

# Model 2482

## Ruska Differential Piston Gauge

### Technical Data



#### Features

- Differential Pressure Standard
- Total uncertainty 40 ppm of reading + 0.0013 psi (9 Pa)
- Static (line) pressure range to 2900 psi (200 bar, 20 MPa)
- Differential pressure range to 30 psi 850 inH<sub>2</sub>O, (2100 mbar, 210 kPa)
- Hydraulic and pneumatic operation
- Software provided for operation and data management
- Extremely fast and easy to operate

The Model 2482 is a high precision pressure standard that provides unsurpassed performance in the field of differential pressure metrology at high static (line) pressures. The Model 2482 continues Fluke Calibration's standard of excellence and innovation building on over 50 years of piston gauge manufacturing expertise. Designed to calibrate virtually any pressure device at high static line pressures the 2482 is a revolutionary breakthrough providing a fast, easy and accurate solution to what has historically been a time consuming and technique dependent process.

At the heart of the Model 2482 is a patented large area triple-axis differential piston piston design with axial symmetry less than one micrometer ( $\mu\text{m}$ ). This unique piston design eliminates the need for a second deadweight piston and provides identification of the differential pressure as it is directly proportional to the mass load.

In traditional twin-post and divider systems minute load adjustments are required to establish zero differential at each static (line) pressure.

This results in a process that is both technique dependent and time consuming. This elaborate zeroing process is eliminated in the Model 2482 through the use of a precision load cell. The load cell supports the mass of the differential piston and serves as a null detector to ensure zero differential pressure is established at the desired static (line) pressure.

Establishing a differential pressure is then as simple as loading the masses determined by the supplied WinPrompt® software and activating the control function. Once the control system restores the balance reading to zero the desired differential pressure is applied to the test instrument.

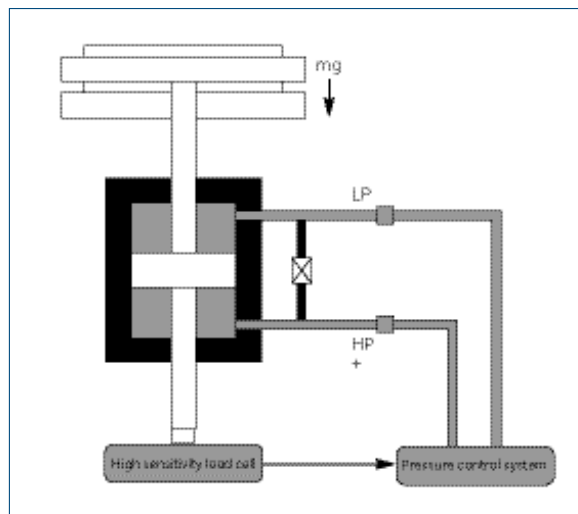
The differential piston assembly is manufactured from tungsten carbide which provides high strength, durability and long term stability. This material also provides a very low dependence on temperature, low distortion from pressure and undetectable hysteresis.

The Model 2482 is supplied with a precision mass set in a sturdy wooden storage case. Two mass sets are available which provide nominal pressure increments in either inH<sub>2</sub>O or mbar. Winprompt® software performs pressure-to-mass and mass-to-pressure calculations for the Model 2482 along with the corrections for

environmental influences. The operator is also provided with a display of the pressure being generated by the mass load. Local environmental conditions for humidity, barometric pressure and ambient temperature can be entered manually or the values can be acquired automatically from a Model 2456-LEM Laboratory Environmental Monitor.

Included with the 2482 is the controller software package that provides set up information, line pressure display, power settings for the thermal controllers along with other settings and menus for operating the instrument.

The Model 2482 allows for gas calibrations through two gas/oil interface chambers. A manual hand pump is provided for line pressure generation of either hydraulic or pneumatic pressures. For pneumatic operation a regulated gas supply is required.



## Specifications

General	
Differential pressure range	0 to 850 inH <sub>2</sub> O (0 to 210 kPa)
Static pressure range	0 psi to 2900 psi (0 to 20 MPa)
Electrical power requirements	12 V dc 5 A max
	120/240 V ac 50/60 Hz Universal power supply included
Temperature	Operating temperature: 18 °C to 28 °C (64 °F to 82 °F) Storage temperature: 0 °C to 50 °C (32 °F to 122 °F)
Humidity	Operating humidity: 20 % to 75 % RH, non-condensing Storage humidity : 0 % to 90 % RH, non-condensing
Pressure medium	Operating medium for Piston/Cylinder, test pump and hydraulic test port: Diocetyl Sebacate (DOS) Operating medium for pneumatic test port: clean, dry, instrument grade gas (nitrogen recommended)
Dimensions (H x W x D)	480 mm x 380 mm x 480 mm (18 in x 15 in x 18 in) Test Pump: 280 mm x 280 mm x 250 mm (11 in x 11 in x 10 in)
Weight	2482: 40 kg (88 lb) Test Pump: 5.5 kg (12 lb)
Performance	
Total uncertainty	40 ppm of reading + 0.0013 psi (9 Pa) Note: Total uncertainty is defined as the expanded uncertainty in pressure determined using the method described in the ISO "Guide to the Expression of Uncertainty in Measurement" and represents an approximate 95 % level of confidence (2 sigma).
Differential pressure reproducibility	± 0.0006 psi (4.5 Pa)
Static pressure accuracy	0.25 % full scale
Long term stability	Better than 10 ppm per year
Piston and cylinder	
Materials	Tungsten carbide
Thermal coefficient	9.2 x 10 <sup>-6</sup> °C
Mass set	
Total mass	13.5 kg (30 lb)
Max platter mass	4 kg (9 lb)
Minimum pressure increment	0.5 inH <sub>2</sub> O (1.0 mbar)

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