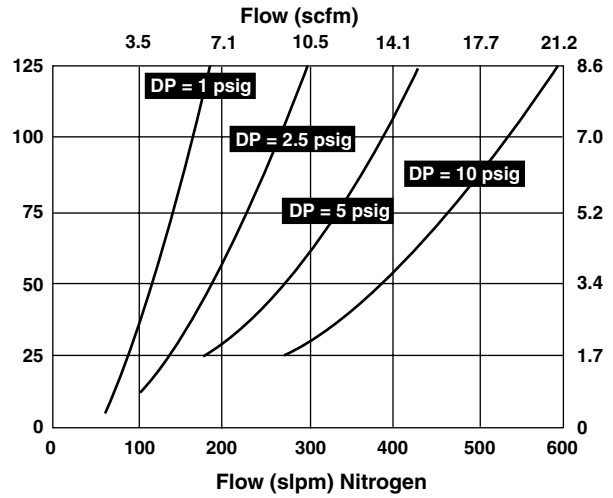
0.81 lbs (0.36 kgm)

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

NV55	S	S	44MM	PM
Basic Series NV55		Materials S 316L Stainless Steel		Optional Features PM Panel Mount PEEK PEEK™ Seat VESP Vespel® Seat
Type 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		Connections 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 (N₂O) 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
- ▶ O₂ 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

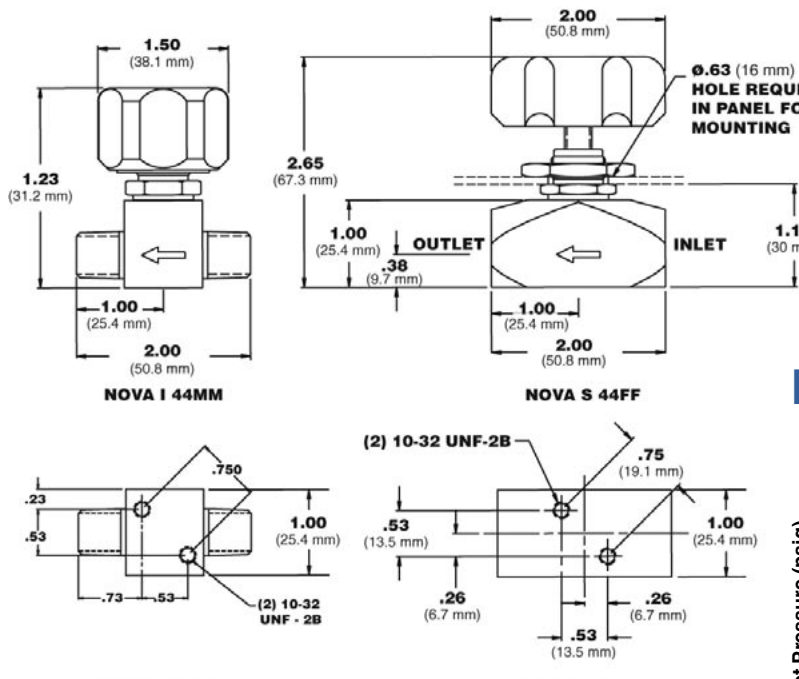
Internal Volume

Less than 1.0cc

Approximate Weight

9 oz. (0.26 kg)

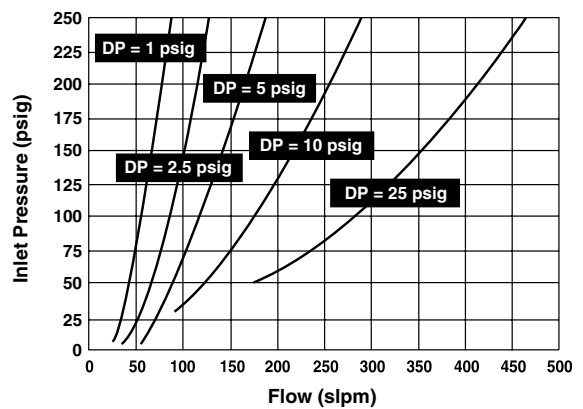
Dimensional Data



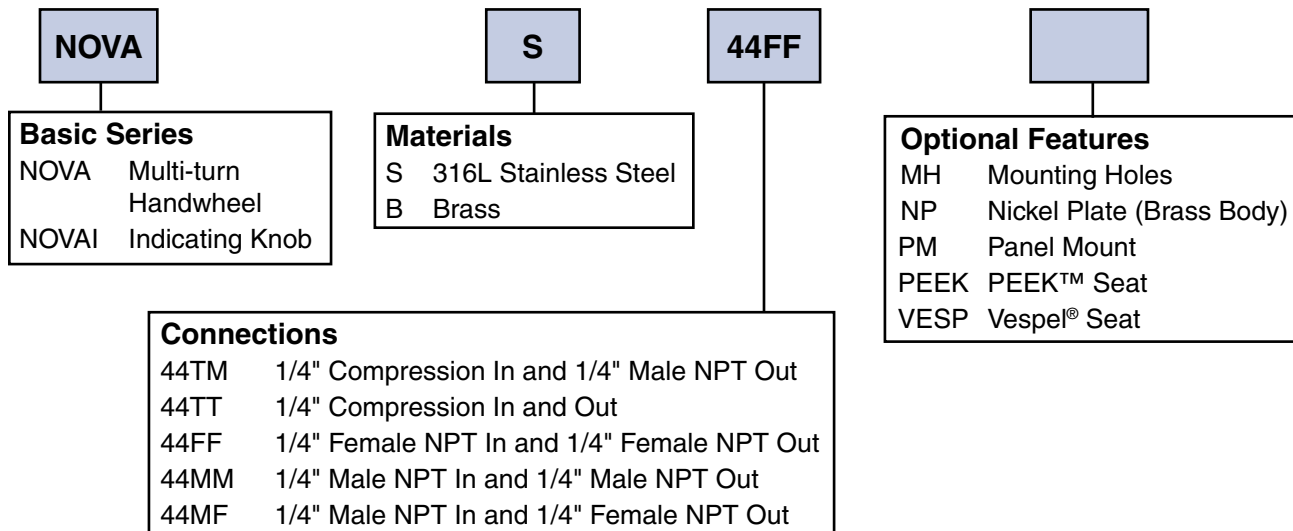
Connection	End to End Dimension
44TM	2.79
44TT	1.71
44FF	2.00
44MM	2.00
44MF	3.15

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 (N₂O) 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
- ▶ O₂ 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_v = .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

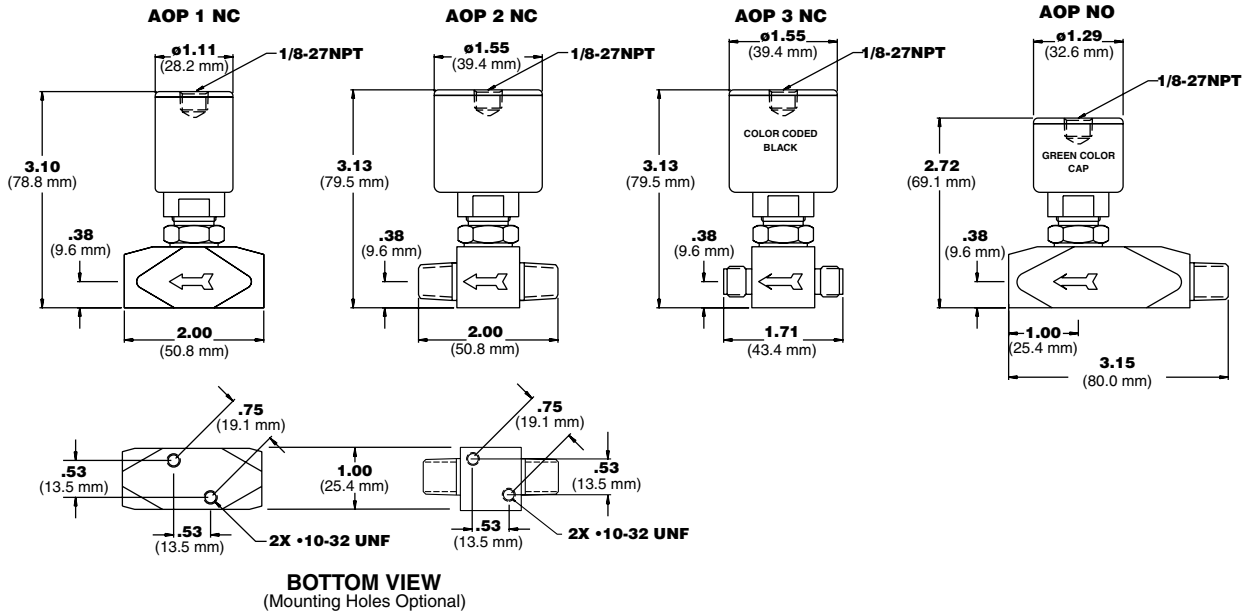
Internal Volume

Less than 1.0 cc

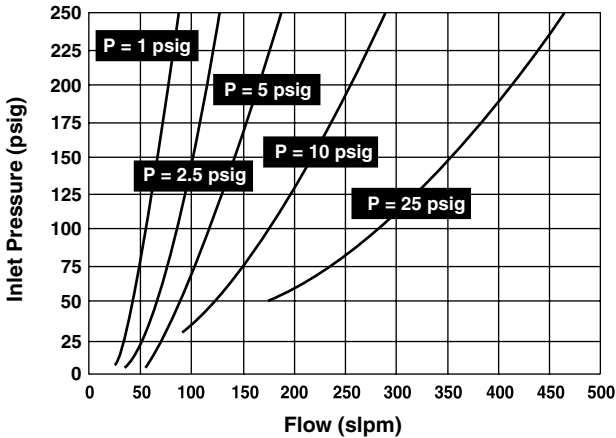
Approximate Weight

9 oz. (0.26 kg)

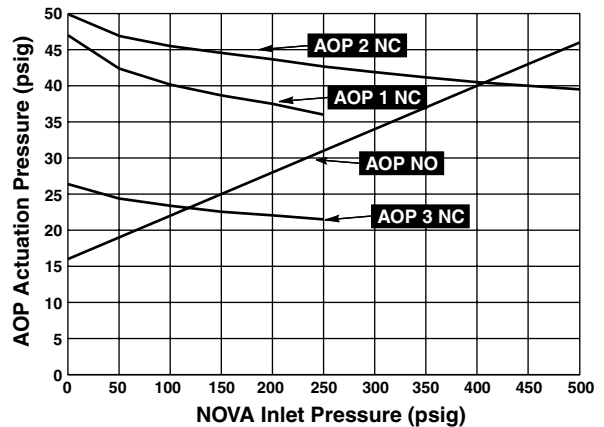
Dimensional Data



Flow Curves



NOVA AOP Series
AOP Actuation Pressure vs. NOVA Inlet Pressure



Ordering Information

NOVA AOP	1	S	44TT	
Basic Series NOVA AOP Air Operated		Materials B Brass S 316L Stainless Steel		Optional Features MH Mounting Holes NP Nickel Plate (Brass Body) PEEK PEEK™ Seat VESP Vespe® Seat
Style 1 Normally Closed - 250 psig 2 Normally Closed - 500 psig 3 Normally Closed - 250 psig NO Normally Open - 500 psig			Connections 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 (N₂O) 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
- ▶ O₂ 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_v = .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

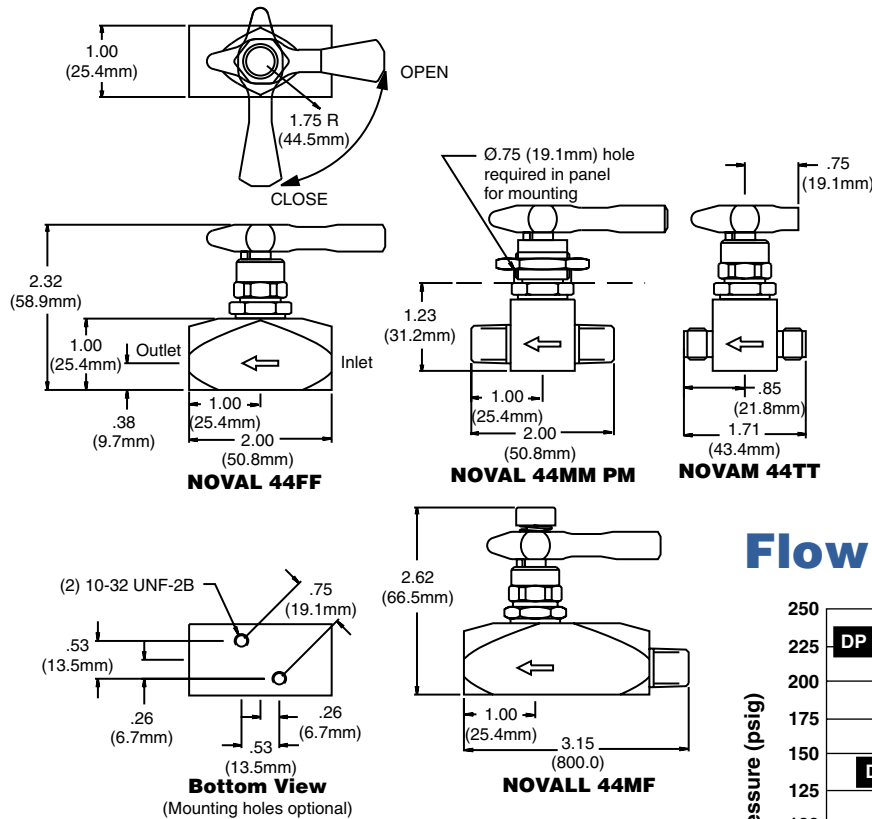
Internal Volume

Less than 1.0 cc

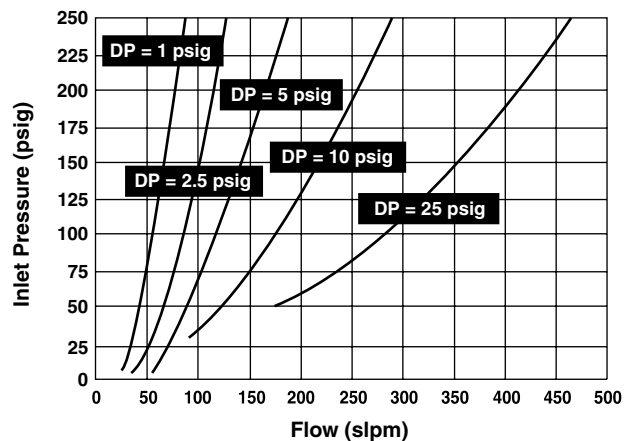
Approximate Weight

9 oz. (.26 kg)

Dimensional Data



Flow Curve



Ordering Information

NOVAL	S	44FF	
Basic Series NOVAL 1/4 Turn Lever NOVALL 1/4 Turn Locking Lever NOVAM 1/4 Turn Mini-Lever	Materials S 316L Stainless Steel B Brass		Optional Features MH Mounting Holes NP Nickel Plate (Brass Body) PM Panel Mount PEEK PEEK™ Seat VESP Vespel® Seat
Connections 44TM 1/4" Compression In and 1/4" NPT Male Out 44TT 1/4" Compression In and Out 44FF 1/4" Female NPT In and Female NPT Out 44MM 1/4" Male NPT In and Male NPT Out 44MF 1/4" Male NPT In and Female NPT Out			Notes: Vespel® seat material is recommended for Nitrous Oxide (N ₂ O) service. Compression Ends include Nuts and Ferrules.

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 2×10^{-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

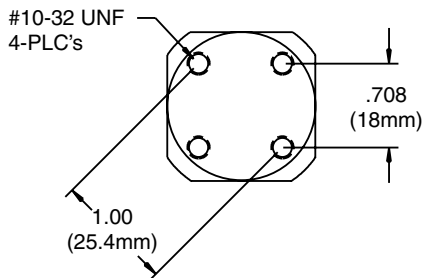
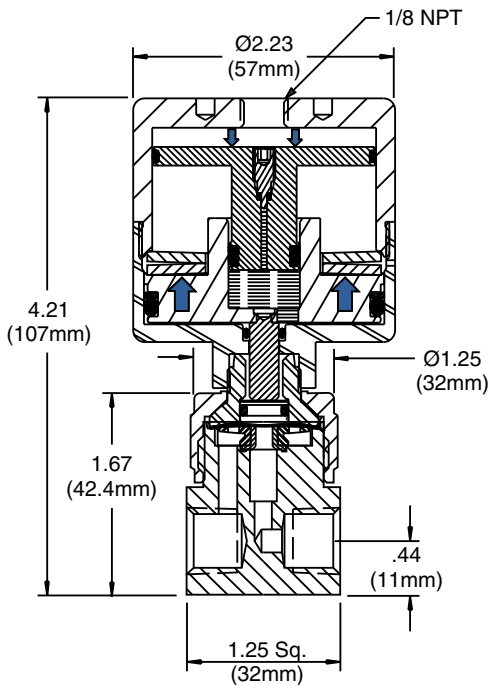
Surface Finish

Standard Ra 32 micro inch or less

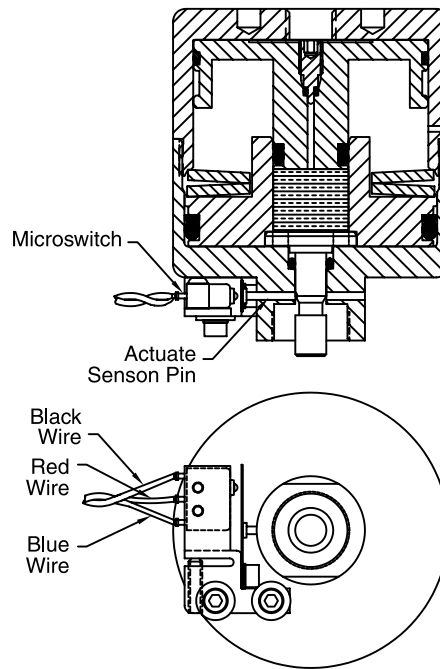
Approximate Weight

1.75 lb. (.80 kg)

Dimensional Data

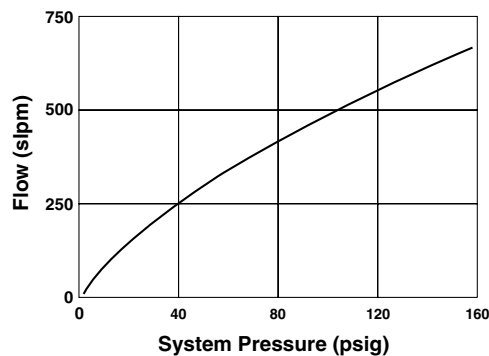


Limit Switch Option

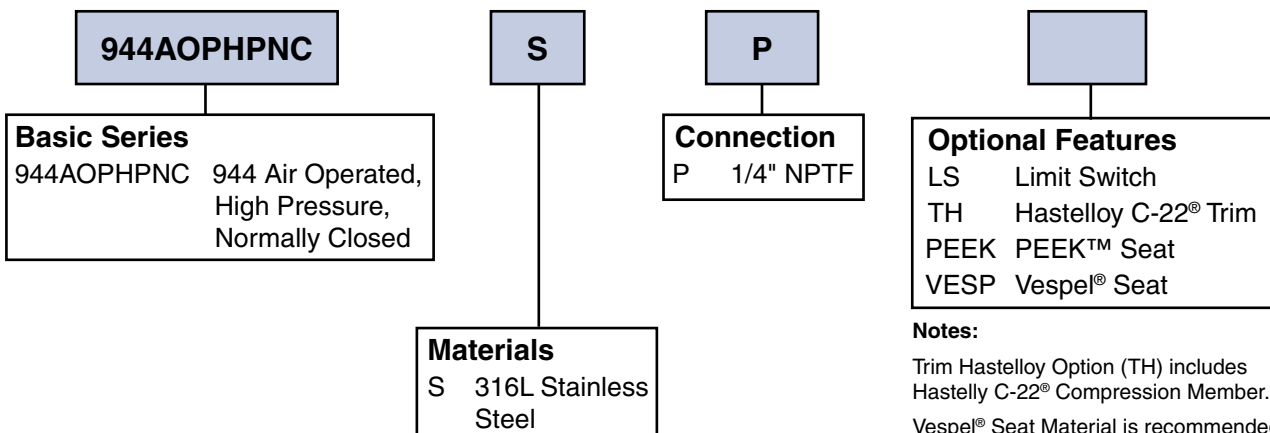


Switch Type: Subminiature
 Circuitry: Single Pole Double Throw (SPDT)
 Sealed: No
 Voltage: 250 VAC
 Amperage Rating: 5 A
 Approvals: CE, CSA DEMKO, UL
 Actuator: Pin Plunger
 Wires: Red: Normally Open
 Black: Common
 Blue: Normally Closed

Flow Curve



Ordering Information



Notes:

Trim Hastelloy Option (TH) includes Hastelloy C-22[®] Compression Member.
 Vespel[®] Seat Material is recommended for Nitrous Oxide (N₂O) 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	2×10^{-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

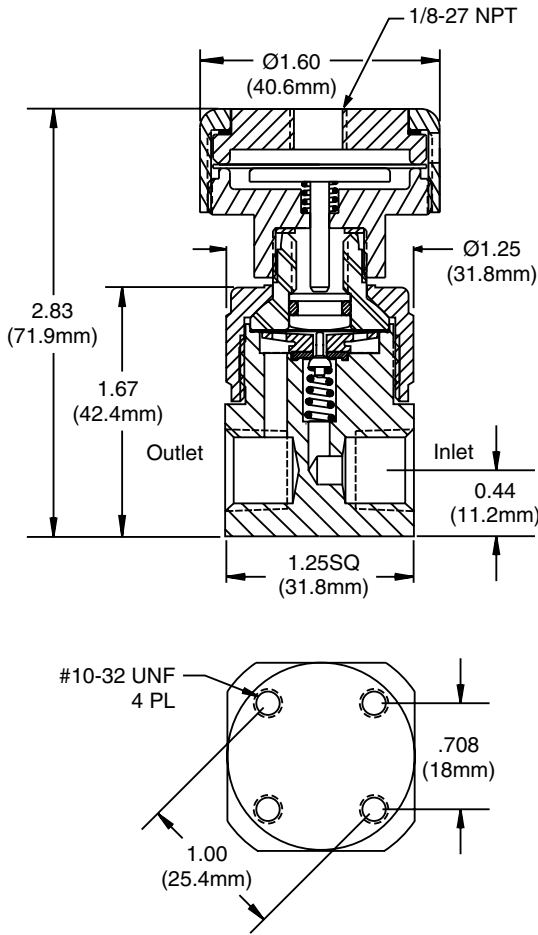
Surface Finishes

Standard Ra	32 micro inch or less
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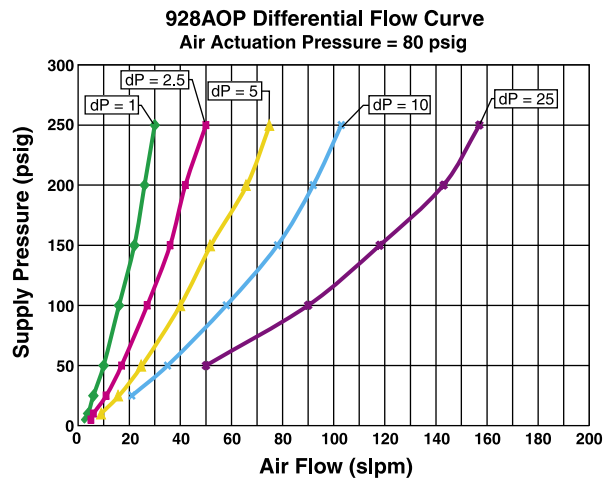
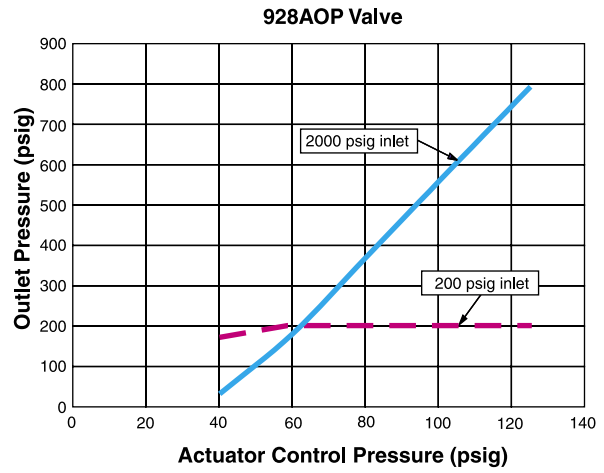
Approximate Weight

0.95 lbs (0.43 kgm)

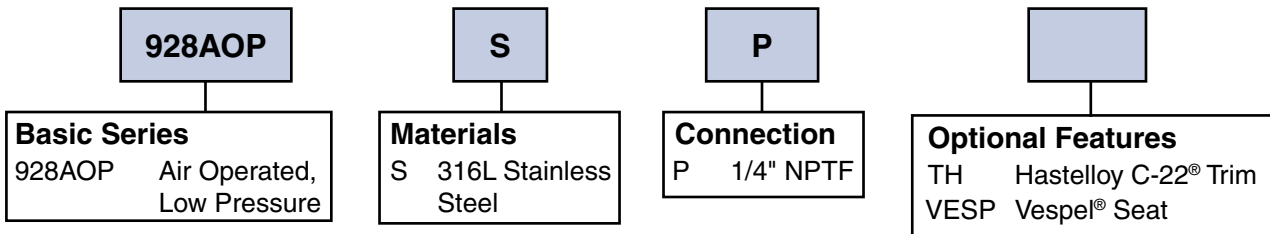
Dimensional Data



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 (N₂O) 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 ⁻¹⁰ scc/sec He
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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

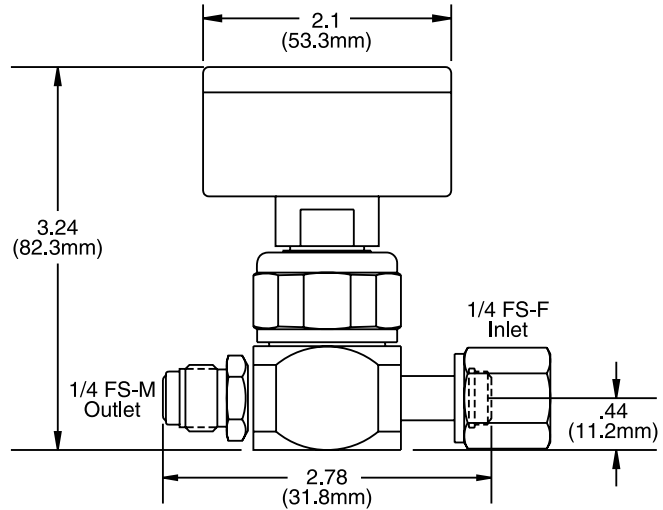
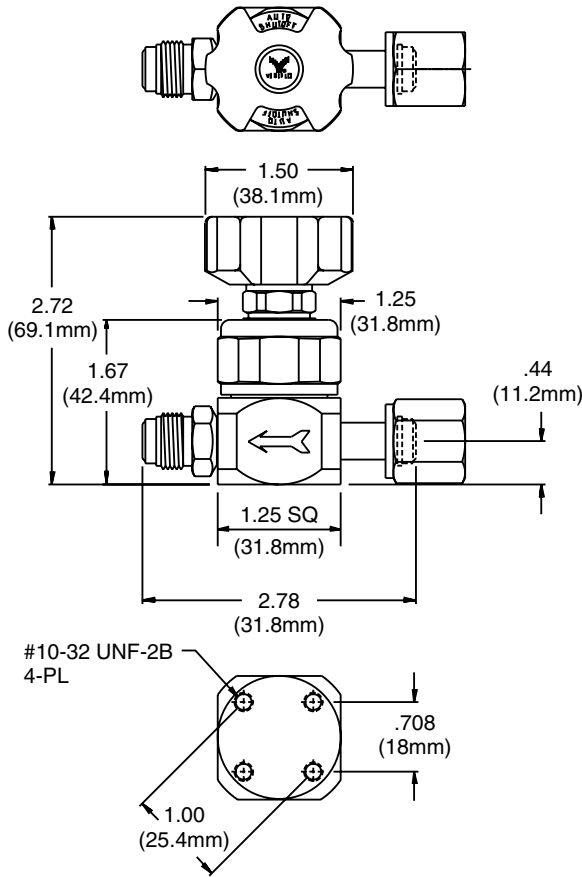
1/4" NPT female, 1/4" face seals or 1/4" tube stubs

Approximate Weight

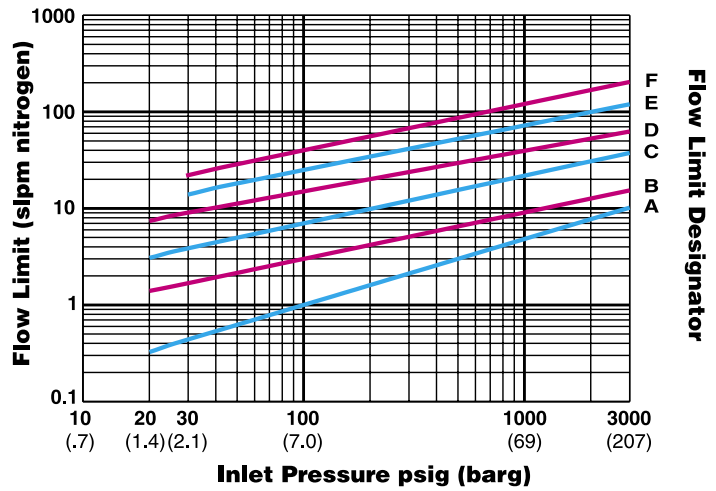
12.5 oz. (0.32 kg)

O₂ Cleaned

Dimensional Data



Sizing Chart



Ordering Information

FS190	S	A	FSFM	AOP
Basic Series FS190		Flow Limit Designator A B C D E F See Sizing Chart		Options AOP Air Operated TH Hastelloy C-22® Trim internals
Materials S 316L Stainless Steel				
			Note: Trim Hastelloy Option (TH) includes Hastelloy C-22® Compression Member, Poppet, Spring, and Screen.	
			Connections P 1/4" NPTF FSMM 1/4" FS Male In – Male Out FSFF 1/4" FS Female In – Female Out FSFM 1/4" FS Female In – Male Out FSMF 1/4" FS Male In – Female Out TS 1/4" Welded Tube Stubs	



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