DURHAM GEO SLOPE INDICATOR

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Product/Water Interface Probe

Version 1.0

SOLID TONE = WATER

PULSATING TONE = HYDROCARBONS

POWER LIGHT IS NEAR BATTERY AND SHOULD BE FLASHING BRIGHTLY

Note: A brightly flashing green light near the battery indicates is the unit is powered. IF THE LIGHT IS VERY FAINT, THE UNIT WILL DETECT PRODUCT BUT WILL NOT DETECT WATER. THE UNIT NEEDS A BATTERY(ALKALINE) PRODUCING 4.8 VOLTS TO DETECT WATER.

Operator's Instructions

GENERAL
Try to use the casing hook and built-in cable protector (frame leg) by hanging the reel on the well casing and passing the flat tape over the reel frame leg to prevent damage to the cable.

CLEANING AND CARE
When cleaning the probe use a mild detergent or remove the battery and soak in vinegar diluted with water. 1 part water 1 part vinegar.

TROUBLESHOOTING

UNIT IS ON BUT WILL NOT DETECT WATER - recommended settings below:

5/8 probe

7/16 probe

If light beside battery is not flashing brightly, replace battery. De-ionized or distilled water, (often used for cleaning) will not be detected as water but as a hydrocarbon. However, distilled water will not be found in any field conditions.

UNIT DETECTS WATER THROUGH OIL BUT VERY SLOWLY

Let probe go well below where the water starts and measure the interface as you raise the probe. Or increase sensitivity to water by turning knob clockwise. Unit will then detect water more quickly however probe being wet may be read as probe being in water (immersed). This setting can be ideal for 5/8 probes but not recommended for 7/16 probes.

UNIT DETECTS WATER BUT KEEPS SOUNDING EVEN WHEN REMOVED FROM WATER

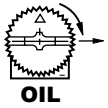
This can occur when the water is salty or contains a high percentage of dissolved solids.

UNIT PRODUCES NO SIGNAL IN OIL(usually occurs while unit is being tested indoors)
Factory presets below:

5/8 probe

7/16 probe

The most common reason for this is that the unit is being tested prior to being taken out into the field, which is recommended, but make certain the test vessel is like the actual borehole expected in the field (dark, non reflective bottom unlike the bottom of a beaker) and more than 6" deep. Don't change unless the well is similar. Once changed to the setting below, probe will ignore ambient light but may detect coated or scratched lense as being in oil.



Arrow @ 3 pm position

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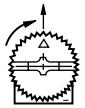
UNIT INDICATES IT IS IN OIL AFTER IT IS WITHDRAWN FROM A VERY VISCOUS OIL
Once changed to the setting below, probe will work very well in extremely viscous oil but the probe needs to be in a well or away from ambient light



Arrow @ 12 pm position

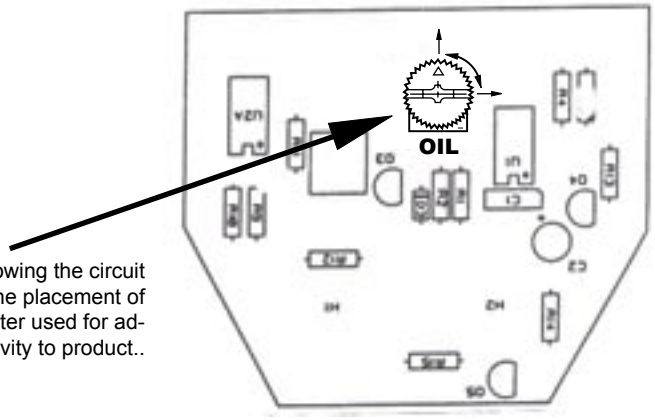


Illustration showing the circuit board and the placement of the potentiometer used for adjusting sensitivity to product..

CALIBRATING FLUID SENSING CIRCUIT FOR PROBLEM WELLS
(extremely viscous fluid, lot of ambient light, very small white casing, very badly damaged prism sensor and so on)

1.Turn OFF water sensing circuit (turn water knob fully counter clockwise)
2.Put probe in any fluid or in the well you are taking a reading from
3.Turn oil knob clockwise until you hear the pulsing tone start
4. Immediately withdraw probe to make certain beeping stops.
5. If the beeping does not stop or does not stop quickly enough (i.e. very viscous oil turn the knob counter clockwise another 10 degrees

Operation
Push the red push button and the unit will remain on for about 10 min.

A solid tone indicates water.
An intermittent tone indicates hydrocarbon.

Battery
If the battery is low, the green light next to battery holder will stop flashing or become very faint. Unit will detect fluids but NOT water because it needs a higher voltage to jump across water.