

Calibration of a Built-in Vacuum Sensor in a Gas Pressure Balance Down to 1 Pa Using RPG (Reverse-Operated Piston Gauge)

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Abstract: In order to calibrate a built-in vacuum sensor installed in a gas pressure balance such as the PG7601 (Fluke, USA), the sensor should be detached from the platform, which is a laborious and time-consuming task. It is clear that the best way to calibrate such a vacuum sensor installed in a gas pressure balance is to calibrate it directly in the current position without disassembly. For this purpose, the RPG (Reverse-operated Piston Gauge) developed by KRISS is very useful. The RPG is based on a variable bell-jar pressure method and a unique weight loading mechanism. The RPG varies the pressure in a range of 1 Pa–3 kPa. In this paper, in situ calibration results of a built-in vacuum sensor from 1 to 10 Pa are described. To the best of the authors' knowledge, this is the first trial in the world of pressure calibration to as low as 1 Pa using a pressure balance.

Keywords: Built-in; Gas pressure balance; RPG (Reverse-operated Piston Gauge)