

# PPS Product Application Note

## PPS Silicon-Sapphire Gauge Recalibration (Rev. 01)



### **Pioneer Petrotech Services Inc.**

#1, 1431 - 40th Ave. NE  
Calgary, AB T2E 8N6, Canada

Phone: 1-888-PP-GAUGE (774-2843)  
E-mail: [infopps@pioneerps.com](mailto:infopps@pioneerps.com)  
Website: [www.pioneerps.com](http://www.pioneerps.com)

---



## REVISION HISTORY

Revision	Date	Comments
00	2008-11-15	Initial release
01	2011-09-26	Revision

**Note:** The information contained in this note regarding downhole tool applications is intended through suggestion only and subject to change without notice. All descriptions and information provided is subject to current PPS Term and Condition.

### Pioneer Petrotech Services Inc.

#1, 1431 - 40th Ave. N.E.  
Calgary, Alberta, Canada T2E 8N6  
Phone: 1-403-282-7669  
Fax: 1-403-282-0509  
Total Free in Canada & USA: 1-888-PP-GAUGE (774-2843)  
E-mail: infopps@pioneerps.com  
Website: www.pioneerps.com



---

<b>REVISION HISTORY .....</b>	<b>1</b>
<b>1. Introduction.....</b>	<b>3</b>
<b>2. Recalibration .....</b>	<b>3</b>
<b>2.1 Normal operation condition.....</b>	<b>3</b>
<b>2.2 Extreme operation condition.....</b>	<b>3</b>
<b>2.3 Exception.....</b>	<b>3</b>



## How often does a PPS Pressure Gauge need to be recalibrated?

### 1. Introduction

All PPS Silicon-Sapphire Pressure Gauges (PPS25/50/51/52...) are calibrated by using 0.01% of reading pressure reference and 0.1°C temperature reference to ensure accurate measurement. Mechanical stress introduced in a silicon diaphragm chip from the support chip or the substrate affects the performance of silicon pressure sensors. It means that stress relief is very important for pressure sensor to get best long term stability. So during PPS calibration process, all pressure sensors have been aged under max. pressure and temperature for 48 hrs.

If the gauges are not exposed to significant pressure or temperature, and there is no vibration or shock during operation, the calibration will remain valid over long time; or if the gauges are stored in a controlled environment with stable temperature, the calibration will remain valid over 3 years.

### 2. Recalibration

In most case, the application condition in downhole is not easy to be indentified clearly. To ensure the performance of pressure gauges, we recommend that the gauges need to be recalibrated and maintained based on following operation conditions:

#### 2.1 Normal operation condition

- Operation pressure < 75% of Max. Pressure rating, and
- Operation temperature < 75% of Max. Temperature rating, and
- Total operation time < 4000 hrs

Recalibration period: **one year**

#### 2.2 Extreme operation condition

- Operation pressure > 75% of Max. Pressure rating, or
- Operation temperature > 75% of Max. Temperature rating, and
- Total operation time < 2000 hrs or Continuous operation time < 1000hrs

Recalibration period: **6 months**

#### 2.3 Exception

If the pressure reading of gauges at ambient pressure/temperature is much higher or lower than your local ambient pressure, the gauges may need to be recalibrated. If the gauges are used usually in vibration or shock environment, the gauges need to be checked if recalibration is necessary.

In case if an operation is done by a gauge with an unexpected drift, data correction can still be done by recalibration and data re-downloading from the gauge.



*To monitor the pressure drift of gauges, there are some simple approaches to check if the gauges need to be recalibrated:*

- Check pressure reading of gauges at ambient pressure/temperature;
- Compare pressure reading of a gauge to another gauge (which is known with good performance) at same pressure and temperature;
- Verify pressure reading by a deadweight tester at 20%, 40%, 60%, 80% and 100% of FS pressure at ambient temperature.