

Gradiomanometer (Gradio)

Application

The gradiomanometer is a non-radioactive tool used to derive fluid density in a wellbore. It uses a high-resolution, differential transducer to measure the differential pressure over the length of a 24 in. column of fluid. The pressure enters the tool via two ports spaced 24 in. apart and a differential pressure measurement is taken. Since the column height and gravity are constants, the average fluid density is easily calculated. Due to the fast and sensitive response, this measurement can be obtained while continuously moving in the wellbore.

The tool is used to quantitatively establish the density of the fluid or gas in the wellbore and the depths of water/oil, water/gas, and oil/gas contacts are then derived from this information.

The gradiomanometer is used with other tools in a tool string, and transmits its data to either the telemetry tool or the memory adapter tool (MAT).

Features

- Derives Fluid Density in a Well
- Measurements can be Obtained While the Tool is Moving or Stationary

Benefits

The Gradio tool has a convenient field serviceable sensor that is quick and easy to access. The density readings produced by the Gradio tool are very accurate and highly sensitive.



Gradiomanometer	
Type	Part No.
Standard Service	AM002WA0001
H2S Service	AM002WB0001

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Spare Parts	
Type	Part No.
Seal Kit	AM012RK0001
O-Ring	PM933RC3x1.5 (x2)
Upper Tube Bushing	PM002CB0029
Upper Tube Screw	PM002CB0028
Sockethead Cap Screw #6-32x0.75L	101452 (x2)
Sockethead Cap Screw #6-32x0.25L	100141 (x2)
Bottom Sense Port Plug	PM002SA0027
Gradio Port Plug	PM002SA0004 (x2)
Cap Screw 6-32UNCx0.1875	PM951SB006-32-018 (x2)
Feed Thru Pin	PM002UU0034 (x4)
Lower Buffer Tube	PM002SA0036
Lower Buffer Tube Extender	PM002SD0020
Accessories	
Gradio Fill Pump	AM002UU0015
Multipin Jumper Cable	AM007UU0007
Gradio Fluid	PE545UU0035-1

Specifications	
	Details
OD	1.375 in (34.9 mm)
Length	51.6 in. (131 cm)
Weight	15.6 lb (7.1 kg)
Resolution	0.001 g/cc (1 kg/m ³)
Accuracy	± 0.03 g/cc (± 30 kg/m ³)
Range	0 - 2 g/cc (0 - 2,000 kg/m ³)
Temperature Rating	350°F (175°C)
Pressure Rating	15,000 psi (103 MPa)
18V Power Requirement (Memory String)	27 mA
18V Power Requirement (Telemetry String)	5 mA