

Ranarex[™] Gas Gravitometer

Ranarex Portable Gravitometer from AMETEK Excels in Total Performance

Features

- ▶ **Accurate**
Eliminates span drift to ensure permanently accurate calibration.
- ▶ **Sensitive**
Advanced design develops large measuring forces and is virtually friction-free.
- ▶ **Fast Response**
Gas sample flows continuously at a high rate through a small measuring chamber that purges rapidly.
- ▶ **Rugged**
Durable, corrosion-resistant materials. Outer case protects against dust, humidity, and shock.
- ▶ **Low Cost**
Simple design for low equipment cost; simple piping and wiring for low installation cost; rugged construction for low maintenance cost. These features ensure lowest long-term, total cost.
- ▶ **Easy to Use**
Completely mechanical and easily understood. Installation requires only piping or tubing and electrical power. No special skills required.
- ▶ **Readable**
Indicating scale is 6" wide. Can be read from a distance.

Operation

The Ranarex principle and design are simple. The chassis of the gravitometer forms two cylindrical, gas-tight measuring chambers; each has a separate inlet and outlet connection. In each chamber there is an impeller and an impulse wheel, both with axial vanes. These wheels are mounted on separate shafts, facing each other but not touching. An electric motor and drive belt rotate the impellers at the same speed and in the same direction. The impellers draw continuous flow of gas sample into the upper chamber, and reference air into the lower chamber. They spin the gas and air against the vanes of the corresponding impulse wheels. As the spinning gas and air impinge against the vanes, they create torques on the impulse wheels that are proportional to the density of the gas and of the air.

Specific Gravity

These torques are transmitted from the chambers to two external measuring wheels. A flexible tape is wrapped on the measuring wheel rims in the crossed direction so that the torque creates two opposing forces. The measuring wheels are restrained from continuous rotation, but a difference between the torques allows limited motion of the entire system. The measuring

system divides the torque of the gas by the torque of the air. This is the same ratio as the density of the gas divided by the density of the air which is —the specific gravity.

The rim of the gas measuring wheel is contoured so that it rotates through equal angles for equal changes in specific gravity. The uniform motion of the gas measuring wheel is transmitted by a link to the readout indicator.

To ensure accuracy, the gas sample and the reference air must be measured at ambient temperature, at barometric pressure, and at equal humidity content (either humidified or dry).

Portable Gravitometer

No elaborate setup is required for the portable version. The unit can be operated from the floor, a bench, or hung from the wall and operated from a standard AC power supply or from a 12-Volt vehicle battery through a DC-AC inverter.



Ranarex gravimeters excel over more complex and costly analyzers in total performance.

Ranarex™ Gas Gravimeter

Specifications

Accuracy: ±0.5% of actual value

Readings: Indicating only.

Drive Motor:

115 VAC, 60 Hz or 230 VAC, 50 Hz

Sample Flow Rate: 10-15 Scf/hour

Sample Pressure: 20 psig maximum

Specific Gravity Range:

Dual Scale: 0.52 to 1.03 and 0.97 to 1.90

Ambient Air Reference Dryer:

Silica Gel

Flowmeter: Built-in sample gas flowmeter

Actual Weight:

220v model: 46 pounds

115v model: 38 pounds

Ship Weight: 50 lb (23 kg)

Options

- ▶ Power inverter: 12 VDC to 115 VAC or 230 VAC
- ▶ Carrying case with handle
- ▶ Protective treatment for sour gas applications

Applications

- ▶ Oil Refining
- ▶ Natural Gas Measurement
- ▶ Gas Utilities
- ▶ Chemical Processing
- ▶ Heat Treating Metals
- ▶ Combustion Analysis
- ▶ Sewage Treatment

Benefits

- ▶ Instantaneous Response: No time required for chemical reaction or gas diffusion.
- ▶ Excellent Reliability: Components positioned to equalize temperatures of gas sample and reference air during analysis.
- ▶ No Chemicals to Replace: Jeweled pivots and permanently lubricated ball bearings minimize wear and virtually eliminate servicing.

Warning

High Concentrations of H₂S are extremely hazardous to personnel.

The Ranarex SG meter with sour gas protection provides physical protection for the Ranarex SG meter only.

Precautions should be taken to protect personnel and all local safety regulations concerning hazardous gases should be followed.

Do not use the Ranarex SG meter in any enclosed space or in any area where the concentration of H₂S may exceed 10 ppmv for any length of time.

Failure to do so can result in serious harm or death.



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