

CARTEN®

Ultra High Purity Regulators



Product Features

- Vacuum to 3500PSIG working pressure
- 100% Helium leak tested for high leak integrity and containment
- 100% Clean room welded and assembled for high purity
- 100% DI-Water cleaned for ultra-cleanliness
- Precise control of gas pressure
- Medium flow rates in process gas cabinets and gas chambers



RG1 Series

HIGH PURITY HIGH PERFORMANCE
GAS PRESSURE REGULATOR

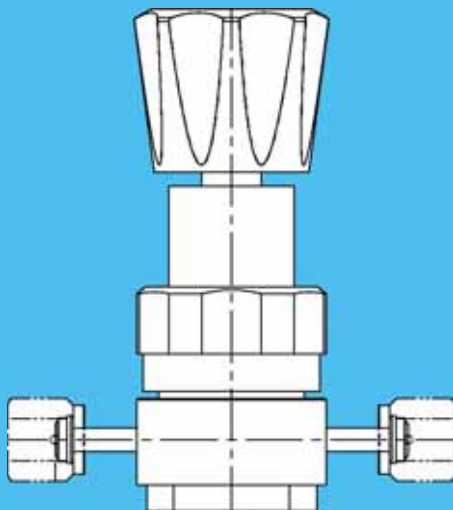
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Product Features



> TOP VIEW



> FRONT VIEW

Ultra-High Purity and High Performance Pressure Control Regulators for Low and High Pressure Applications.

Carten RG1 Series

Carten's RG1 series ultra-high purity regulator is designed for high performance and precise pressure control in point-of-use and medium flow gas systems. Carten's RG1 regulator provides control for high purity gas delivery and containment solutions for customers who demand precise pressure control in the semiconductor, photovoltaic, flat panel display, fibre-optics, LED and other high technology industries. All UHP regulators are assembled and tested in a class 10 cleanroom which support the final cleanliness and purity for Carten's regulator range of products.

The RG1 series is capable of precise control of gas pressure at or near the process tool for flow rates up to 250 SLPM at 3000 PSIG inlet pressure. The RG1 series regulator as a metal-to-metal diaphragm seal which provides enhanced leak tight integrity up to 1×10^{-9} atm cc/sec of Helium. Carten's standard internal surface finish of 10Ra in contact wetted area enhances the surface quality to support high purity gas delivery to the point-of-use.

Applications for the RG1 series regulator include:

- Gas Cabinets
- Gas Chambers
- Gas Panels
- Gas Sticks
- High Performance Gas and Solvent Systems.

RG1 Series Key Performance Data

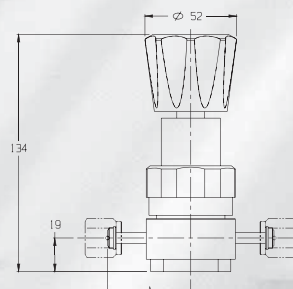
Size (inch)	Inlet/Outlet Pressure (psig)	Flow Rate (slpm)	Leak Rate (atm cc/sec)	Cv	Grade
1/4	3500 / 30,60,100,150, 250	300	1×10^{-9}	0.06 to 0.20	EP, BA

* Flow Rate: N2 gas, at inlet 1000 psig and outlet pressure 100 psig

PSIG Pressure Conversion

100 PSIG =	6.89 Bar 7.03 Kg/cm ² 0.6894 Megapascals (MPa) 689.47 Kilopascals (KPa)
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MAJOR CONFIGURATION



Size	Inlet / Outlet Connection	Alt 0.5
1/4"	VF	47
1/4"	WN	57/47-184
1/4"	SN	47.5
1/4"	TN	38

PORT CONFIGURATIONS



Product Specifications

Fluid Media

The RG1 series is suitable for most inert, explosive and corrosive gasses or those requiring high purity regulation compatible with materials of construction. For other media please consult with Carten group members.

Pressure Rating (per criteria of ANSI/AME B31.3)

- Maximum rated inlet pressure:
3500 or 600 psig (241 or 41 Bar)
- Outlet pressure ranges:
1-30; 1-60; 1-100; 1-150 or 1-250
psig (0.1-2.1; 0.1- 4.1; 0.1- 6.9; 0.1-10.3; 0.1-17.3 Bar)
- Design Proof Pressure:
150% of Maximum rated pressure

Materials of Construction (Wetted Area)

- Body:
316L Stainless Steel (Electropolished or BA)
- Seat:
PCTFE (Vespe® optional for 3500 PSIG model only)
- Diaphragm:
Hastelloy C-22
- Spring, Stem and Valve Bush:
316L Stainless Steel

Key Performance Parameters

- Flow coefficient:
CV = 0.06 (3500 psig model); CV = 0.2 (600 psig model)
- Maximum inboard leak rate:
1 x 10⁻⁹ atm cc/sec He
- Internal surface finish:
10Ra or 5Ra microinch (0.25µm or 0.13µm)
- Operating temperature:
PCTFE seat: -15°F to +176°F (-26°C to +80°C)
Vespe® seat: -15°F to +350°F (-26°C to +177°C)
- Weight (w/o gauges):
2.0 lbs (0.9kg)

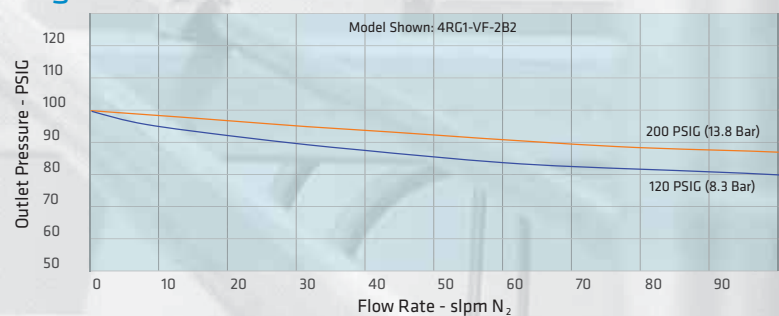
Product Selection and Ordering Information

Product Example



(1) Material	(2) Connection Size	(3) Product Series
S = 316L Stainless Steel Single Melted D = 316L Stainless Steel Double Melted	4 = 1/4"	RG1 Series
(4) Connection Type	(5) Maximum Inlet Pressure	(6) Maximum Range of Inlet Gauge
NF = Female NPT Thread SW = Compression Lok Fitting TW = Tube Butt Weld VF = Female Type Face Seal VM = Male Type Face Seal VMF = Fixed Male Type Face Seal	1 = 3500 psig 2 = 600 psig	1 = 600 psig 2 = 1000 psig 3 = 3500 psig 4 = 4000 psig Blank = no gauge
(7) Gauge Port Configuration	(8) Outlet Pressure Range	(9) Maximum Range of Outlet Gauge
A = No gauge port (Fig. A) B = 1/4" Internal Face seal (Fig. C) C = 1/4" Internal Face seal (Fig. B) D = 1/4" Internal Face seal (Fig. D) E = 1/4" Male Face seal (Fig. D) F = 1/4" Male Face seal (Fig. C) G = 1/4" Male Face seal (Fig. B) H = 1/4" Female Face seal (Fig. D) I = 1/4" Female Face seal (Fig. C) J = 1/4" Female Face seal (Fig. B) K = 1/4" Fixed Male Face seal (Fig. B) L = 1/4" Fixed Male Face seal (Fig. C) M = 1/4" Fixed Male Face seal (Fig. D) N = 1/4" Female NPT Thread (Fig. B) O = 1/4" Female NPT Thread (Fig. C) P = 1/4" Female NPT Thread (Fig. D)	0 = 1 ~ 30 psig 1 = 1 ~ 60 psig 2 = 1 ~ 100 psig 3 = 1 ~ 250 psig 4 = 1 ~ 150 psig	0 = 30 psig 1 = 60 psig 2 = 100 psig 3 = 160 psig 4 = 200 psig 5 = 300 psig Blank = no gauge
(10) User Option	(11) Surface Quality	
Customisation	Blank = BA Standard (20Ra) P = Electropolishing (10Ra)	

Regulator Flow Characteristic Chart



Quality, Engineering and Performance

Carten Controls is committed to providing the highest quality products, service and support for our clients that meets customer expectations. Carten's commitment to our customers and quality is demonstrated through our ongoing membership and compliance to the IS EN ISO9001:2008 QMS programme and by the implementation of continuous improvement initiatives throughout the company.

It is Carten's intention to provide specific customer drawings for each UHP regulator configuration ordered by our customers. This will ensure that you – our customer – will receive a detailed dimensional drawing including the UHP regulator performance data for the exact

product ordered thus ensuring clarity and transparency for customer orders.

Carten Controls are part of the Fujikin Group of companies.

Carten Controls Ltd. and its products comply with the requirements of Pressure Equipment Directive (ref.# 97/23/EC) and sound engineering practices (ref. CE040).

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Other Products By Carten

- Ultra-High Purity Bellows Valves
- Ultra-High Purity Diaphragm Valves
- High Purity Check Valves
- High Purity Ball Valves
- Vacuum Generators
- Custom Built Gas Panels



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