



MODELS 2413 / 2417

Differential Pressure Cell and Indicator

- Diaphragm isolation provides physical separation between different media
- Capable of 15,000 psi differential overpressure
- Maximum error contribution to 5 PPM
- Model 2413 for pressures to 15,000 psi
Model 2417 for pressures to 40,000 psi
- Utilize one standard for multiple media
- Compatible with virtually any noncorrosive gas or liquid
- Time saving tool for crossfloat calibration



MODELS 2413 / 2417

Specifications

DESCRIPTION

Ruska Instrument's Differential Pressure Cell and Null Indicators are designed to physically separate two media while only contributing 5 part per million uncertainty to the measurement process.

The differential pressure cell has two pressure chambers separated by a thin metal diaphragm. A difference in pressure in the two chambers causes a deflection of the diaphragm which is sensed by an LVDT circuit. The output from the LVDT is displayed on the indicator.

The differential pressure cell and indicator is capable of indicating when zero differential pressure exists between two systems to within 5 ppm. However, it is not intended to measure the magnitude of a differential pressure.

Approved gas media in either chamber include dry air, nitrogen, CO₂, and the noble gases and exclude hydrogen and oxygen. Liquid media in the top chamber may be virtually any nonconducting, noncorrosive liquid. Liquid media in the lower chamber can be virtually any noncorrosive media. For applications where water will be used in the lower chamber, Ruska offers a differential pressure cell manufactured from monel.

A variety of configurations can be provided, including a differential pressure cell equipped with a constant volume valve for deadweight gauge crossfloat calibrations.

A zero offset correction curve is supplied with all differential pressure cells and indicators, except those equipped with a constant volume valve since the differential pressure cell is re-zeroed at each pressure during a crossfloat calibration. This curve is a one time process and the differential pressure cell and indicator do not require periodic testing or calibration.

During manufacture, all testing of the differential pressure cell is performed with nitrogen, therefore the instrument is supplied with each chamber dry. Once the user has committed either chamber with a liquid, changing that chamber to a different liquid is not recommended as it requires disassembly, cleaning and replacement of the diaphragm. This procedure should only be performed at the factory, and requires a new zero offset correction curve.

SELECTION GUIDE

Model 2413-800
For use as a media separator, such as liquid to liquid or liquid to gas, for pressures to 15,000 psi.

Model 2413-800-59900
Same as 2413-800, but for water service in lower chamber. Lower cell material is monel.

Model 2413-801
Same as 2413-800 but for crossfloat of two different media.

Model 2413-851
For gas crossfloat calibrations to 3000 psi. Includes constant volume valve.

Model 2413-850
For liquid crossfloat calibrations using a single medium. Includes constant volume valve.

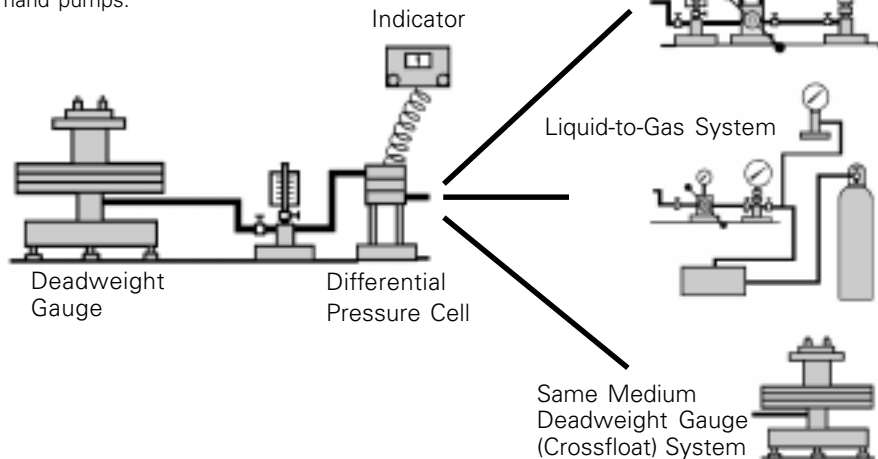
Model 2417-800
For use as a media separator, such as liquid to gas or liquid to liquid, for pressures to 40,000 psi.

Model 2417-800-59900
Same as 2417-800, but for water service in lower chamber. Cell material is monel.

Please consult the factory if you have an application not described above.

APPLICATION NOTES

For each side using a liquid, an open tube manometer is required for zeroing head pressure. Also, since the differential pressure cell does not transfer pressure, a means of generating and adjusting pressure on each side of the cell is required. See our deadweight gauge accessory brochure for a complete line of manometers and hand pumps.



MODEL 2413

Operating Pressure: 15,000 psi
Accuracy: 5 ppm or 0.01 psid^a
Sensitivity: Variable from 2×10^{-4} to 0.01 psi per meter unit
Over Pressure: 15,000 psi, either side
Temperature Range: 5 to 70 °C^b
Material: Cell is 400 Series stainless steel
Fittings: 1/4" autoclave, female
Upper chamber volume: 29.5 cc
Lower chamber volume: 0.6 cc

MODEL 2417

Operating Pressure: 40,000 psi
Accuracy: 5 ppm or 0.01 psid^a
Sensitivity: Variable from 2×10^{-4} to 0.01 psid per meter unit
Over Range: 15,000 psi, either side
Temperature Range: 5 to 70 °C
Material: Cell is 400 Series stainless steel
Fittings: 1/4" autoclave, female
Upper chamber volume: 35 cc
Lower chamber volume: 2.4 cc

INDICATOR

Type: Analog meter movement
Potentiometers for zero and gain adjust
Power: 115/230 VAC, 50/60 Hz

^aWhichever is greater

^bContact Ruska for special high temperature applications

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