

# Pressure Gauges

## Ultrahigh-Purity and Clean Dry Air



### PGU and PGC Series

- 40 and 50 mm (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 4 for PGU series and page 5 for PGC series dial range information.

### Accuracy

- 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  $140^\circ\text{F}$  ( $-40$  to  $60^\circ\text{C}$ )
- **Media:**  $-40$  to  $212^\circ\text{F}$  ( $-40$  to  $100^\circ\text{C}$ )

### Temperature Error

$\pm 0.4\%$  for every  $18^\circ\text{F}$  ( $10^\circ\text{C}$ ) temperature change from  $68^\circ\text{F}$  ( $20^\circ\text{C}$ )

## Testing and Calibration

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

## 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


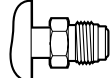

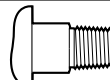
- Assembled, cleaned and packaged in class 100 cleanroom
- Packaged in single nylon bag
- Purged with nitrogen
- Protective cap over threaded connection
- ASME B40.100, Level IV

## 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 (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
<b>Ultrahigh-Purity (PGU Series)</b>		
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
<b>Clean Dry Air (PGC Series)</b>		
1/4 in. male NPT		4NPT

See the Swagelok® *VCR Metal Gasket Face Seal Fittings* catalog (MS-01-24) for more 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

#### 50 mm (2 in.) Gauges

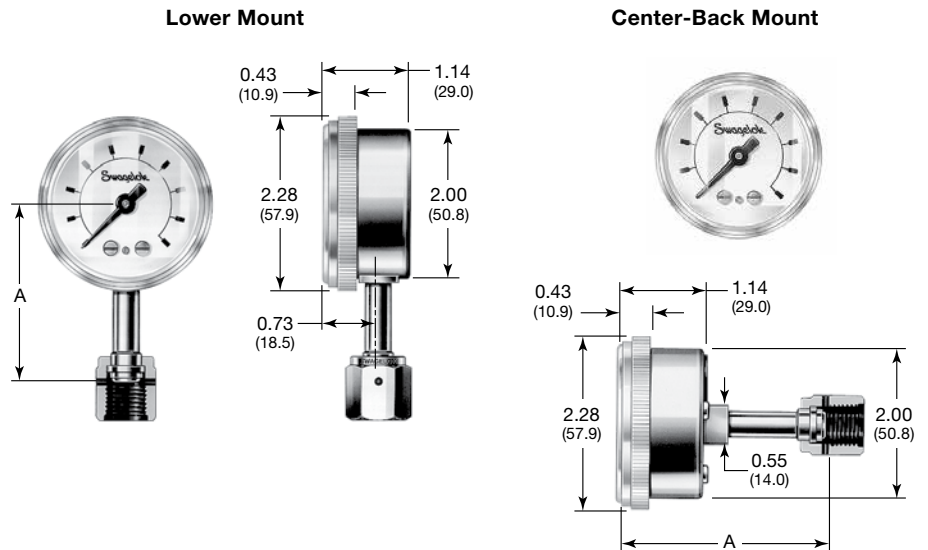
##### Dial Ranges

##### 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		1.88 (47.8)
Integral male VCR face seal fitting		

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		2.23 (56.6)
Integral male VCR face seal fitting		

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

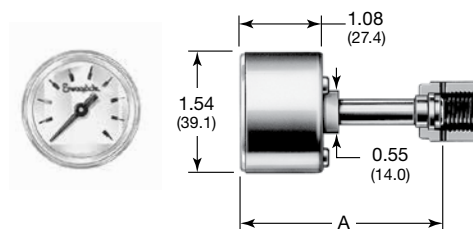
##### Dial Ranges

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

## 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**.

### PGC Series: Clean Dry Air Gauges

#### 50 mm (2 in.) Gauges

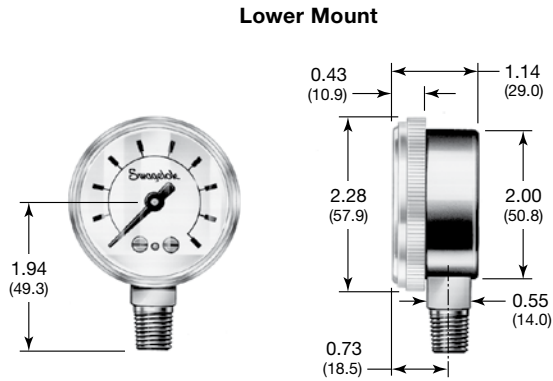
##### Dial Ranges

##### Compound Gauges

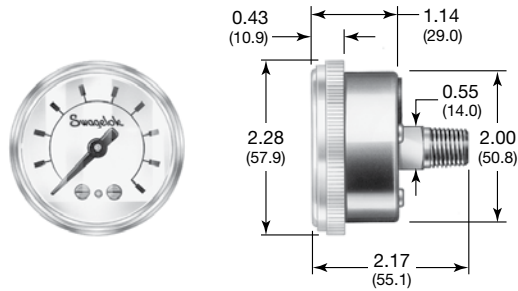
- Vacuum to 15 psi through vacuum to 300 psi
- Vacuum to 0.1 MPa through vacuum to 2.1 MPa

##### Positive Pressure Gauges

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

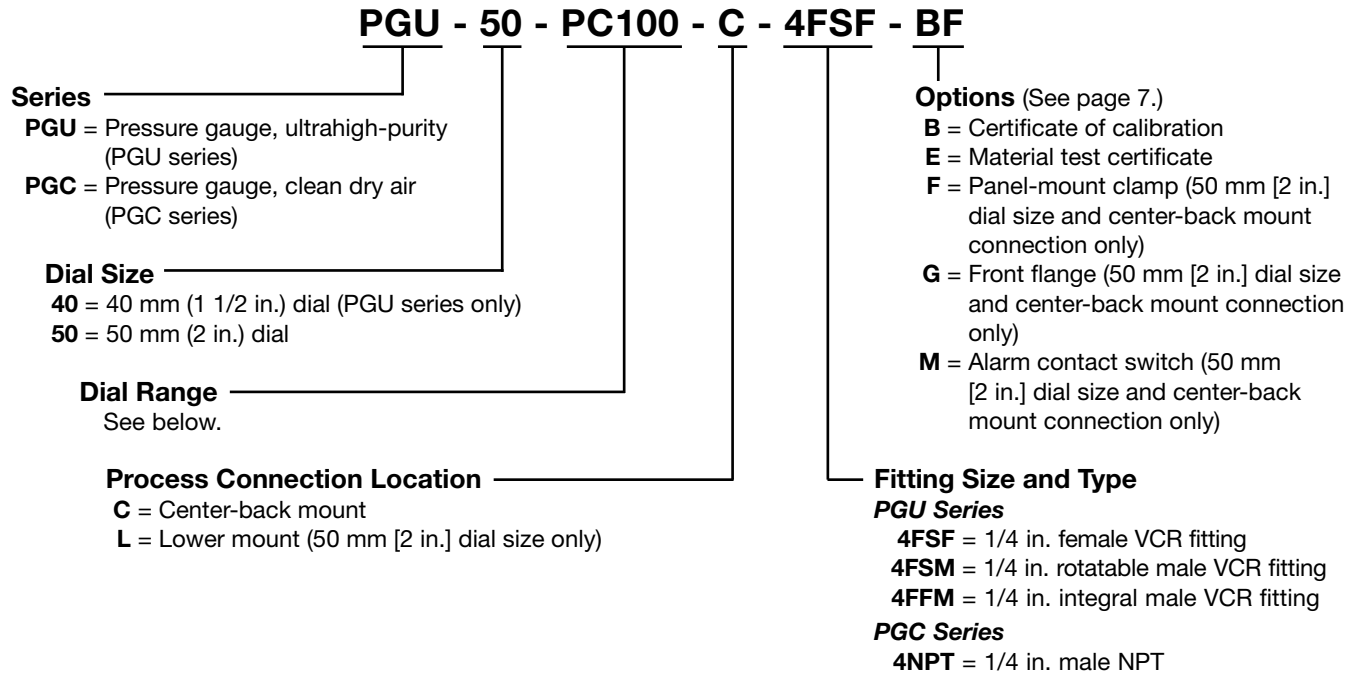


#### Center-Back Mount



## Ordering Information

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



## 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.

Dial Range, psi (bar) (primary scale: psi; secondary scale: bar)		
Minimum	Maximum	Designator
<b>PGU and PGC Series</b>		
-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)	P300
	600 (40)	P600
	1000 (68)	P1000
3000 (200)	P3000	
<b>PGC Series Only</b>		
0 psi (0 bar)	4000 (272)	P4000
	5000 (340)	P5000
	6000 (400)	P6000

Dial Range, MPa (primary scale: MPa; no secondary scale)		
Minimum	Maximum	Designator
<b>PGU and PGC Series</b>		
-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
<b>PGC Series Only</b>		
0 MPa	28	M280
	35	M350
	40	M400

## Options and Accessories

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

### Certificates of Calibration

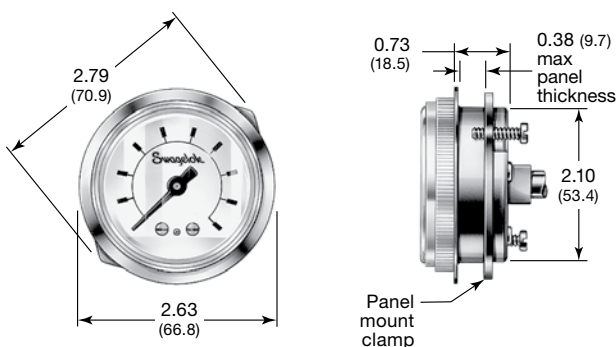
This option provides the user with a calibration sheet and a serial-numbered gauge, which has been calibrated with a gauge that is traceable to National Institute of Standards and Technology.

### 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.

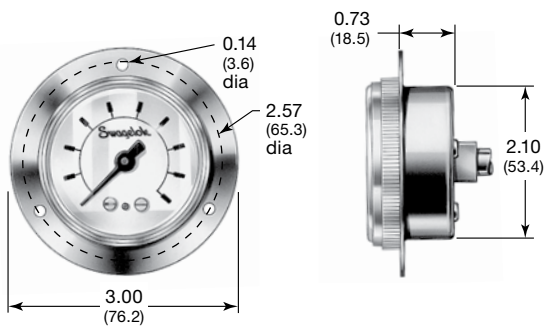


Panel hole cutout 2.17 (55.0)

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.

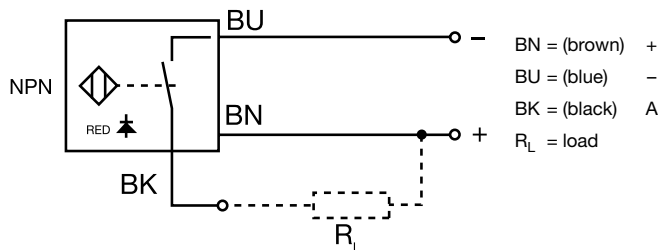
## Alarm Contact Switches

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

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

### Wiring Diagram



**Caution: Do not mix or interchange parts with those of other manufacturers.**

## About this document

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### 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.**

## Warranty Information

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

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