VERIFLO
ISO 9001 Certified

# Veriflo Division

Instrument/Analyzer Digest

## Regulators, Valves & Flow Controllers

Catalog 4500
Revised, August 2000


Parker
Instrumentation

VERIFLO
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Parker
Instrumentation

# The Division

Veriflo Division is a leading manufacturer of precision valves, regulators and transducers for the control and application of liquids and gases used in chemical and petrochemical industries as well as in the fabrication of semiconductor ICs.

## A leading manufacturer of precision valves and regulators

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

The Instrumentation Group has ten manufacturing plants and over 300 authorized distributor locations worldwide 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.

Veriflo has been responding to industry change through innovative engineering and manufacturing for more than 85 years. Veriflo's ISO 9001 registration at its Richmond, California plant in May 1995 and its ISO 9002 certification at its Carson City, Nevada facility in July 1996 confirm the division's commitment to quality and excellence as recognized by the international community.

In an effort to meet growing global industry demands, Veriflo recently expanded its manufacturing capacity and implemented a Continuous Flow Manufacturing philosophy. Part of Veriflo's overall physical expansion included the addition of two state-of-the-art Class 10 Clean Rooms at its Richmond, California, semiconductor component manufacturing facility.

Veriflo's proven leadership is deeply rooted in customer service and the ability to develop high-quality products for the various global markets it serves.

Veriflo's technical superiority is supported by patents allowing the division to deliver innovative state-

## Veriflo's proven leadership is deeply rooted in customer service

of-the-art products to its customers. Veriflo has manufacturing facilities in Richmond, California, Carson City, Nevada, and Belleville, New Jersey that produce products for the following applications:

- *Instrument/Analyzer*
- *Pharmaceutical*
- *Semiconductor/High Purity*

Note: For more information on Veriflo Division visit its web site (www.veriflo.com). For more information on Parker Hannifin Corporation and the Instrumentation Group visit Parker's web site (www.parker.com).

## IR6000 Series Two Stage Regulator Internally Threadless Design

The NEW IR6000 Series is an internally threadless pressure regulator designed for pressure reducing instrument/analyzer applications including cylinder and calibration gases.

The IR6000 is a high pressure regulator that can be ordered with a variety of options to meet a range of system design requirements.

- Unique patented compression member loads the seat to the body without requiring a threaded nozzle
- Selection of seat materials for media compatibility and temperature applications
- Meets NACE standard MR0175
- Compression member for low internal volume
- Fully swept design
- Internally threadless seat design to promote long seat life
- Convoluted, Hastelloy C-22® diaphragm provides high corrosion resistance and increases cycle life

**OPERATING CONDITIONS**
Maximum inlet: 4000 psig (276 barg)
Outlet : 1-10 psig (.7 barg), 1-30 psig (2 barg), 1-60 psig (4 barg), 2-100 psig (7 barg), 2-250 psig (17 barg)

**FLOW CAPACITY**
Standard: $C_V$ .06
Optional: $C_V$ .02, .15 (Semi Flow Coefficient Test # F-32-0998)

**INTERNAL VOLUME**
8.1 cc

**TEMPERATURE**
PCTFE: -40°F to 150°F (-40°C to 66°C)
PEEK™: -40°F to 275°F (-40°C to 135°C)
Vespel®: -40°F to 500°F (-40°C to 260°C)

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## IR4000 Series High Pressure Regulator Internally Threadless Design

The NEW IR4000 Series is an internally threadless pressure regulator designed for instrument/analyzer and semiconductor applications.

Industrial applications include gas management in refineries and process analyzer systems. Semiconductor applications for use on general purpose gas management (Air, Condensed Dry Air (CDA), and Plant Nitrogen).

The IR4000 is a high pressure regulator that can be ordered with a variety of options to meet a range of system design requirements.

- Unique patented compression member loads the seat to the body without requiring a threaded nozzle
- Selection of seat materials for media compatibility and temperature applications
- Meets NACE standard MR0175
- Compression member for low internal volume
- Fully swept design
- Internally threadless seat design to promote long seat life
- Convoluted, Hastelloy C-22® diaphragm provides high corrosion resistance and increases cycle life

**OPERATING CONDITIONS**
Maximum inlet: 4000 psig (276 barg)
Outlet : 1-10 psig (.7 barg), 1-30 psig (2 barg), 1-60 psig (4 barg), 2-100 psig (7 barg), 2-250 psig (17 barg), 5-500 psig (35 barg)

**FLOW CAPACITY**
Standard: $C_V$ .06
Optional: $C_V$ .02, .15 (Semi Flow Coefficient Test # F-32-0998)

**INTERNAL VOLUME**
4.0 cc

**TEMPERATURE**
PCTFE: -40°F to 150°F (-40°C to 66°C)
*PEEK™: -40°F to 275°F (-40°C to 135°C)
*Vespel®: -40°F to 500°F (-40°C to 260°C)

** Temperature ranges are not available in Brass body*

## NPR4000 Series Negative Pressure Regulator

Parker Hannifin Corporation's Veriflo Division introduces the NPR4000 regulator for applications involving negative delivery pressures with low pressure gas sources.

This new regulator is specifically designed to regulate negative pressures down to -26 inHg vacuum (100 Torr). Typical applications include the delivery of low pressure gases from liquid sources such as $WF_6$, $BCL_3$.

- Internal threadless design
- Consistently maintains outlet set point
- Fluid media: corrosive and non-corrosive gases
- Metal-to-metal, diaphragm-to-body seal with Viton® O-ring backup

**OPERATING CONDITIONS**
Maximum inlet: 250 psig (17 barg)
Outlet: 100 torr to 10 psig (-26 in Hg to .7 barg)

**FLOW CAPACITY**
Standard: $C_V$ .06
Optional: $C_V$ .02, .15 (Semi Flow Coefficient Test # F-32-0998)

**INTERNAL VOLUME**
4.0 cc

**TEMPERATURE**
PCTFE: -40°F to 150°F (-40°C to 66°C)

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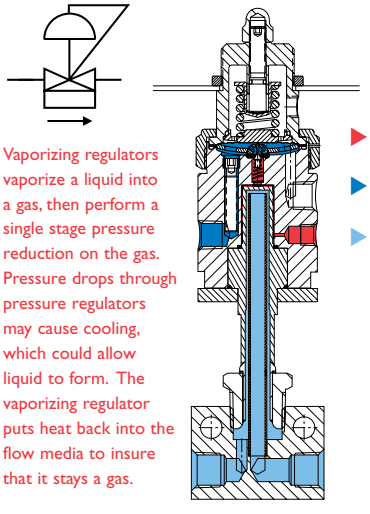
### Vaporizing Regulator




Vaporizing regulators vaporize a liquid into a gas, then perform a single stage pressure reduction on the gas. Pressure drops through pressure regulators may cause cooling, which could allow liquid to form. The vaporizing regulator puts heat back into the flow media to insure that it stays a gas.

**OPERATING CONDITIONS**
Max InletPressure : 3500 psig (241 barg)
Outlet pressure: 1-10 psig (.07-.7 barg), 1-30 psig (.07-2 barg), 1-60 psig (.07-4 barg), 2-100 psig (.14-7 barg), 3-250 psig (.2-17 barg), 5-500 psig (.3-34.5 barg)

**FLOW CAPACITY**
$C_V$ 0.06 Nominal

**INTERNAL VOLUME**
High Pressure Inlet 0.57 cc

**TEMPERATURE**
40°F to 500°F (-40°C to 260°C)

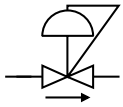
## AVR3 and AVR4 Series Pressure Reducing Regulator Electrically and Steam Heated Design

The NEW AVR3 and AVR4 Series steam and electrically heated vaporizing pressure reducing regulators are designed to heat and/or vaporize a gas or liquid sample before entering an analyzer system. The design allows easy cleaning of the heating element.

- Ultra Low internal volume
- Standard Hastelloy C22® diaphragm for superior strength and corrosion resistance
- Convoluted diaphragm provides outlet pressure stability with changes in flow
- Integral diaphragm stop provides additional safety measure
- Meets NACE standard MR0175
- CSA approved, Cenelec certified (Pending)
- Field serviceable heat transfer element

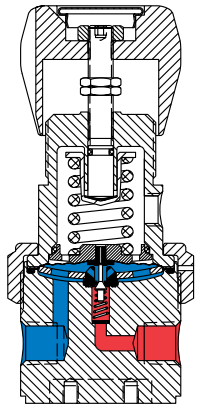
## Pressure Reducing Regulators

### Single Stage



▶ Outlet

▶ Inlet



This device is used to reduce a high pressure, supply pressure or inlet pressure in one stage to a low pressure. The low pressure side may also be called: low pressure, reduced pressure, control pressure, delivery pressure, downstream side or outlet pressure. Single stage regulators generally are preferred where there is little inlet pressure variability or where some outlet pressure variability is acceptable (see supply pressure effect specification on our product literature).

### HFR900 Series

***High Flow Pressure Regulator***

**OPERATING CONDITIONS**
Inlet: 500, 200 psig (35, 14 barg)
Outlet: 1-30, 2-75, 5-150 psig (.06-2, .1-6, .3-10 barg)

**FLOW CAPACITY**
$C_V$ = 0.85

**INTERNAL VOLUME**
38 cc

**TEMPERATURE**
-40°F to 150°F (-40°C to 66°C)

- 316L Stainless steel construction
- High flow

### MIR700 Series

***Compact Single Stage Regulator***

**OPERATING CONDITIONS**
Inlet: 3000 psig (207 barg)
Outlet: 0-15, 30, 100, 200 psig (1, 2, 7, 14 barg)

**FLOW CAPACITY**
$C_V$ = .02

**INTERNAL VOLUME**
3.9 cc

**TEMPERATURE**
-40°F to 150°F (-40°C to 66°C)

- Brass or 316L Stainless Steel construction
- Compact size

### APR3 Series

***Pressure Reducing Regulator***

**OPERATING CONDITIONS**
Inlet: 3500 psig (241 barg)
Outlet: 0-5, 30, 60, 100 (0.3, 2, 4, 7 barg)

**FLOW CAPACITY**
$C_V$ = 0.02, (optional .2)

**INTERNAL VOLUME**
13.8 cc

**TEMPERATURE**
-40°F to 150°F (-40°C to 66°C)

- 316L stainless steel or Hastelloy®
- Standard Hastelloy C22® diaphragm
- Oversized diaphragm provides more pressure sensitive adjustments

### 959TDR Series

***High Pressure Tied Diaphragm Regulator***

**OPERATING CONDITIONS**
Inlet: 3500 psig (241 barg)
Outlet: 0-30, 100 psig (2, 7 barg) or subatmospheric to 30 psig (NPR only)

**FLOW CAPACITY**
$C_V$ = .04

**INTERNAL VOLUME**
4.0 cc (6.19cc)

**TEMPERATURE**
-40°F to 150°F (-40°C to 66°C)

- 316L Stainless Steel construction
- Tied diaphragm regulator
- True metal-to-metal diaphragm seal assures high leak integrity

### APR66 Series

***Pressure Reducing Regulator***

**OPERATING CONDITIONS**
Inlet: 6000 psig (414 barg)
Outlet: 0-1000, 2000, 3000 and 6000 psig (69, 138, 207, 414 barg)

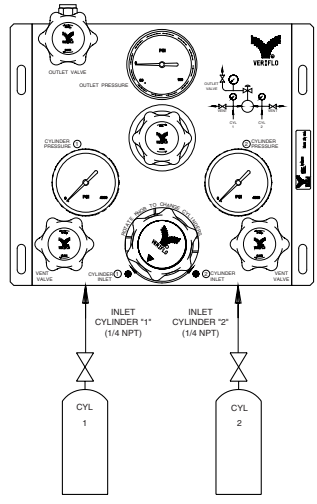
**FLOW CAPACITY**
$C_V$= 0.05

**TEMPERATURE**
-40°F to 150°F (-40°C to 66°C)

- Brass or 316L Stainless Steel construction
- 6000 psig service

## ChangeOver System with Alarm Package

Continous Gas and Fluid Management
with Alarm Package




Veriflo's ChangeOver System is a compact turnkey module designed for continuous gas and fluid management. The ChangeOver System combines the IR Series pressure reducing regulator with the NOVA Series diaphragm valves to create a compact gas delivery system for continuous gas or fluid applications

The Alarm Package for the ChangeOver System is designed to give users both an audible and a visual indication of when it is time to change out cylinders. The alarm package is equipped with four channels to allow for the connection of multiple ChangeOver Systems.

The alarm signal is activated when either cylinder has dropped below a preset pressure. The signal is activated through two pressure switches which are located on each inlet valve.

**OPERATING CONDITIONS**
Inlet pressure: 3,000 psig
(204 barg) maximum
Outlet pressure: 100, 150, 200,
250 psig (7, 10, 3, 14, 17 barg)

**FLOW CAPACITY**
$C_V$ = .02

**TEMPERATURE**
-40°F to 150°F (-40°C to 66°C)

- 316L Stainless Steel and Brass construction
- Convoluted diaphragm provides outlet pressure stability with changes in flow
- Quick changeover control enhances safety

## HPR800 Series

***Pressure Regulator***

**OPERATING CONDITIONS**
Inlet: 5000 psig (344 barg) @ 70°F (21°C)
Outlet: 10-800, 20-1500, 50-2500 psig
(.6-55, 1.3-103, 3.3-172 barg)

**FLOW CAPACITY**
$C_V$ = .02

**INTERNAL VOLUME**
6.5 cc

**TEMPERATURE**
-40°F to 150°F (-40°C to 66°C)

- Brass or 316L Stainless Steel construction
- Suitable for gas cylinder applications

## HIR100 Series

***Pressure Regulator***

**OPERATING CONDITIONS**
Inlet: 3000 psig (207 barg)
Outlet: 1-15, 30, 2-75 and 5-150 psig
(.07-1, .07-2, .14-5, .34-10 barg)

**FLOW CAPACITY**
$C_V$ = 0.131

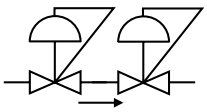
**INTERNAL VOLUME**
9.30 cc

**TEMPERATURE**
-40°F to 150°F (-40°C to 66°C)

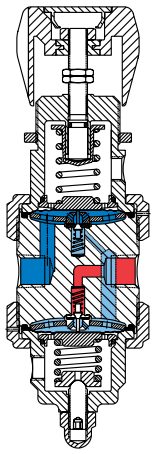
- Brass or 316L Stainless Steel construction
- Excellent low pressure setability
- Large diaphragm area for minimal pressure drop

## Pressure Reducing Regulators

### Two Stage



This device reduces an inlet pressure to an outlet pressure in two stages. The design is two single-stage regulators in series in one body. This device is preferred where there is a potential for large inlet pressure variations. Gas cylinders are the most common example of this application.




### 735TDR Series

***Two Stage Tied Diaphragm Regulator***

**OPERATING CONDITIONS**
Inlet: 3500 psig (241 barg)
Outlet: 0-30, 100
(2, 7 barg) adjustable

**FLOW CAPACITY**
$C_V$ = .04

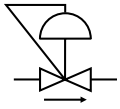
**INTERNAL VOLUME**
7.3 cc

**TEMPERATURE**
-40°F to 150°F (-40°C to 66°C)

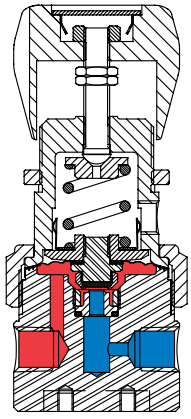
- 316L Stainless Steel construction
- Two-stage tied diaphragm regulator
- Adjustment range spring may be replaced without breaking the diaphragm seal to the body and exposing the wetted area to contamination
- True metal-to-metal diaphragm seal assures high leak integrity
- For gas cylinder applications

## Back Pressure Regulators

### Back Pressure Regulator



In contrast to controlling downstream pressure with a pressure reducing regulator, the back pressure regulator is used to control upstream or back pressure. This device operates like a sensitive, externally adjustable relief valve.





(Shown with Optional Aluminum knob)

### ABP1 Series

***Back Pressure Regulator***

**OPERATING CONDITIONS**
Control Pressure: 0-25, 50, 100, 250, 500 psig (0-1.7, 3.5, 7, 17.2, 35 barg)

**FLOW CAPACITY**
$C_V$ = 0.3 (optional 0.1 and 0.06)

**INTERNAL VOLUME**
5.9 cc

**TEMPERATURE**
Flow Media: -40°F to 400°F
(-40°C to 204°C)

- 316L Stainless Steel, Monel® or Hastelloy C-22® construction
- Low internal volume
- Meets NACE standard MR0175
- Atmospheric corrosion resistant

### BPR50 Series

***Back Pressure Regulator***

**OPERATING CONDITIONS**
Control Pressure:
100-1200 and 200-2000 psig
(6.8-8.3 barg and 13.8-38 barg)

**FLOW CAPACITY**
$C_V$ = 0.45

**INTERNAL VOLUME**
5 cc

**TEMPERATURE**
-40°F to 150°F (-40°C to 66°C)

- 316L Stainless Steel
- 2000 psig service

### ABP3 Series

***Back Pressure Regulator***

**OPERATING CONDITIONS**
Control Pressure:
0-5, 30, 60 psig (0-.3, 2, 4 barg)

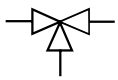
**FLOW CAPACITY**
$C_V$= 0.3 (optional 0.1 and 0.06)

**INTERNAL VOLUME**
13.8 cc

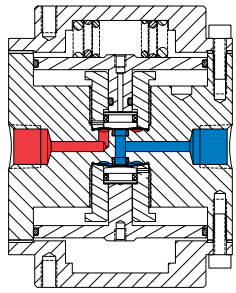
**TEMPERATURE**
Flow Media: -40°F to 150°F
(-40°C to 66°C)

- 316L Stainless Steel
- Large diaphragm for extra sensitivity

## 3Way Diaphragm Valve



These are on/off devices with no packing, o-rings or bellows in the flow stream. Available in Air Operated or Manual actuation. The 3-Way's metal-to-metal seal of the Elgiloy® diaphragm to the Stainless Steel body achieves outstanding seal integrity to atmosphere. This eliminates stem leakage and prevents contamination of the sample stream.




- Compact size
- High cycle life
- Diaphragm is only moving part in wetted area

## Nova 3Way AOP

***Air Operated Diaphragm Valve***

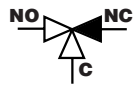
**OPERATING PRESSURE**
Vacuum to 500 psig (34.5 barg)

**FLOW CAPACITY**
$C_V$ = .15 (Typical)

**INTERNAL VOLUME**
2.11 cc

**TEMPERATURE**
-40°F to 150°F (-40°C to 66°C)
PCTFE (formerly Kel-F 81®)

-40°F to 250°F (-40°C to 121°C)
Vespel®




- Compact size
- High cycle life
- Diaphragm is only moving part in wetted area

## Nova 3Way Manual

***3Way Manual Diaphragm Valve***

**OPERATING PRESSURE**
Vacuum to 3500 psig (241 barg)

**FLOW CAPACITY**
$C_V$ = 0.15 (Typical)

**INTERNAL VOLUME**
2.11 cc

**TEMPERATURE**
-40°F to 150°F (-40°C to 66°C)
PCTFE (formerly Kel-F 81®)

-40°F to 250°F (-40°C to 121°C)
Vespel®

- Compact size
- High cycle life
- Diaphragm is only moving part in wetted area

## Nova 3Way Block & Bleed

***Block & Bleed Diaphragm Valve***

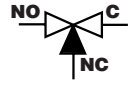
**OPERATING PRESSURE**
Vacuum to 80 psig (5.5 barg)

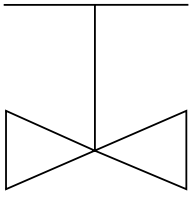
**FLOW CAPACITY**
$C_V$ = 0.15 (Typical)

**INTERNAL VOLUME**
2.11 cc

**TEMPERATURE**
-40°F to 150°F (-40°C to 66°C)
PCTFE (formerly Kel-F 81®)

-40°F to 250°F (-40°C to 121°C)
Vespel®



## Nova Series

***Standard Features - All Models***

**OPERATING PRESSURE**
Vacuum to 3500 psig (241 barg) except NOVA AOP

**FLOW CAPACITY**
$C_V$ = .14

**INTERNAL VOLUME**
Less than 1.0 cc

**TEMPERATURE**
-40°F to 150°F (-40°C to 66°C)

- Clean for $O_2$ service
- Low internal volume
- 316L Stainless Steel or Brass construction
- Metal to metal diaphragm seal to environment for leak integrity
- No packing, O-rings, springs or bellows in wetted area
- Diaphragm is only moving part in wetted area

- Air operated pressure piston style actuator
- High cycle life
- NC: Normally closed (3 options)
- NO: Normally open

## NovaAOP

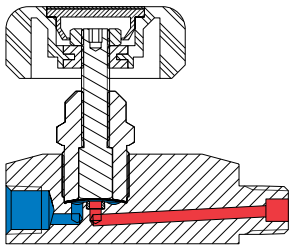
***Air Actuated Diaphragm Valve***

**OPERATING PRESSURES**
Vacuum to 250 psig (AOP1 NC, AOP3 NC) or 500 psig (AOP2 NC, AOP NO)

**MINIMUM ACTUATION PRESSURE**
40 psig min (AOP3 NC) and 65 psig min (AOP1 NC) @ 250 psig line pressure. 75 psig (AOP2 NC) and 50 psig (AOP NO) @ 500 psig line pressure.

## Diaphragm Valve

These are on/off devices with no packing, o-rings or bellows in the flow stream. Available with multiple-turn handwheel, indicating handwheel, quarter-turn or air-operated actuators. Ideal for eliminating fugitive emissions in instrument systems.




- Low internal volume
- No O-rings in wetted areas
- Clean $O_2$ service
- Compact size
- High cycle life

### Nova Handwheel
*Manual Diaphragm Valve*

**OPERATING PRESSURE**
Vacuum to 3500 psig (241 barg)

**FLOW CAPACITY**
$C_V$ = .14

**INTERNAL VOLUME**
Less than 1.0 cc

**TEMPERATURE**
-40°F to 150°F (-40°C to 66°C)

- Low internal volume
- No O-rings in wetted areas
- Clean $O_2$ service
- Compact size
- High cycle life

### Nova I
*Indicating Handwheel*

**OPERATING PRESSURE**
Vacuum to 3500 psig (241 barg)

**FLOW CAPACITY**
$C_V$ = .14

**INTERNAL VOLUME**
Less than 1.0 cc

**TEMPERATURE**
-40°F to 150°F (-40°C to 66°C)

- Low internal volume
- No O-rings in wetted areas
- Clean $O_2$ service
- Compact size
- High cycle life

### Nova L
*Lever Valve*

**OPERATING PRESSURE**
Vacuum to 3500 psig (241 barg)

**FLOW CAPACITY**
$C_V$ = .14

**INTERNAL VOLUME**
Less than 1.0 cc

**TEMPERATURE**
-40°F to 150°F (-40°C to 66°C)

- "VeriClean", Veriflo's high purity type 316L VAR Stainless Steel
- Unique patented compression member which loads the seal uniformly without the need for threaded components or crimping operations
- Fully field serviceable seat can be replaced without special tools
- NO (normally open) or NC (normally closed) or metering actuators available
- Fully functional under all vacuum conditions

### 944 Series
*Diaphragm Valves*

**OPERATING CONDITIONS**
944L, 944S, 944I Vacuum to 3500 psig (241 barg)
944 AOP LP: Vacuum to 125 psig (8.6 barg)
944 AOP HP: Vacuum to 3500 psig (241 barg)

**FLOW CAPACITY**
944L: $C_V$ = .18
944 AOP LP: $C_V$= .25
944 AOP HP: $C_V$= .25

**INTERNAL VOLUME**
2.18 cc

**TEMPERATURE**
-40°F to 150°F (-40°C to 66°C)

- Internally threadless
- Ideal for high flow applications
- Fully functional from vacuum to 125 psig for AOP valve and 250 psig for manual valves
- Diaphragm is only moving part in wetted area
- High cycle life (including corrosive service)

### NV55 Series
*High Flow Diaphragm Valve*

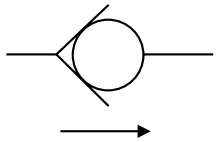
**OPERATING PRESSURE**
Maximum: (AOP) 125 psig (98.6 barg), (Manual) 250 psig (17 barg)
Minimum: Vacuum

**FLOW CAPACITY**
$C_V$= .55

**INTERNAL VOLUME**
3.15 cc

**TEMPERATURE**
-40°F to 150°F (-40°C to 66°C)

## Check Valve



### VC10 Series
*Check Valve*

**BODY**
Brass or 316L Stainless Steel

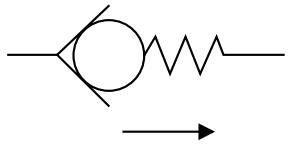
**MAXIMUM WORKING PRESSURE**
3000 psig (207 barg) Stainless Steel
2000 psig (138 barg) Brass

**FLOW CAPACITY**
$C_v$ = 0.42

**OPERATING TEMPERATURE**
-30°F to 550°F (-35°C to 287°C)

- Positive sealing at very Low differential pressure
- Viton® and Kalrez seal options

## Relief Valve



### VR7 Series
*Relief Valve*

**BODY**
Brass or 316L Stainless Steel

**ADJUSTABLE RANGES**
10-20, 20-100, 100-250,
250-550 psig (.6-1.4, 1.4-6.9,
7-17, 17-34 barg)

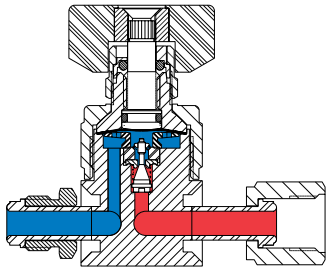
**FLOW CAPACITY**
$C_v$ = 0.37

**OPERATING TEMPERATURE**
30°F to 400°F (-35°C to 204°C)

- Choice of seal materials
- HEX body provides wrench flats
- Available with a variety of connection options

## Excess Flow Valve

This valve is flow sensitive and will shut off if it senses an increased amount of flow above the specified set point. After shut off, it may be manually reset to continue operation.




### FS190 Series
*Excess Flow Shut-off Valve*

**MAXIMUM INLET PRESSURE**
3500 psig (241 barg)

**6 AVAILABLE FLOW RANGES**
500 cc - 100 LPM

**INTERNAL VOLUME**
1.86 cc

**TEMPERATURE**
-10°F to 150°F (-23°C to 66°C)

- 316L Stainless Steel
- A non-attitude sensitive excess flow shut-off valve

### 928AOP Series
*Pressure Reducing*
*Air-Operated Valve*

**OPERATING CONDITIONS**
Inlet: 3500 psig (241 barg)
Outlet: 350 psig (24 barg) with
2000 psig (138 barg) inlet pressure
and 80 psig (5.5 barg) actuator pressure -
Outlet pressure varies with inlet pressure
and actuator pressure

**FLOW CAPACITY**
$C_v$ = .04

**INTERNAL VOLUME**
1.54 cc

**TEMPERATURE**
-40°F to 150°F (-40°C to 66°C)

- Improves systems safety by lowering the inlet pressure to a safer working range

### 928AOPHP Series
*High Pressure*
*Air-Operated Valve*

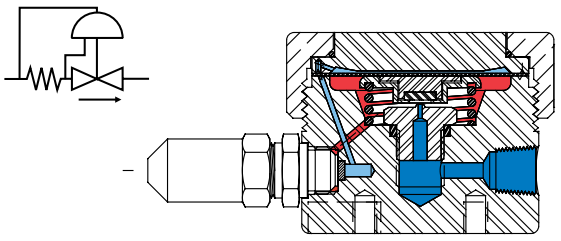
**OPERATING CONDITIONS**
Inlet: 3500 psig (241 barg)
(for oxygen: 2200 psig (170)
Outlet: Vacuum to 3500 psig (241 barg)

**FLOW CAPACITY**
$C_v$ = .04

**INTERNAL VOLUME**
1.54 cc

**TEMPERATURE**
-40°F to 150°F (-40°C to 66°C)

## Flow Controller



These are mechanical devices that control flow by maintaining a constant differential pressure across an orifice. They can be either upstream or downstream referenced.

- Metered Flow
- Down Stream
- Upstream

### SC421 and SC423 Series

***Precision Low Flow Controllers***

**MAXIMUM INLET PRESSURE**
150 psig (10 barg)

**FLOW RANGE**
1 cc - 1000 cc/min
5 cc - 500 cc/min

**TEMPERATURE**
-40°F to 200°F (-40°C to 93°C)

- 316L Stainless Steel construction
- Upstream or downstream referenced
- Air sampling per EPA method TO-12 and TO-14
- Analyzer systems

### LC221 and LC223 Series

***Gas and Liquid Flow Controllers***

**MAXIMUM INLET PRESSURE**
LC221: 3800 psig (262 barg)
LC223: 5000 psig (344 barg)

**FLOW RANGE**
LC221: Less than .1 scc/min - 1 LPM
LC223: 25 scc - 40 LPM

**TEMPERATURE**
-20°F to 200°F (-29°C to 94°C)

- 316L Stainless Steel construction
- Upstream or downstream referenced

### SC423 XL Series

***Precision Low Flow Controller***

**MAXIMUM INLET PRESSURE**
2 psig

**FLOW RANGE**
3, 6, 10, 27 sccm

**TEMPERATURE**
-40°F to 200°F (-40°C to 94°C)

- 316L Stainless Steel construction
- Reliable precision flow control as low as 3 sccm
- Air sampling per EPA method TO-12 and TO-14
- Stable flows over a wide temperature band
- Stable flows as vacuum pressure changes downstream from 28 in/Hg to 5 in/Hg

**Additional documentation and technical information regarding Veriflo Division's Instrument/Analyzer and Semiconductor/High Purity product lines is available in ".PDF" format via:**

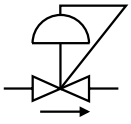
**www.veriflo.com**

## New Product Spotlight

- IR6000 Series
- IR4000 Series
- NPR4000 Series
- AVR3 and AVR4 Series

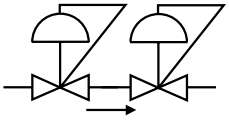
## Pressure Reducing Regulators

**Single Stage**



- HFR 900 Series
- MIR 700 Series
- APR3 Series
- 959 TDR Series
- APR66 Series
- ChangeOver System with Alarm Package
- HPR 800 Series
- HIR 100 Series

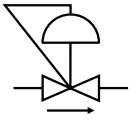
**Two Stage**



- 735 TDR Series

## Back Pressure Regulators

**Back Pressure Regulator**



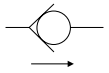
- ABP1 Series
- BPR50 Series
- ABP3 Series

## Valves

**Diaphragm Valve**

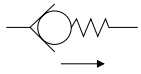
- NOVA 3Way AOP
- NOVA 3Way Manual
- Nova 3Way Block & Bleed
- Nova Series
- Nova AOP
- Nova Handwheel
- Nova I
- Nova L
- 944 Series
- NV55 Series

**Check Valve**



- VC10 Series

**Relief Valve**



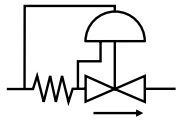
- VR7 Series

**Excess Flow Valve**

- FS 190
- 928AOP Series
- 928AOPHP Series

## Flow Controllers

**Vaporizing Regulator**



- SC 421 and SC 423 Series
- LC 221 and LC 223 Series
- SC 423 XL

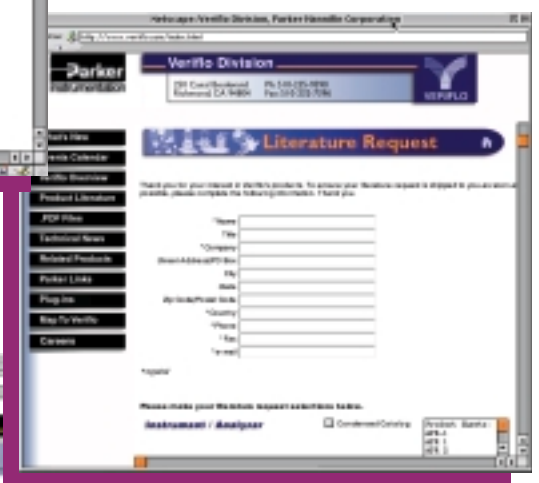
## Veriflo Division On-line

Veriflo Division of Parker Hannifin features a comprehensive web site which includes detailed information on pressure regulators, diaphragm valves, and continuous gas management systems at the click of the mouse.

The site features downloadable product literature in .PDF files, archived pressed releases, trade show event information and general division information. Product literature buttons include viewable cross sectional drawings, flow curves and ordering information.



Visitors to www.veriflo.com can click the Applications Support button to ask detailed technical questions on the Veriflo Division's product line. Veriflo's Application Support team responds to all visitor's question within 24 hours.




Product Literature binders can be ordered on-line by selecting the Literature Request button (located at the bottom of each web page throughout veriflo.com).


Links to Parker's Instrumentation Group (www.parker.com/instrumentation) and IG Divisions web site can be accessed through www.veriflo.com. Parker's home page (www.parker.com) can also be accessed directly via veriflo.com

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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.

VERIFLO
ISO 9001 Certified

## WARNING

**FAILURE, IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.**

This document and other information from Parker Hannifin Corporation, it subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice

## Offer of Sale

The items described in this document are hereby offered for the sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. This offer and its acceptance are governed by the provisions stated in the "offer of Sale".



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