



VAPORIZING REGULATORS

Instrument/Analyzer Products

Catalog 4512/USA
October 2003



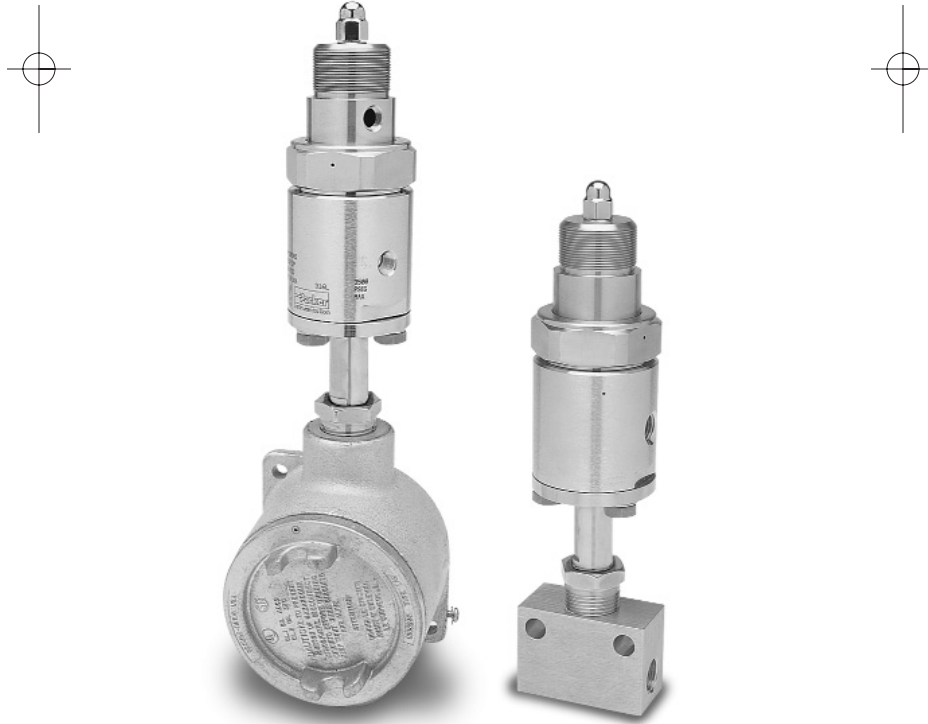
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Parker Hannifin Corporation
Veriflo Division
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Richmond, CA 94804-0034
Telephone 510.235.9590
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<http://www.veriflo.com>



VERIFLO DIVISION



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

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

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

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

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

With the focus of maintaining the highest industry standards,

Maintained Industry Leadership By Placing A Premium On Quality Customer Care

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

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

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

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



AVR3 Series

Steam Heated Pressure Reducing Regulator



Parker Hannifin Corporation's Veriflo Division presents the AVR3 Series steam heated pressure reducing vaporizing regulator.

The AVR3 is 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 and screen.



features

- ▶ Ultra Low internal volume.
- ▶ Standard Hastelloy C-22[®] diaphragm for superior strength and corrosion resistance.
- ▶ Convolute diaphragm provides outlet pressure stability with changes in flow.
- ▶ Integral diaphragm stop provides additional measure of safety.
- ▶ Meets NACE Standard MR-01-75.
- ▶ Field serviceable heat transfer element.

materials of construction

Wetted

Pressure control and heat exchanger Bodies. 316L Stainless Steel or Monel[®]
 Seat PCTFE, PEEK[™], or Vespel[®]
 Heater Seal PEEK[™]
 Back-up O-ring. Viton[®]
 Carrier Stainless Steel
 Compression Member. Inconel[®]
 Diaphragm Hastelloy C-22[®]
 Poppet Elgiloy[®]
 Poppet spring. Inconel[®]

Nonwetted

Cap. 303 Stainless Steel
 Cap nut. 316L Stainless Steel

operating conditions

Maximum Inlet pressure 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)
 Maximum steam supply. 600 psig, 500 °F
 (41 barg), (260° C)
 Temperature of flow media -40°F to 500°F
 (-40°C to 260°C)

functional performance

Design proof pressure 5250 psig (362 barg)
 Design burst pressure 11,500 psig (793 barg)
 Flow capacity C_v 0.06 Nominal
 (SEMI Flow Coefficient Test # F-32-0998)
 Supply pressure effect. 0.5 psig per 100 psig
 (.03 barg per 7 barg)
 Maximum Inboard Design
 Leak Rate. < 2 x 10⁻⁸ scc/sec HE

internal volume

High Pressure Inlet 0.57 cc, Overall 4.6 cc

standard connections

1/4" NPT outlet ports, 1/8" NPT or 1/8" low volume internal compression inlet port, 3/8" NPT steam supply connections

approximate weight

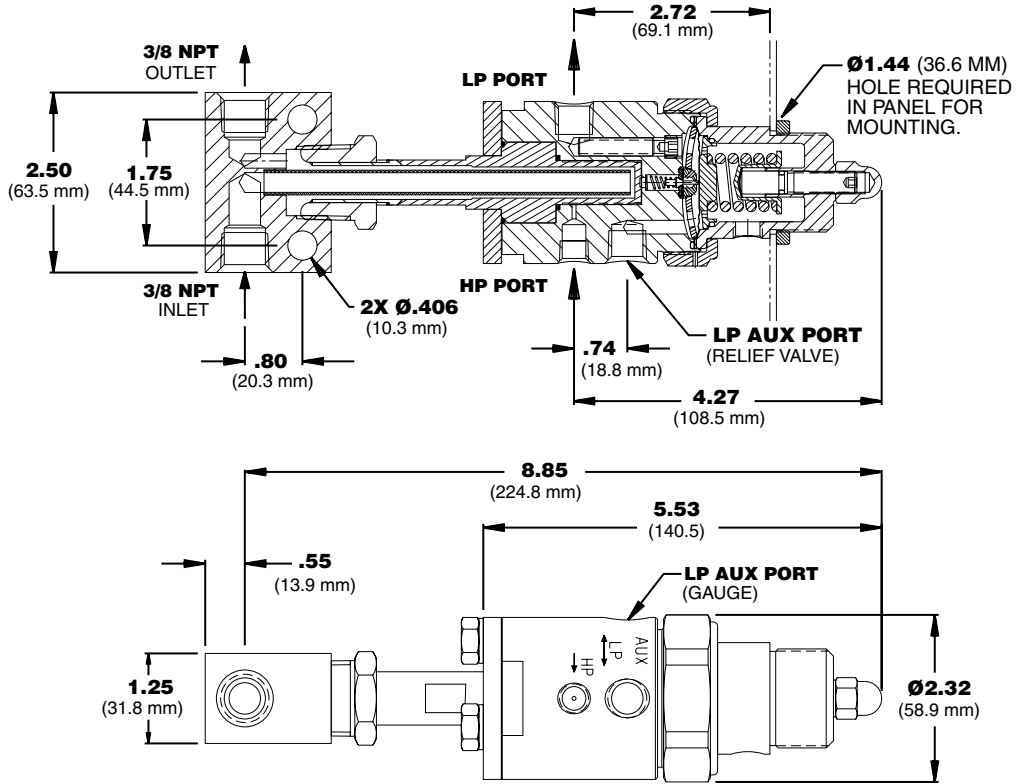
8 lbs (2.0 kgm)

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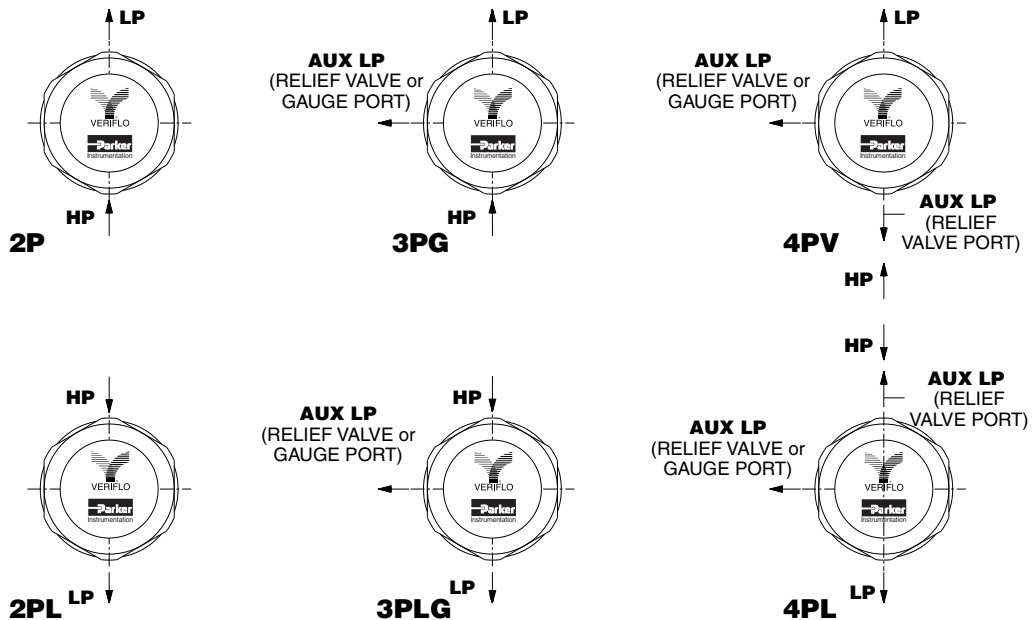


AVR3 Series

Cross Sectional View and Installation Dimensions

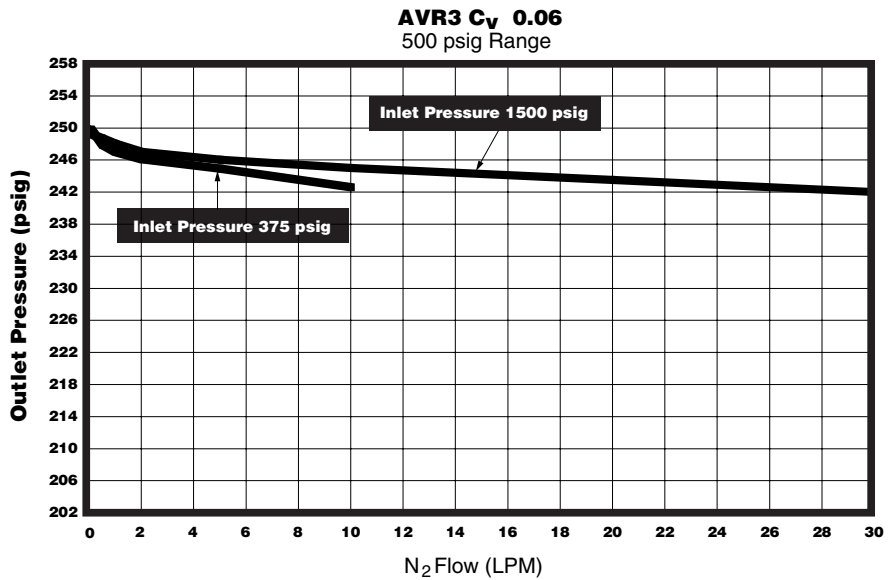
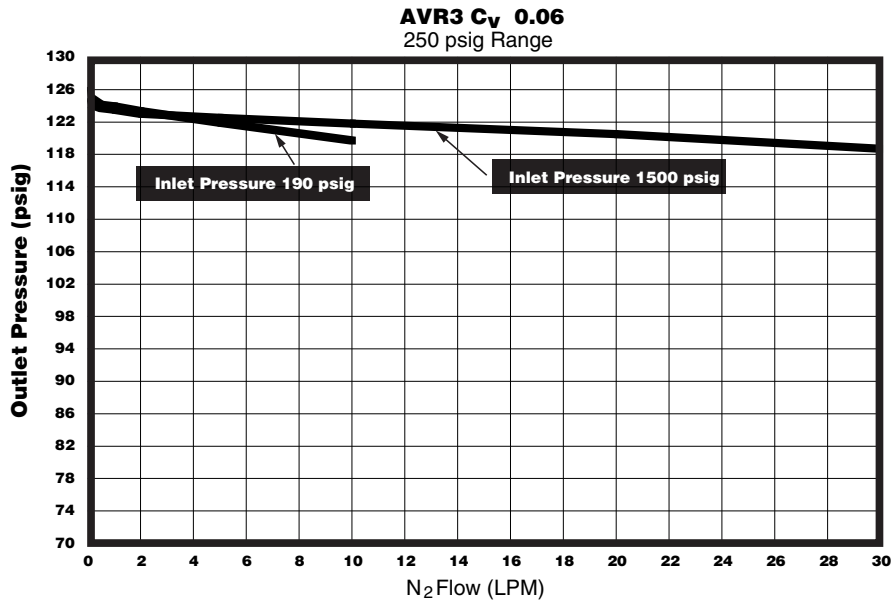


Porting Configurations



AVR3 Series

Flow Curves

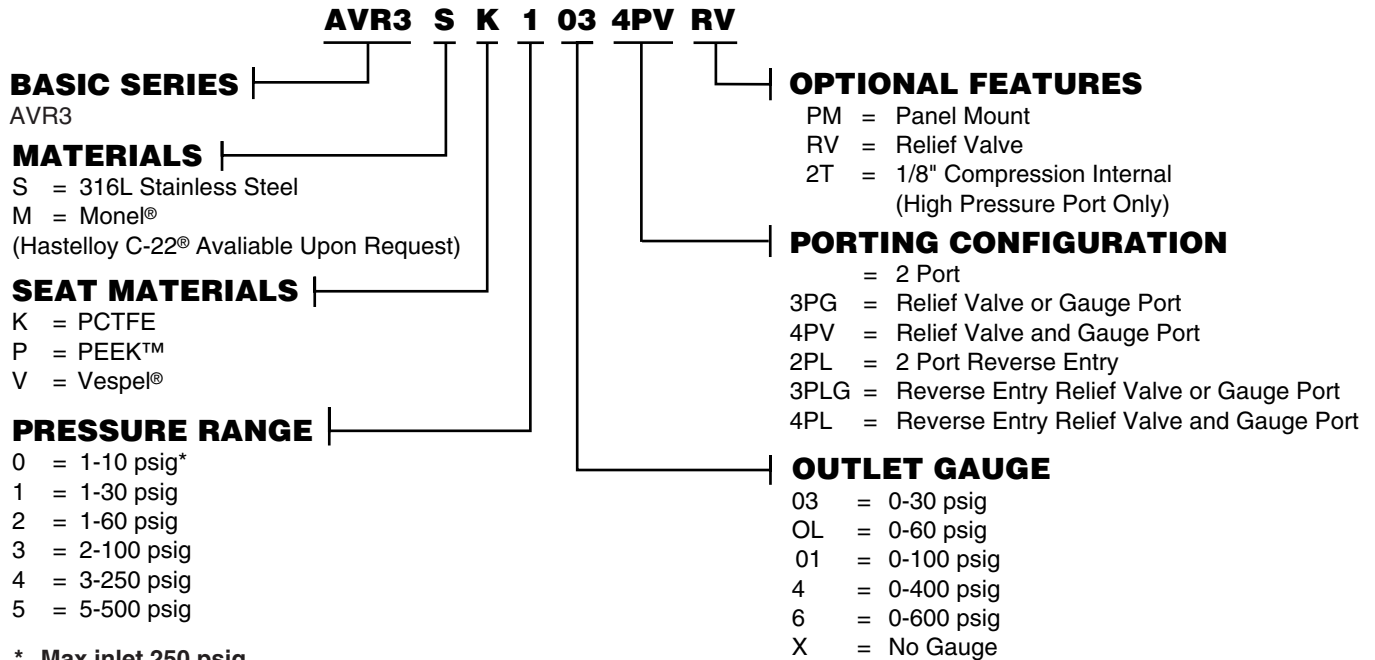


Seat Operating Parameters

Seat Material	Temperature	Inlet Pressure
PCTFE	150°F (66°C)	3500 psig (241 barg)
PEEK™	275°F (135°C)	3500 psig (241 barg)
VespeI®	500°F (260°C)	3500 psig (241 barg)

AVR3 Series

Ordering Information



* Max inlet 250 psig

Note: 1/4" NPT Female on auxillary outlet ports.

High Pressure port: 1/8" NPT Female is standard

Hastelloy C-22® is a registered trademark of Haynes International, Inc.

Inconel® is a registered trademark of Inco Alloys International.

Monel® is a registered trademark of International Nickel Company.

Vespel® is a registered trademark of DuPont Company.

Elgiloy® is a registered trademark of Elgiloy Corp.

PEEK™ is a trademark of Victrex plc

AVR4 Series

Electrically Heated Pressure Reducing Regulator



Parker Hannifin Corporation's Veriflo Division presents the AVR4 Series electrically heated vaporizing pressure reducing regulator. The AVR4 Series is for use in potentially explosive atmospheres.

The AVR4 is 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 and screen, reducing expensive replacement cost.



features

- ▶ Ultra Low internal volume.
- ▶ Standard Hastelloy C22[®] diaphragm for superior strength and corrosion resistance.
- ▶ Convolute diaphragm provides outlet pressure stability with changes in flow.
- ▶ Integral diaphragm stop provides additional safety measure.
- ▶ Meets NACE Standard MR-01-75.
- ▶ CSA, CE - ATEX certified.
- ▶ Field serviceable heat transfer element.

materials of construction

Wetted

Pressure control and heat exchanger Bodies 316L Stainless Steel or Monel[®]
 Seat PCTFE, PEEK[™], or Vespe[®]
 Heater Seal PEEK[™]
 Back-up O-ring Viton[®]
 Carrier Stainless Steel
 Compression Member Inconel[®]
 Diaphragm Hastelloy C-22[®]
 Poppet Elgiloy[®]
 Poppet spring Inconel[®]

Non-Wetted

Cap. 303 Stainless Steel
 Adjusting screw 416 Stainless Steel
 Condulet Cast iron and aluminum

electrical specifications

Power requirements . . . 120V or 240V, 50/60 Hz
 Heater wattage 40, 100, 150, 200 watt
 Temperature controller Proportional,
 75°F to 220°F or 215°F to 380°F
 (24°C to 105°C or 102°C to 194°C)
 Ranges approximate
 Condulet Crouse Hinds, UL and CSA
 listed Class 1, Groups A,B,C,D
 Class 2, Groups E,F,G

operating conditions

Maximum Inlet pressure . . . 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), 3-250psig (.2-17barg),
 5-500 psig (.3-34.5 barg)
 Temperature of flow media -40°F to 500°F
 (-40°C to 260°C)

functional performance

Design proof pressure 5250 psig (362 barg)
 Design burst pressure 11,500 psig (793 barg)
 Flow capacity C_v 0.06 Nominal
 (SEMI Flow Coefficient Test # F-32-0998)
 Supply pressure effect 0.5 psig per 100 psig
 (.03 barg per 7 barg)
 Maximum Inboard Design
 Leak Rate < 2 x 10⁻⁸ scc/sec HE

internal volume

High Pressure Inlet 0.57 cc, Overall 4.6 cc

standard connections

1/4" NPT outlet ports, 1/8" NPT or 1/8" low volume internal compression inlet port

approximate weight

8 lbs (2.0 kgm)

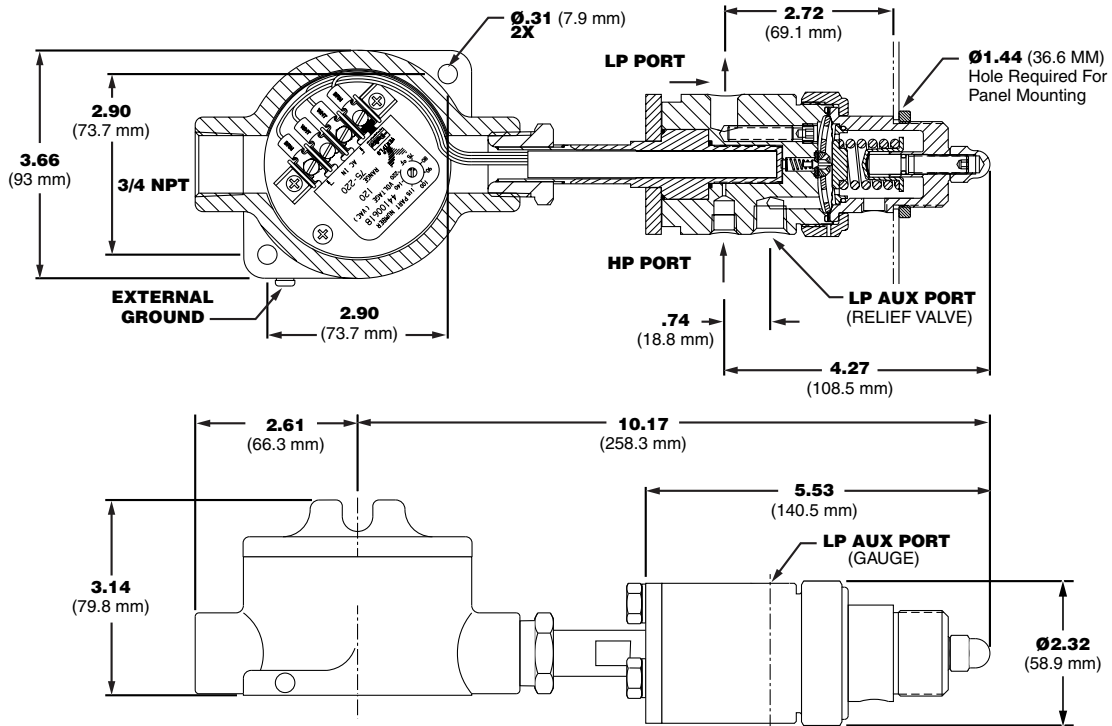
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 Reference: ATEX Schedule Drawing 54013150
 Reference: CSA File # LR99181

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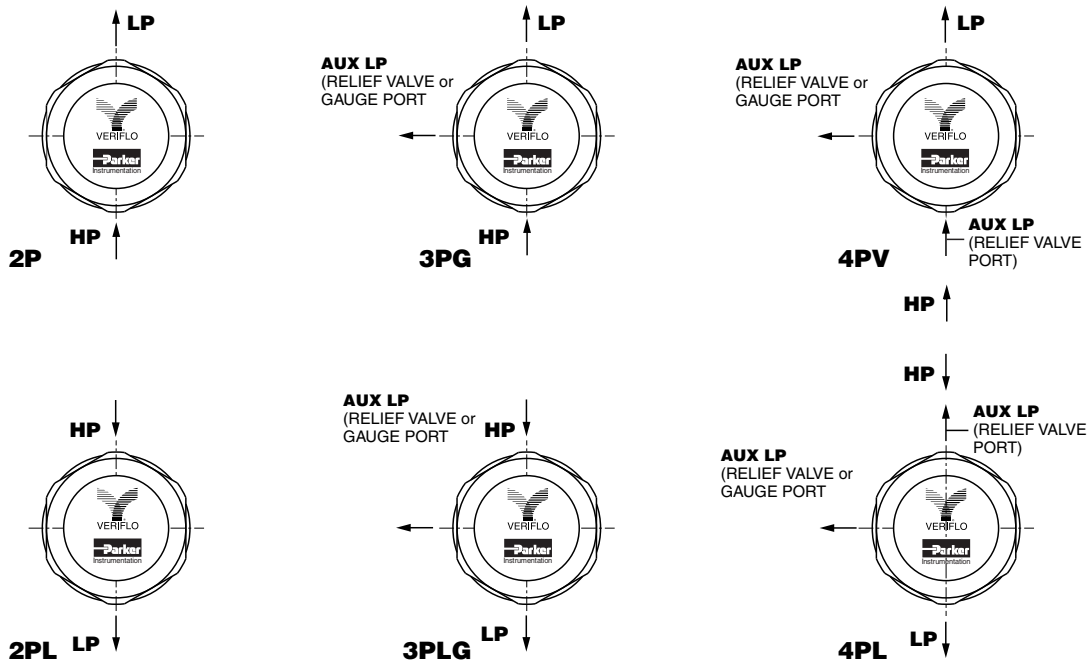


AVR4 Series

Cross Sectional View and Installation Dimensions

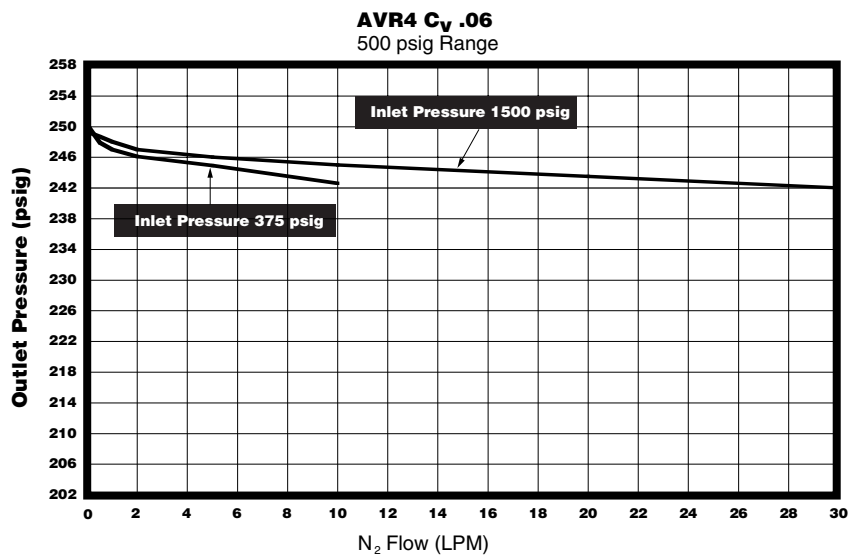
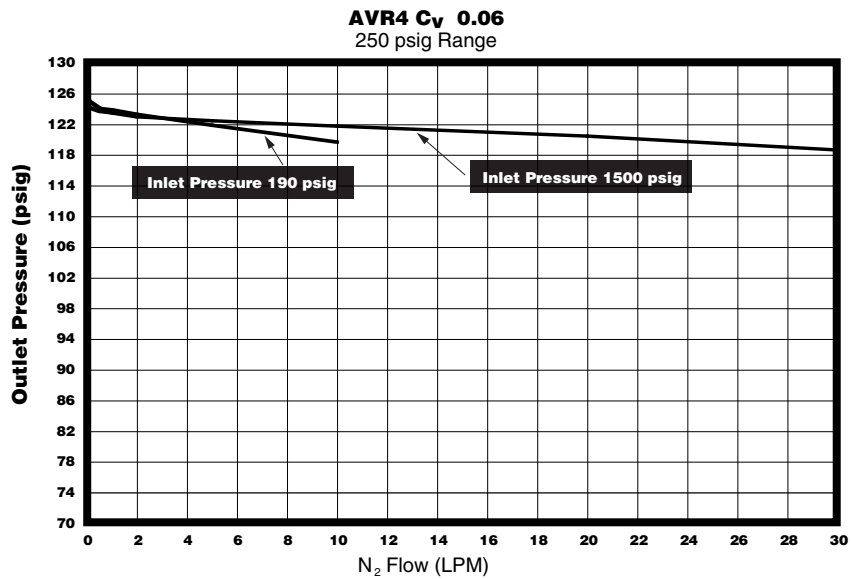


Porting Configurations



AVR4 Series

Flow Curves



Seat Operating Parameters

Seat Material	Temperature	Inlet Pressure
PCTFE	150°F (66°C)	3500 psig (241 barg)
PEEK™	275°F (135°C)	3500 psig (241 barg)
Vespel®	500°F (260°C)	3500 psig (241 barg)

AVR4 Series

Ordering Information

AVR4 S K 1 120 A L 03 4PV RV

BASIC SERIES

AVR4

MATERIALS

S = 316L Stainless Steel

M = Monel®

(Hastelloy C-22® Available Upon Request)

SEAT MATERIALS

K = PCTFE

P = PEEK™

V = Vespel®

PRESSURE RANGE

0 = 1-10 psig*

1 = 1-30 psig

2 = 1-60 psig

3 = 2-100 psig

4 = 3-250 psig

5 = 5-500 psig

VOLTAGE

120 = 120V

240 = 240V

OPTIONAL FEATURES

PM = Panel Mount

RV = Relief Valve

2T = 1/8" Compression Internal
(High Pressure Port Only)

PORTING CONFIGURATION**

= 2 Port

3PG = Relief Valve or Gauge Port

4PV = Relief Valve and Gauge Port

2PL = 2 Port Reverse Entry

3PLG = Reverse Entry Relief Valve or Gauge Port

4PL = Reverse Entry Relief Valve and Gauge Port

OUTLET GAUGE

03 = 0-30 psig

OL = 0-60 psig

01 = 0-100 psig

4 = 0-400 psig

6 = 0-600 psig

X = No Gauge

TEMPERATURE CONTROLLER

L = 75° F to 220° F

H = 220° F to 380° F

HEATER WATTAGE

A = 40

C = 100

D = 150

E = 200

* Max inlet 250 psig

Note: 1/4" NPT Female on auxillary outlet ports.

High Pressure port: 1/8" NPT Female is standard

Kel-F81® is a registered trademark of 3M Company.

Hastelloy C-22® is a registered trademark of Haynes International, Inc.

Inconel® is a registered trademark of Inco Alloys International.


Monel® is a registered trademark of International Nickel Company.

Vespel® is a registered trademark of DuPont Company.

Elgiloy® is a registered trademark of Elgiloy Corp.

PEEK™ is a trademark of Victrex plc

Product Certifications

<p>North American Certification</p>	 CLASS I GROUPS A, B, C & D C _{US} LR99181
<p>European Union Certification</p>	 0344  II 2 G EE*dIIC T3 LCIE 00,E6071



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Parker Hannifin Corporation

About Parker Hannifin Corporation

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

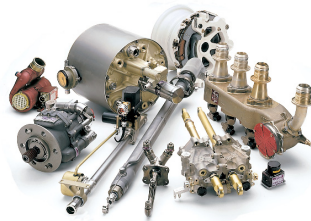
Parker's Charter

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

Product Information

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

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



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



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



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



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



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



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



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





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