

REED SWITCH PROBE (RSP) FOR USE WITH GEONSENSE® GEO-XM MAGNETIC EXTENSOMETER SYSTEMS

INSTRUCTION
MANUAL



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1.0 INTRODUCTION

This manual is intended for all users of **Geosense® Reed Switch Probes** and provides information on their installation and operation.



THE GEOSENSE® REED SWITCH PROBE IS DESIGNED TO BE USED WITH THE GEOSENSE® GEO-XM MAGNETIC EXTENSOMETER. FOR MORE INFORMATION ON THE GEO-XM MAGNETIC EXTENSOMETER PLEASE CONTACT GEOSENSE® LTD



It is VITAL that personnel responsible for the installation and use of Geosense® Reed Switch Probes READ and UNDERSTAND the manual, prior to working with the equipment.



1.1 General Description

Geosense® Reed Switch Probes are used to determine the depth of magnetic targets installed as part of Geosense Geo-XM magnetic extensometer system.

Geosense® Reed Switch Probes consist of a stainless steel shrouded probe, which has an internal magnetically operated reed switch contained inside. This is connected onto a steel measurement tape with millimetre increments for reading.

As the probe is lowered into the magnetic field the reed switch is triggered and an audible deep is heard as well as a visual indication via LED.

It is mounted on a rugged lightweight drum with integral brake and probe holder for easy operation and storage.

The readings from the Reed Switch Probe/ Geo XM magnetic extensometer system can be used to provide a settlement profile. By monitoring changes in the depth of the magnetic targets, the presence of settlement or heave can be confirmed.

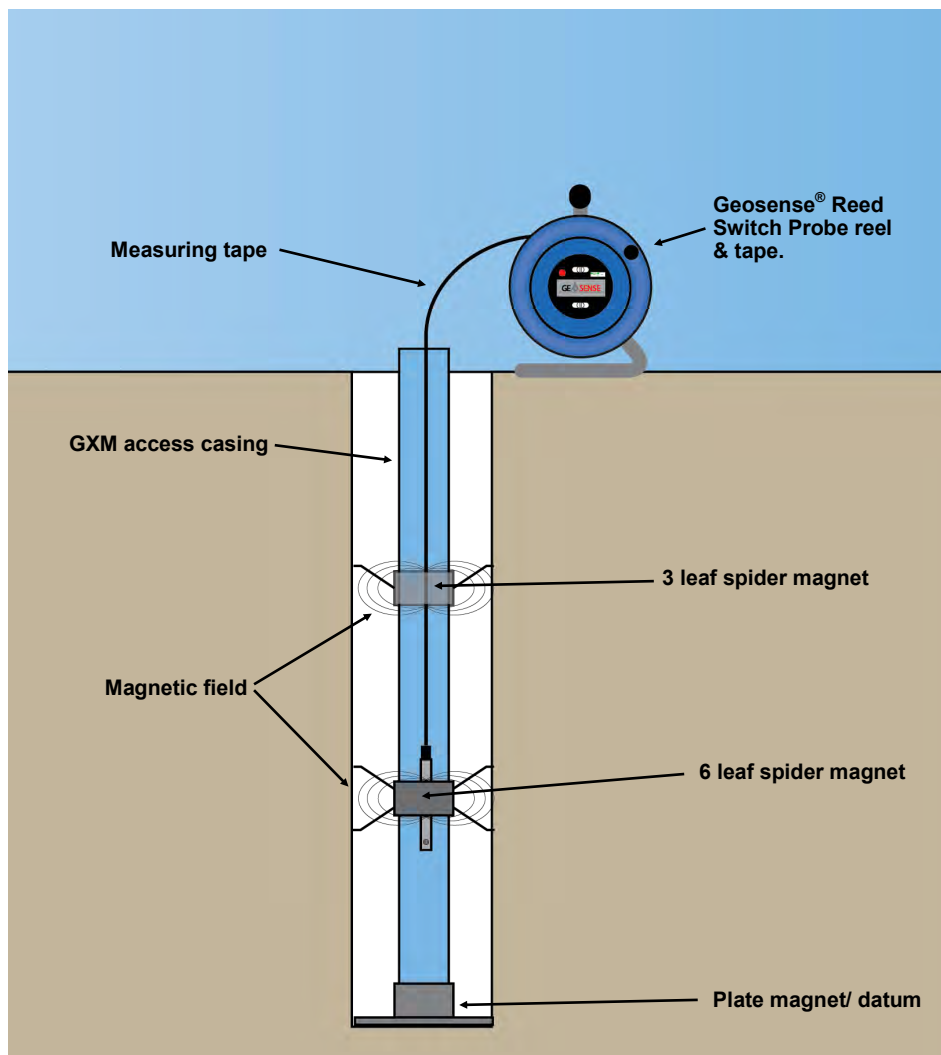
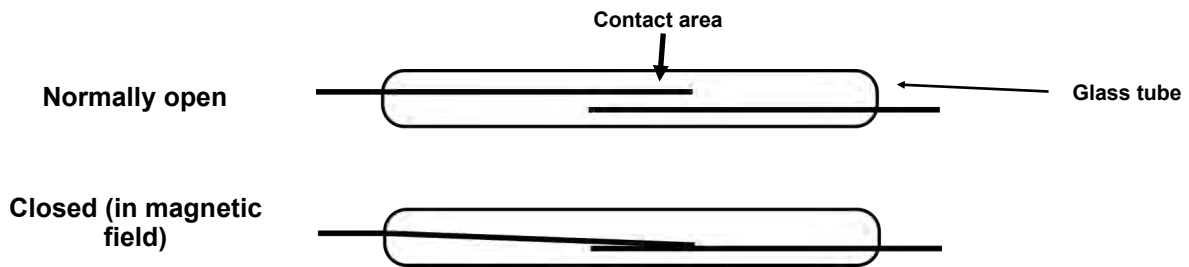
Features:-

- Slim-line probe
- High accuracy
- Simple to use
- Easy to clean
- Robust construction
- Compact design

1.2 Theory of Operation

The probe is a normally open reed switch that closes when inside a magnetic field. The operation is the same as a water level meter, in that when the reed switch is closed, it connects the circuit and an audible sound is heard as well as a visual indication LED. The target depth is then read using the millimetre scaled tape.

The depth readings of the magnetic targets can then be used to create a settlement profile, as each new readings can be compared to the previous to indicate if settlement or heave has occurred.

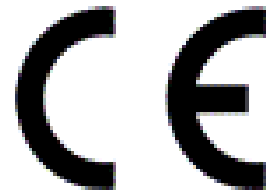


2.0 CONFORMITY

Geosense Limited

Nova House
Rougham Industrial Estate
Rougham, Bury St Edmunds
Email: info@geosense.co.uk

Declaration of Conformity



We Geosense Ltd at above address declare under our sole responsibility that the Geosense products detailed below to which this declaration relates complies with protection requirements of the following harmonized EU Directives,

Low Voltage Directive 73/23/EEC (as amended by 93/68/EEC)
The Electromagnetic Compatibility Directive 2004/108/EC
The Construction Products Directive 89/106/EEC

<i>Equipment description</i>	Reed Switch Probe
<i>Make/Brand</i>	Geosense
<i>Model Numbers</i>	DIPRSP-30-50-100-150-200-250-300

Compliance has been assessed with reference to the following harmonised standard:

EN 61326-1:2006 Electrical equipment for measurement, control and laboratory use.
EMC requirements. General requirements.

A technical file for this equipment is retained at the above address.

A handwritten signature in black ink, appearing to read 'Martin Clegg', is written over a light grey rectangular background.

Martin Clegg
Director

Jan 2019

3.0 DELIVERY

This section should be read by all users of **Geosense® Reed Switch Probes**.

3.1 Packaging

Geosense® Reed Switch Probes are packed for transportation to site. Packaging is suitably robust to allow normal handling by transportation companies. Inappropriate handling techniques may cause damage to the packaging and the enclosed equipment. The packaging should be carefully inspected upon delivery and any damage **MUST** be reported to both the transportation company and Geosense.

3.2 Handling

Whilst they are a robust devices, **Geosense® Reed Switch Probes** are precision measuring instruments. They and their associated equipment should always be handled with care during transportation, storage and installation.

Once the shipment has been inspected, it is recommended that **Geosense® Reed Switch Probes** remain in their original packaging for storage or transportation.

3.3 Inspection

It is important to check all the equipment in the shipment as soon as possible after taking delivery and well before installation is to be carried out. Check that all the components detailed on the documents are included in the shipment. Check that the equipment has not been physically damaged.

3.4 Storage

All equipment should be stored in an environment that is protected from direct sunlight. Storage areas should be free from rodents.

When **Geosense® Reed Switch Probes** are not in use, it is recommend that the measuring tape is neatly wound onto the reel and the probe placed in its holder.

For extended periods of non-use, it is recommended that the battery is disconnected.

If the unit has been used in contaminated conditions it is recommended that the probe and tape is rinsed in clean water before storage.



4.0 OPERATION

This section of the manual is intended for all users of **Geosense® Reed Switch Probes** and is intended to provide guidance with respect to their installation.

It must be remembered that no two installations will be the same and it is inevitable that some 'fine tuning' of the following procedures will be required to suit specific site conditions.

4.1 Taking readings

Step 1: Make sure that the brake is removed on the reel



Step 2: Remove the probe from the probe holder.



Step 3: Slowly lower the probe down the GXM access casing.

Step 4: Continue to lower the probe until it reaches the bottom of the access casing. As the probe passes through each magnetic target an audible sound (beep) will be heard.



4.1 Taking readings contd...



AS THE PROBE PASSES THROUGH A SINGLE MAGNETIC TARGET, ONE, TWO OR THREE AUDIBLE SOUNDS (BEEPS) COULD BE HEARD.



Step 5: Slowly raise the probe through



IT IS IMPORTANT TO USE THE SAME REFERENCE POINT WHEN TAKING READINGS TO ENSURE THEIR RELIABILITY



the first magnetic target until the first audible sound (beep) is heard.

STOP



Step 6: Slowly lower the probe to just below the point where the sound stops.

Step 7: Slowly raise the probe again until it sounds again

STOP



Step 8: Repeat until the level at which the sound starts can be accurately determined.



4.1 Taking readings contd...

Step 9: At the point where the audible sound (beep) is heard, place your thumb on the tape inline with the top of the access casing.



Step 8: Without moving your thumb, lift the tape up to read the length



Step11: Repeat for all other targets, remembering to use the first audible sound (beep) as the probe rises into the magnetic field of each target as the target depth.



IT IS IMPORTANT TO USE THE SAME REFERENCE POINT WHEN TAKING READINGS TO ENSURE THEIR RELIABILITY



4.2 Replacing the battery

Step 12: Remove the reel plate by undoing the 4 screws (see right)



Step 13: Remove the old 9V battery and remove the Velcro backing.



Step 14: Apply the Velcro to the back



ALWAYS DISPOSE OF BATTERIES IN A SUITABLE AND RESPONSIBLE MANNER



of the replacement battery.



4.3 Replacing the battery contd....

Step 15: Attach the new battery and secure onto the Velcro inside the reel



Step 16: Replace the reel plate.



MAKE SURE THAT NO CABLES ARE TRAPPED WHEN REPLACING THE REEL PLATE.



5.0 MAINTENANCE

All Reed Switch Probes require basic maintenance (please see below):-

- Status of the battery - change as required
- Cleanliness - always clean the probe, tape & reel after use
- When lowering and raising the probe make sure that the tape does not run over any sharp edges that may abrade the surface and shorten the life of the instrument.

6.0 TROUBLESHOOTING

If when lowering the probe into the borehole/casing no sound is audible check the following:

- Check that the battery has power
- Magnetic targets have a strong enough magnetic field to activate the reed switch.

If the above does not provide a solution then request a return authorisation number (RAN) from **Geosense**[®] and send back for inspection/ repair.

7.0 SPECIFICATION

Reed Switch Probe

SPECIFICATION	
Probe diameter	14mm
Probe length	150mm
Probe material	Austenitic stainless steel
Tape type	Steel mm markings
Tape width	11.5mm
Tape coating	Polyethylene
Tape lengths	30, 50, 100, 150 200, 250 (longer lengths available upon request)
Reel type	Polypropylene
Reel diameter	230mm
Audible indicator	88 dB (A) buzzer
Visual indicator	Red LED
Power	9 volt PP3 battery
System precision	±3 to 5mm

8.0 SPARE PARTS

While **Geosense® Reed Switch Probes** are robust instruments, items may need to be replaced from time to time due to wear. Please see below spare parts available.

Qty	Description
1	Spare probe and tape
1	9 volt battery
1	Reel
1	LED
1	Buzzer
2	Probe clips

9.0 RETURN OF GOODS

8.1 Returns procedure

If goods are to be returned for either service/repair or warranty, the customer should contact Geosense for a **Returns Authorisation Number**, request a **Returned Equipment Report Form QF034** and, prior to shipment. Numbers must be clearly marked on the outside of the shipment.

Complete the **Returned Equipment Report Form QF034**, including as much detail as possible, and enclose it with the returned goods and a copy of the form should be faxed or emailed in advance to the factory.

8.2 Chargeable Service or Repairs Inspection & estimate

It is the policy of **Geosense**[®] that an estimate is provided to the customer prior to any repair being carried out. A set charge for inspecting the equipment and providing an estimate is also chargeable.

8.3 Warranty Claim (See Limited Warranty Conditions)

This covers defects which arise as a result of a failure in design or manufacturing. It is a condition of the warranty that **Geosense**[®] **Reed Switch Probes** must be installed and used in accordance with the manufacturer's instructions and has not been subject to misuse.

In order to make a warranty claim, contact **Geosense**[®] and request a **Returned Equipment Report Form QF034**. Tick the warranty claim box and return the form with the goods as above. You will then be contacted and informed whether your warranty claim is valid.

8.4 Packaging and Carriage

All used goods shipped to the factory **must** be sealed inside a clean plastic bag and packed in a suitable carton. If the original packaging is not available, **Geosense**[®] should be contacted for advice. **Geosense**[®] will not be responsible for damage resulting from inadequate returns packaging or contamination under any circumstances.

8.5 Transport & Storage

All goods should be adequately packaged to prevent damage in transit or intermediate storage.

10.0 LIMITED WARRANTY

The manufacturer, warrants **Geosense® Reed Switch Probes** manufactured by it, under normal use and service, to be free from defects in material and workmanship under the following terms and conditions:-

Sufficient site data has been provided to **Geosense®** by the purchaser as regards the nature of the installation to allow **Geosense®** to select the correct type and range of **Geosense® Reed Switch Probes** and other component parts.

Geosense® Reed Switch Probes equipment shall be installed in accordance with the manufacturer's recommendations.

The equipment is warranted for 1 year from the date of shipment from the manufacturer to the purchaser.

The warranty is limited to replacement of part or parts which, are determined to be defective upon inspection at the factory. Shipment of defective part or parts to the factory shall be at the expense of the Purchaser. Return shipment of repaired/replaced part or parts covered by this warranty shall be at the expense of the Manufacturer.

Unauthorised alteration and/or repair by anyone which, causes failure of the unit or associated components will void this **LIMITED WARRANTY** in its entirety.

The Purchaser warrants through the purchase of Geosense® Reed Switch Probes that he/she is familiar with the equipment and its proper use. In no event shall the manufacturer be liable for any injury, loss or damage, direct or consequential, special, incidental, indirect or punitive, arising out of the use of or inability to use the equipment sold to the Purchaser by the Manufacturer.

The Purchaser assumes all risks and liability whatsoever in connection with **Geosense® Reed Switch Probes** from the time of delivery to Purchaser.



INSTALLATION NOTES:-



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