

Operation & Maintenance Manual

Oil/Water Interface Probe

Your Oil/Water Interface Probe is constructed using the highest quality stainless steel components with sub-sea encapsulation to ensure total integrity against leakage.

Like all precision instruments, simple precautions will extend the life of the instrument and maintain its accuracy.

Care of the Instrument

When running the probe in or out of the well or boreholes do not allow the tape to run over sharp edges of the casing. Severe damage will eventually occur to the insulation of the electrical conductors.

Always reel in the tape after monitoring, do not drag the tape on the ground between boreholes.

After use, particularly in aggressive or dirty groundwater, clean the tape and probe with clean water. Ensure the probe is not clogged with dirt/soil.

Fault Finding

It will be most unusual for your unit to develop a fault and most apparent faults can be diagnosed onsite.

NOTE: There are no user serviceable components within the probe, do not disassemble! Only components within the cable reel, such as the battery and sensitivity adjustment are accessible by the user.

OPERATING PRINCIPLE OF THE UNIT

When water makes contact between the external M2 probe and the central electrode, the completion of the circuit causes an audible tone and the red LED to operate.

The circuit is modified by trim potentiometer on the internal electronic module to enable the user to adjust the sensitivity of the circuit to groundwater conductivity.

The float carries a pair of magnets that operate a reed switch carried within the central probe. These magnets close the reed switch causing a second tone, which is intermittent, to be generated and the green LED to operate.

The unit, when used in water, will trigger both the float and water modes simultaneously. Minor adjustment to ensure that these are coincident may be made by adjusting the threaded M2 probe only.

Where there is a floating layer of non-aqueous phase liquid, the level to operation of the float is recorded and then the level to the operation of the water is determined. The difference in elevation is the thickness of the layer.

USING THE UNIT

1. Switch the unit on using the toggle switch mounted on the reel cover plate.
2. Lower the probe into the well until the float encounters liquid and the intermittent tone is heard. Pull back slowly on the tape to raise the probe and lower slowly into the liquid. Repeat this until there is confidence in the measurement of depth when the tone is immediately heard when the probe is **lowered into the fluid**. Record this depth, referenced to a suitable datum.
3. Lower the probe through the floating layer until the second tone is heard and the red LED operates. Pull back slowly on the tape to raise the probe and lower slowly through the liquid. Repeat this until there is confidence in the measurement of depth when the tone is immediately heard when the probe is **lowered into the water**. Record this depth, referenced to a suitable datum.

NOTE: For accuracy of readings it is important that the above procedure is carefully carried out. Viscosity of floating product can vary considerably and cones of depression can be caused in high viscosity NAPL resulting in erroneous readings.

FAULT CHECK

1. Water circuit buzzer fails to operate correctly when the probe is immersed in water.

A: Short out the inner probe to the M2 electrode with a metal object (keys, screwdriver etc.). If the buzzer does not sound, replace the battery and carefully check for any disconnected wires within the cable reel and retest. If still no-functional return the unit for repair.

B: Buzzer sounds when shorted out but still does not function when immersed in water. The water in the borehole is probably poorly conductive and the sensitivity of the water circuit requires adjustment (see later).

2. Water circuit buzzer initially functions correctly but continues to sound after being withdrawn from the well.

A: Is the groundwater particularly conductive? Adjust the sensitivity of the unit.

B: Is there any damage to the tape conductors? If so return for repair.

3. No output from the float circuit.

A: Check the operation of the reed switch by moving the float along the central probe body. If the buzzer does not operate replace the battery and carefully check for any disconnected wires within the cable reel and retest. If this does not solve the problem return the unit for repair.

To access battery and sensitivity controls

Remove the black cover plate to the cable reel by removing the three screws. Carefully lift off the cover plate and check for any loose connections.

The battery may be readily replaced (9V PP3 type).

Within the cable reel body is a small potted black box containing the electronics module. Protruding from the potting is a small potentiometer with a central screwdriver slot. Rotation of this potentiometer will change the sensitivity of the water circuit. Carefully rotate the potentiometer until the buzzer sounds when immersed in a sample of water from the well and immediately ceases when removed from the sample.

No further parts or adjustments are available to the user.

Replace the cover plate ensuring that no leads are trapped or strained and replace cover screws.