

Pressure Gauges

Ultrahigh-Purity and Clean Dry Air



PGU and PGC Series

- 28, 40, and 50 mm (1, 1 1/2, and 2 in.) dial sizes
- Accuracy in accordance with ASME B40.100
- 316L VAR end connections (PGU series)
- Center-back and lower mount configurations

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Features

Swagelok offers Bourdon tube pressure gauges to monitor positive system pressure and vacuum. Gauges are available for use in a wide range of applications, from bulk gas distribution to process tool applications.

Technical Data

Dial Ranges

See page 5 for PGU series and page 5 for PGC series dial range information.

Accuracy

- 28 mm (1 in.) dial size: $\pm 3\%$ of span
- 50 mm (2 in.) dial size: $\pm 2\%$ / 1% / 2% of span (ASME B40.100, Grade A, EN 837-1 Class 2.5, JIS B7505 Class 2.5)
- 40 mm (1 1/2 in.) dial size: $\pm 3\%$ / 2% / 3% of span (ASME B40.100, Grade B, EN 837-1 Class 4, JIS B7505 Class 4)

Operating Temperature

- **Ambient:** -40 to 140°F (-40 to 60°C)
- **Media:** -40 to 212°F (-40 to 100°C)

Temperature Error

$\pm 0.4\%$ for every 18°F (10°C) temperature change from 68°F (20°C)

Testing and Calibration

Every ultrahigh-purity and clean dry air gauge is 100 % factory calibrated and helium leak tested to a maximum rate of 1×10^{-9} std cm^3/s .

Cleaning and Packaging

PGU Series

- UHP “clean” for semiconductor gas applications, in accordance with SEMI/SEMATECH
- Cleaned and packaged in class 100/10 cleanroom
- Packaged in two bags
- Purged with nitrogen
- Protective cap over threaded connection

PGC Series




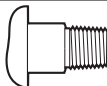
- Assembled, cleaned and packaged in class 100 cleanroom
- Packaged in single nylon bag
- Purged with nitrogen
- Protective cap over threaded connection
- ASME B40.100, Level IV

Materials of Construction

Component	Materials	
	Ultrahigh-Purity (PGU Series)	Clean Dry Air (PGC Series)
<i>End connection</i>	316L VAR, electropolished	316 SS
<i>Bourdon tube</i>	316L SS	316 SS
Case	304 SS	
Movement	Stainless steel	
Lens	Snap-in acrylic (40 mm [1 1/2 in.] dial) Twist-lock polycarbonate (28 mm [1 in.] dial) and (50 mm [2 in.] dial)	Twist-lock polycarbonate (50 mm [2 in.] dial)
Dial	Aluminum	
Pointer		

Wetted components listed in *italics*.

Process Connections

Connection		Designator
Ultrahigh-Purity (PGU Series)		
1/4 in. female VCR® face seal fitting		4FSF
1/4 in. rotatable male VCR face seal fitting		4FSM
1/4 in. integral male VCR face seal fitting		4FFM
Clean Dry Air (PGC Series)		
1/4 in. male NPT		4NPT

Refer to Swagelok® *VCR Metal Gasket Face Seal Fittings* catalog, [MS-01-24](#), for additional information about VCR fitting end connections.

NPT end connections comply with ASME B1.20.1.

Dimensions and Dial Ranges

Dimensions, in inches (millimeters), are for reference only and are subject to change.

See page 6 for **Ordering Information** and **Dial Range Designators**.

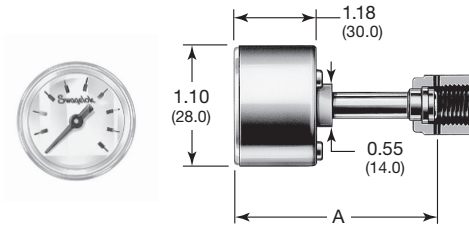
PGU Series: Ultrahigh-Purity Gauges

28 mm (1 in.) Center-Back Mount Gauges

Dial Ranges

Compound Gauges

- Vacuum to 30 psi through vacuum to 150 psi
- Vacuum to 0.2 MPa through vacuum to 1.0 MPa



End Connection		in. (mm)
Type	Size	A
4FSF female VCR	1/4 in.	2.56 (65.0)
4FSM rotatable male VCR		3.19 (81.0)

40 mm (1 1/2 in.) Center-Back Mount Gauges

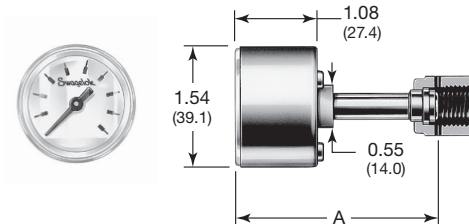
Dial Ranges

Compound Gauges

- Vacuum to 15 psi through vacuum to 300 psi
- Vacuum to 0.1 MPa through vacuum to 2.1 MPa

Positive Pressure Gauges

- 0 to 15 psi through 0 to 3000 psi
- 0 to 0.1 MPa through 0 to 21 MPa



End Connection		A
Type	Size	in. (mm)
Female VCR face seal fitting	1/4 in.	2.57 (65.3)
Rotatable male VCR face seal fitting		
Integral male VCR face seal fitting		2.16 (54.9)

Dimensions and Dial Ranges

Dimensions, in inches (millimeters), are for reference only and are subject to change.

See page 7 for **Ordering Information** and **Dial Range Designators**.

PGU Series: Ultrahigh-Purity Gauges

50 mm (2 in.) Gauges

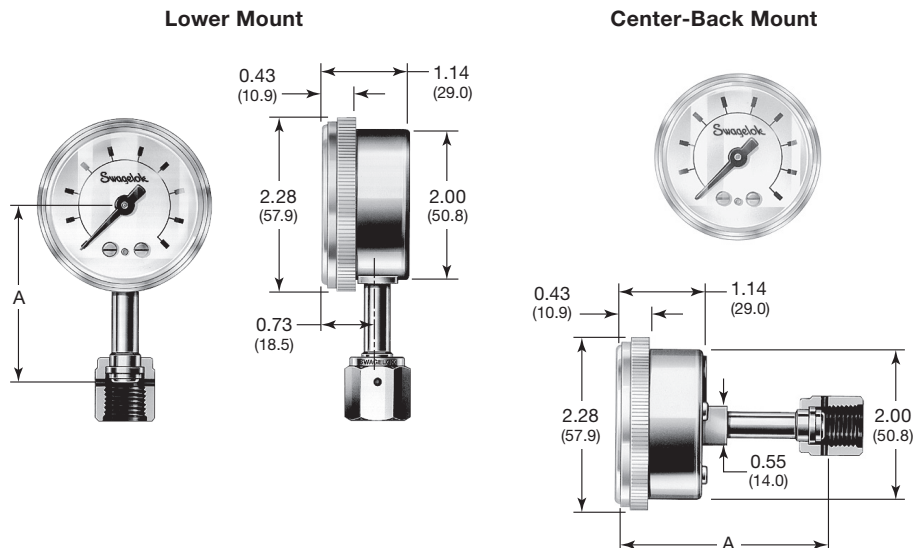
Dial Ranges

Compound Gauges

- Vacuum to 15 psi through vacuum to 300 psi
- Vacuum to 0.1 MPa through vacuum to 2.1 MPa

Positive Pressure Gauges

- 0 to 15 psi through 0 to 3000 psi
- 0 to 0.1 MPa through 0 to 21 MPa



End Connection		A in. (mm)
Type	Size	
Female VCR face seal fitting	1/4 in.	2.32 (58.9)
Rotatable male VCR face seal fitting		
Integral male VCR face seal fitting		1.88 (47.8)

End Connection		A in. (mm)
Type	Size	
Female VCR face seal fitting	1/4 in.	2.59 (65.8)
Rotatable male VCR face seal fitting		
Integral male VCR face seal fitting		2.23 (56.6)

PGC Series: Clean Dry Air Gauges

50 mm (2 in.) Gauges

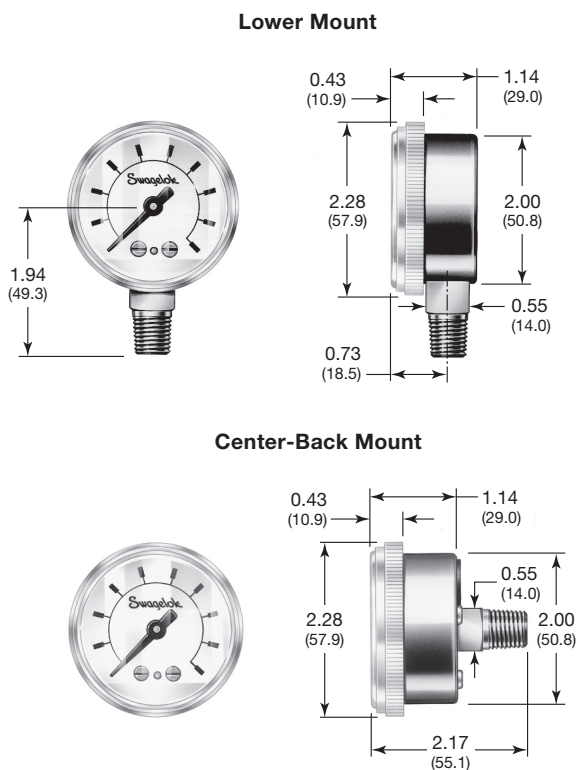
Dial Ranges

Compound Gauges

- Vacuum to 15 psi through vacuum to 300 psi
- Vacuum to 0.1 MPa through vacuum to 2.1 MPa

Positive Pressure Gauges

- 0 to 15 psi through 0 to 6000 psi
- 0 to 0.1 MPa through 0 to 40 MPa



Ordering Information

Build a gauge ordering number by adding the designators as shown below. List option designators *alphabetically*.

PGU - 50 - PC100 - C - 4FSF - BF

Series

- PGU** = Pressure gauge, ultrahigh-purity (PGU series)
- PGC** = Pressure gauge, clean dry air (PGC series)

Dial Size

- 28** = 28 mm (1 in.) dial (PGU series only)
- 40** = 40 mm (1 1/2 in.) dial (PGU series only)
- 50** = 50 mm (2 in.) dial

Dial Range

See below.

Process Connection Location

- C** = Center-back mount
- L** = Lower mount (50 mm [2 in.] dial size only)

Options (See page 8.)

- B** = Certificate of calibration
- E** = Material test certificate^①
- F** = Panel-mount clamp (50 mm (2 in.) dial size and center-back mount connection only)^①
- G** = Front flange (50 mm (2 in.) dial size and center-back mount connection only)^①
- M** = Alarm contact switch (50 mm (2 in.) dial size and center-back mount connection only)^①

^① Does not apply to 28 mm (1 in.) dial size.

Fitting Size and Type

PGU Series

- 4FSF** = 1/4 in. female VCR fitting
- 4FSM** = 1/4 in. rotatable male VCR fitting
- 4FFM** = 1/4 in. integral male VCR fitting^①

PGC Series

- 4NPT** = 1/4 in. male NPT

^① Does not apply to 28 mm (1 in.) dial size.

Dial Range Designators

The selected dial range should be approximately two times the system working pressure, and the system working pressure should be in the middle half (25 to 75 %) of the dial range. Contact your authorized Swagelok sales and service representative if the system working pressure will exceed 75 % of the dial range.

Maximum pressure is limited by the end connection.

40 mm and 50 mm Dial Range Designators		
Dial Range, psi (bar) (primary scale: psi; secondary scale: bar)		
Minimum	Maximum	Designator
PGU and PGC Series		
-30 in. Hg (-1 bar)	15 (1)	PC15
	30 (2)	PC30
	60 (4)	PC60
	100 (6.8)	PC100
	160 (11)	PC160
	200 (13.6)	PC200
	300 (20.4)	PC300
0 psi (0 bar)	15 (1)	P15
	30 (2)	P30
	60 (4)	P60
	100 (6.8)	P100
	160 (11)	P160
	200 (13.6)	P200
	300 (20.4)	P300
	600 (40)	P600
	1000 (68)	P1000
3000 (200)	P3000	
PGC Series Only		
0 psi (0 bar)	4000 (272)	P4000
	5000 (340)	P5000
	6000 (400)	P6000

40 mm and 50 mm Dial Range Designators		
Dial Range, MPa (primary scale: MPa; no secondary scale)		
Minimum	Maximum	Designator
PGU and PGC Series		
-0.1 MPa	0.1	MC01
	0.2	MC02
	0.4	MC04
	0.7	MC07
	1.1	MC11
	1.4	MC14
	2.1	MC21
0 MPa	0.1	M01
	0.2	M02
	0.4	M04
	0.7	M07
	1.1	M11
	1.4	M14
	2.1	M21
	4.0	M40
	7.0	M70
21	M210	
PGC Series Only		
0 MPa	28	M280
	35	M350
	40	M400

28 mm Dial Range Designators		
Dial Range, psi (primary scale: psi; no secondary scale)		
Minimum	Maximum	Designator
PGU Series		
-30 in. Hg (-1 bar)	30	PC30
	60	PC60
	100	PC100
	150	PC150

28 mm Dial Range Designators		
Dial Range, bar (primary scale: bar; no secondary scale)		
Minimum	Maximum	Designator
PGU Series		
-30 in. Hg (-1 bar)	2	BC02
	4	BC04
	6.8	BC07
	10	BC10

28 mm Dial Range Designators		
Dial Range, MPa (primary scale: MPa; no secondary scale)		
Minimum	Maximum	Designator
PGU Series		
-0.1 MPa	0.2	MC02
	0.4	MC04
	0.7	MC07
	1.0	MC10

Options and Accessories

Factory-installed options are specified in gauge ordering numbers, as shown in **Ordering Information**.

Certificates of Calibration

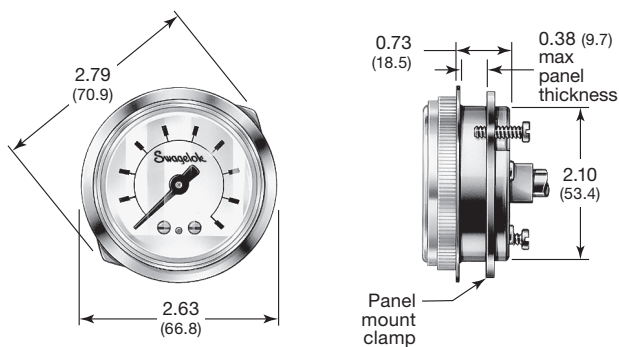
This option provides the user with a calibration sheet and a serial-numbered gauge, which has been calibrated with a gauge that is traceable to National Institute of Standards and Technology.

Material Test Certificates

These documents certify that the material composition of the wetted components has been tested by representatives independent from the factory.

Panel-Mount Clamps

Factory-installed stainless steel panel-mount clamps are available for flush mounting of center-back mount gauges.

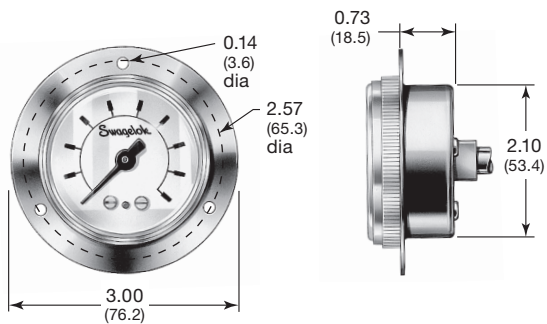


Panel hole cutout 2.17 (55.0)

Dimensions, in inches (millimeters), are for reference only and are subject to change.

Front Flanges

Polished stainless steel front flanges are available for flush panel mounting of center-back mount gauges.



Panel hole cutout 2.17 (55.0)

Dimensions, in inches (millimeters), are for reference only and are subject to change.

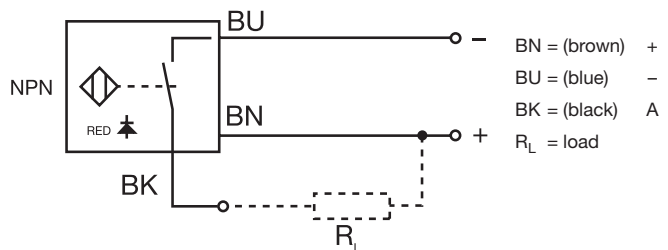
Alarm Contact Switches

The alarm contact switch option is available for the 50 mm (2 in.) dial size. The factory-assembled switch has one adjustable set point, which can be used for high- or low-pressure indication.

Specifications

Operating Voltage	10 to 30 V (dc)
Residual Ripple	10 %
No-Load Current	≤ 10 mA
Maximum Switching Current	≤ 100 mA
Leakage Current	≤ 10 μA
Voltage Drop at I _{MAX}	≤ 0.7 V
Switching Frequency	1000 Hz
Ambient Temperature	-25 to 70°C (-13 to 158°F)
Output Function	Normally open (closed and red LED ON when pressure less than set point)
Output Type	NPN
Switch Point	Approx 55 % of insert depth
Protection Class (DIN 40050)	IP 67
Cable Length	1 m (3.2 ft)

Wiring Diagram



Safe Product Selection

When selecting a product, the total system design must be considered to ensure safe, trouble-free performance. Function, material compatibility, adequate ratings, proper installation, operation, and maintenance are the responsibilities of the system designer and user.

⚠ WARNING

Do not mix/interchange Swagelok products or components not governed by industrial design standards, including Swagelok tube fitting end connections, with those of other manufacturers.

Warranty Information

Swagelok products are backed by The Swagelok Limited Lifetime Warranty. For a copy, visit swagelok.com or contact your authorized Swagelok representative.