

Geotech Interface Meter

Installation and Operation Manual



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DOCUMENTATION CONVENTIONS

This uses the following conventions to present information:



WARNING

An exclamation point icon indicates a **WARNING** of a situation or condition that could lead to personal injury or death. You should not proceed until you read and thoroughly understand the **WARNING** message.



CAUTION

A raised hand icon indicates **CAUTION** information that relates to a situation or condition that could lead to equipment malfunction or damage. You should not proceed until you read and thoroughly understand the **CAUTION** message.



NOTE

A note icon indicates **NOTE** information. Notes provide additional or supplementary information about an activity or concept.



Notice for consumers in Europe:

This symbol indicates that this product is to be collected separately.

The following applies only to users in European countries:

- This product is designated for separate collection at an appropriate collection point. Do not dispose of as household waste.
- For more information, contact the seller or the local authorities in charge of waste management.

Section 1: System Description

Function and Theory

The Geotech Interface Meter is a hand held, battery powered device for measuring depth to water or oil in tanks or wells. The Interface Meter can be used in numerous applications including measuring oil and water levels in monitoring wells, detecting tank leakage and obtaining accurate measurements of water levels.

This manual applies to Geotech Interface Meters with part numbers 82050042, 82050043, 82050044, 82050045, 82050046, 82050047, 82050006, 82050007, and 82050008. These models differ in the length of the tape, and the markings on the tape (metric or engineering). Metric tapes are marked in meters and centimeters, engineering tapes in feet and centifeet.

The Interface Meter consists of an oil/water sensing probe, a measuring tape, and a reel to wind the tape on. Figures 1-1 and 1-2 are examples of the complete assembly. Figure 1-3 is an example of the faceplate and it's components.

The probe contains two different sensor units, one for detecting the liquid/air interface, and one for distinguishing between water and hydrocarbon. The liquid sensor consists of an infrared emitter, a transparent window, and a detector. When in air, most of the light reflects off the window internally and is detected. As long as the detector sees enough light the interface meter is quiet. In liquid, most of the light escapes through the window, even in seemingly opaque fluids. If the detector doesn't pick up enough light, the unit will indicate liquids.

The water/hydrocarbon differentiation is made by testing for conductivity. If any current flows between the electrode in the probe tip and the probe body, the probe will indicate water. If no current is detected (or if current flow is below a threshold), the probe indicates hydrocarbons.

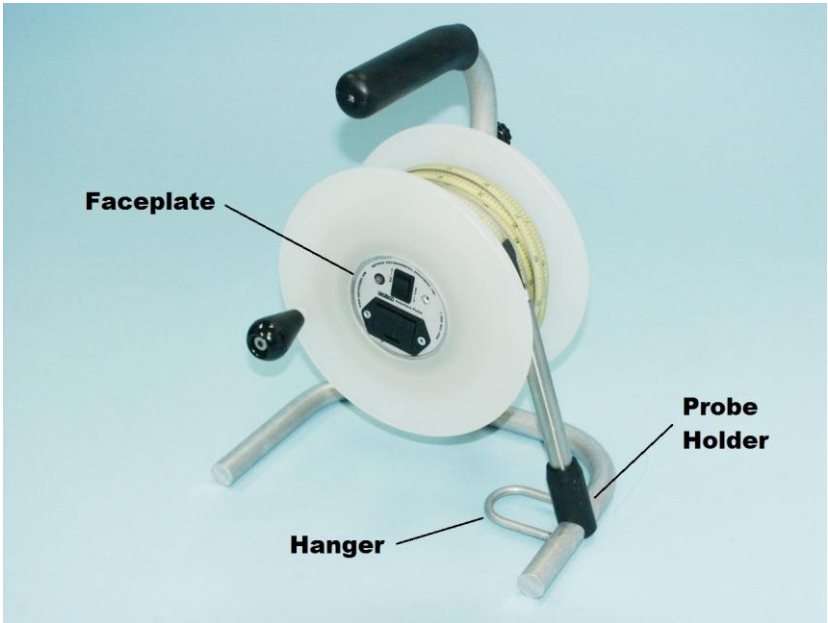


Figure 1-1

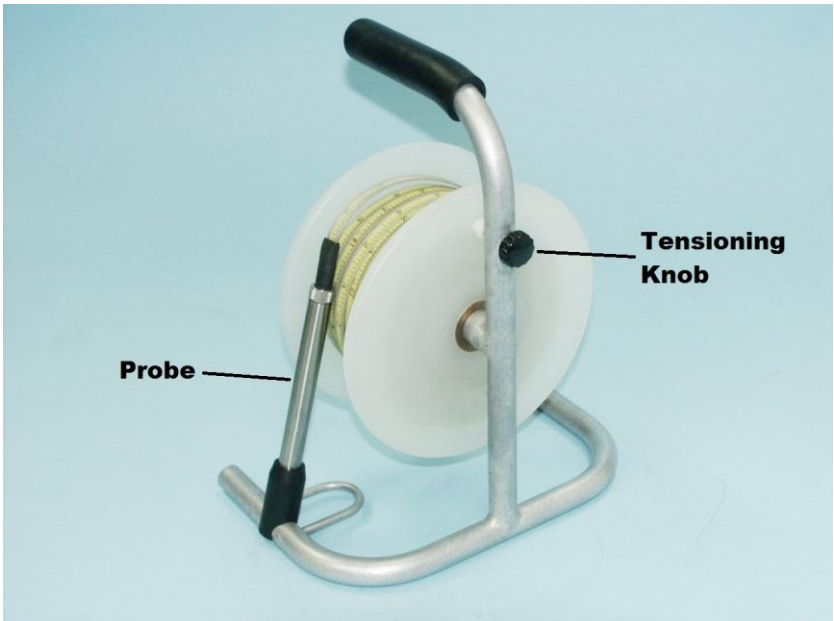


Figure 1-2

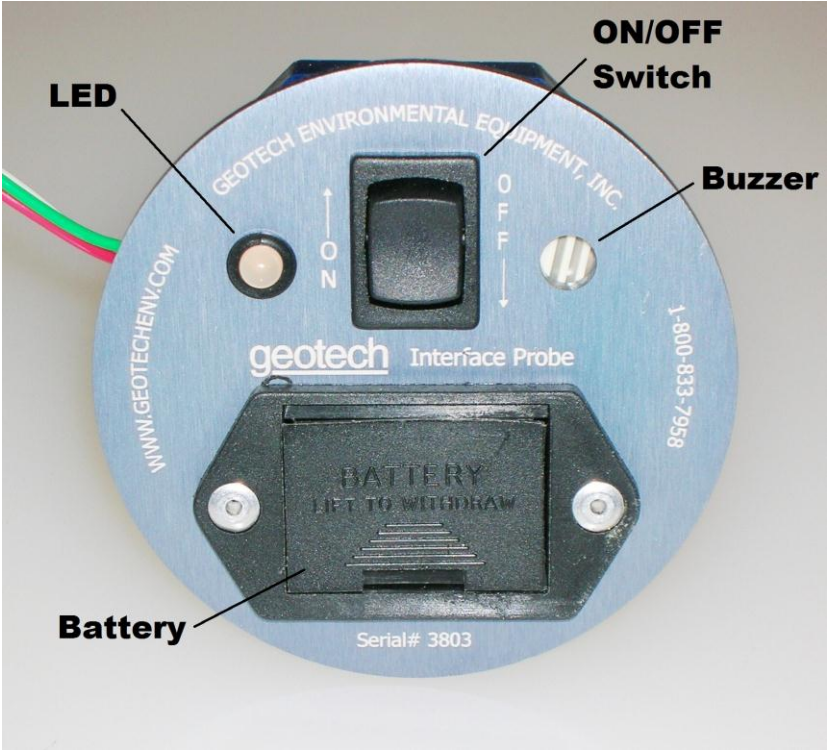


Figure 1-3 Interface Meter faceplate

System Components

Probe

The probe is a 5/8 inch (15.87mm) diameter stainless steel cylinder which can be used in wells as small as 3/4 inch (19.05mm) diameter. When not in use, the probe is to be placed in the probe holder which will protect the tip.

Measuring Tape

The tape connects the probe and the reel assembly and provides an accurate means of measuring the distance from the well head or tank port to the air/water, air/oil or oil/water interface. The tape contains all the wires running between the probe and the circuitry in the reel assembly.

Reel Assembly

The reel assembly contains the control electronics, which includes the battery and the interface indicating LED and buzzer.

Section 2: System Installation

The reel frame has a metal loop called the “hanger”. The hanger can be used to hang the reel frame onto the well casing (as shown in Figure 2-1). The tape can then slide easily over the side of the reel leg.

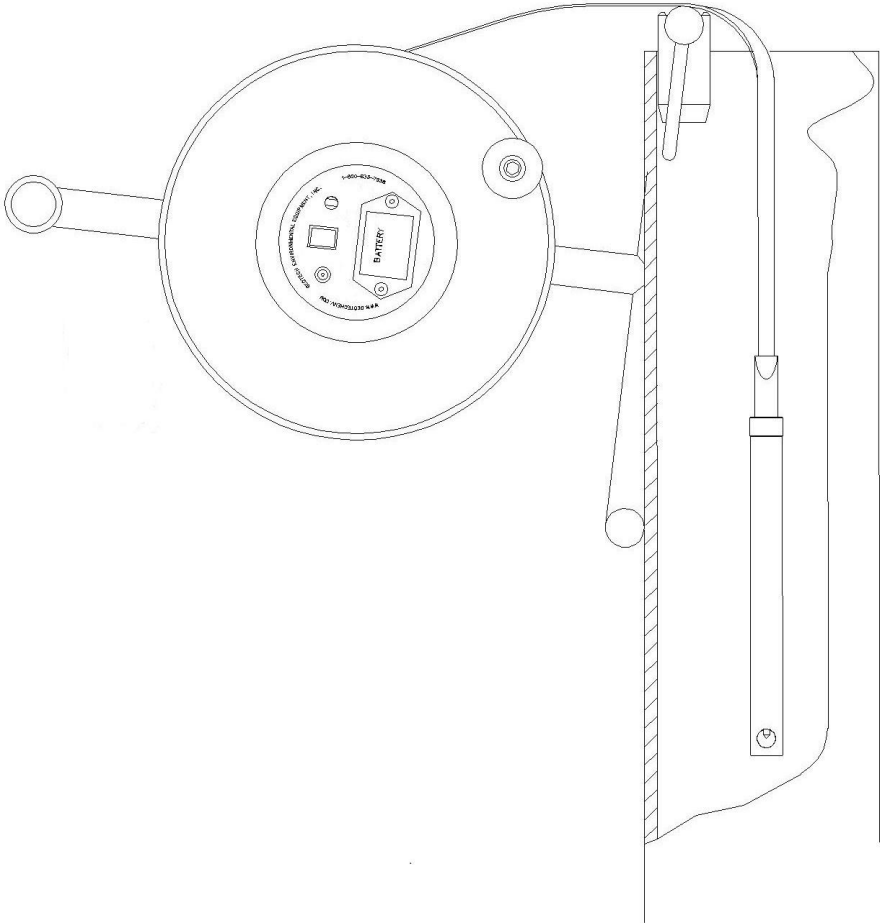


Figure 2-1 Reel frame on well casing.

If you are not able to hang the frame onto the well head, then either use the white plastic leader guard (standard with all units), or the optional Tape Guide, to prevent the edge of the well head from damaging the tape. Figure 2-2 is an example of the two parts.



Figure 2-2 Tape guides and protectors



Do not use the tape leader guard in wells larger than 4" (10cm), as it may fall down the well.

Section 3: System Operation

To turn the unit on, press the switch on the reel faceplate to the “ON” position and release. While the switch is depressed, the LED will show green and the buzzer will sound. Remove the probe from the probe holder, loosen the tensioning knob, and lower the probe down the well or structure to be investigated.



Be sure to install the tape leader guard or optional tape guide onto the well casing prior to deploying the tape (see Section 2.)

When the probe contacts liquid, the visual/audible alarm on the reel will be activated. An oscillating alarm indicates water, a continuous alarm indicates hydrocarbon. To determine the exact thickness of a hydrocarbon layer, the probe should be slowly lowered to the air/hydrocarbon interface until the alarm is activated. With the probe at the exact point where the alarm comes on, read the numbers on the tape to determine the distance from the top of the well head to the air/hydrocarbon interface.

Next, lower the probe through the hydrocarbon layer and well into the water. An oscillating alarm will be obtained. The probe should then be raised slowly to the hydrocarbon/water interface until the point is reached where the alarm changes from oscillating to continuous, and note the tape reading. The thickness of the hydrocarbon layer is determined by subtracting the first reading from the second reading.



The most accurate results are obtained by moving the probe as slowly as possible. It is important that the probe be removed from the fluid slowly. If not, drops of fluid may remain on the probe tip giving a false indication of liquid after it has been removed.

The Interface Meter is equipped with an automatic shutoff circuit. When the probe does not stay in contact with liquid for a period of 5 minutes, the unit will automatically turn off to preserve battery life. To turn the unit back on, momentarily press the power switch to the ON position and release. The unit can also be turned off by momentarily pressing the power switch to the OFF position. The LED will show red when the switch is pressed to the OFF position.



The buzzer tone and LED also aid in telling you that the electronics are working normally.

Section 4: System Maintenance

The Interface Meter has been designed and manufactured to provide a long, trouble free service life. In order to maximize the life of your probe and prevent voiding the manufactures warranty, proper care and cleaning of the probe is recommended.



Things NOT to do:

- Never scrape or gouge the optical probe end with a sharp object, knife, etc. to clear away any debris.
- Avoid using abrasive cleaners on optical probe end.
- Probe senses upper fluid interfaces only, avoid dropping the probe completely to bottom of wells.
- Avoid dropping the sensor head onto the ground.
- Be careful not to over tighten the tape reel or put excessive stress on the tape-probe connection.

Battery Replacement

Replace the battery when the audible and visible signals become weak or the unit does not operate.

1. Gently remove the battery tray.
2. Remove the old battery and replace it with a new one.



Be aware of the polarity (+, -) of the battery when placing the new battery in the tray. Use a 9V alkaline battery only.

Cleaning the Optical Probe

The optical end of the probe should be periodically cleaned with a non-abrasive cleaner such as isopropyl alcohol, xylene, methanol, Alconox, or Liquinox type cleaner. To clean the sensor probe head, place a small amount of the cleaner on a cotton swab; rub the optical face and around the conductivity sensor wire to remove all foreign matter. Repeat this process until all foreign matter has been removed.

Section 5: System Troubleshooting

Problem: Unit will not turn on.

Solution: Replace battery. Ensure the contacts are attached to the correct polarity.

Problem: Unit turns on but will not detect anything.

Solution: Check tape for kinks and breaks.

Problem: Unit turns on but sounds continuously.

Solution: Check optics for dirt, clean as necessary (see Section 4).

Certain assemblies are field replaceable. Replacement probes, tapes, and faceplate assemblies are available from Geotech. If it isn't clear which assembly is malfunctioning, contact your Geotech representative to further troubleshoot the device or return the unit for repair.

For technical assistance, call Geotech Environmental Equipment at 1-303-320-4764 or 1-800-833-7958

Section 6: System Specifications

Probe

| | |
|---|----------------------------------|
| Material: | 316 stainless steel, PTFE, Viton |
| Weight: | 4.6 oz (130 g) |
| Diameter: | .625" (1.59 cm) |
| Length: | 6.525" (1.66 cm) |
| Minimum detectable hydrocarbon thickness: | .0312" (.8 mm) |
| Probe waterproof to: | 100 psi (6.9bar) |
| Maximum probe shock: | 10 G |
| Conductivity sense range: | > .78 μ S |

Tape

| | |
|----------------|--|
| Material: | Kynar coated steel |
| Length/Weight: | 100 foot (30 meters) = 9 lbs (4 kg) 200 foot (60 meters) = 11 lbs (5 kg) 300 foot (100 meters) = 14 lbs (6.5 kg) 500 foot (152 meters) = 20 lbs (9.1kg) 750 foot (229 meters) = 24 lbs (10.9kg) 1000 foot (305 meters) = 28 lbs (12.7kg) (Weight of unit and case) |
| Accuracy: | 100th of a foot/100' (3 mm/30.5 meters) Per Federal Specification GGG-T-106E |

Reel

| | |
|--------------------------------|---|
| Material: | Polypropylene & aluminum (100' – 300') (30 m – 100 m) Powder coated steel & aluminum (500' - 1000') (152 m – 305 m) |
| Size: | 13" H x 11" W x 7" D (100' – 300') (33 cm H x 28 cm W x 18 cm D) 15" H x 11" W x 9" D (500' – 1000') (38 cm H x 28 cm W x 23 cm D) |
| Battery: | 9 volt alkaline |
| Self shut off time: | 5 minutes |
| Output tone (hydrocarbons) | 500 Hz typ |
| Output modulation tone (water) | 3.5 Hz typ |

Unit

| | |
|------------------------------|----------------------------|
| Operating temperature range: | 32 – 140 °F (0 – 60 °C) |
| Storage temperature range: | -40 – 170 °F (-40 – 75 °C) |
| Humidity: | 5-95% non-condensing |

Section 7: System Schematic

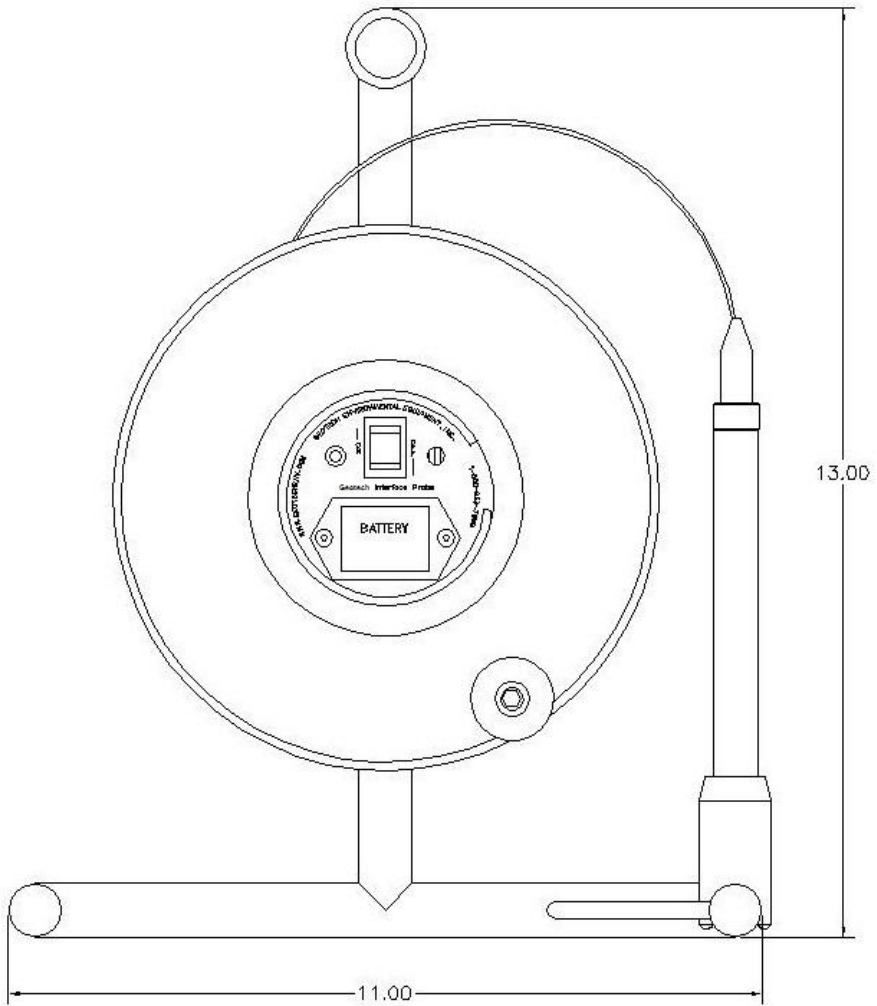


Figure 7-1 Interface Meter (front view)

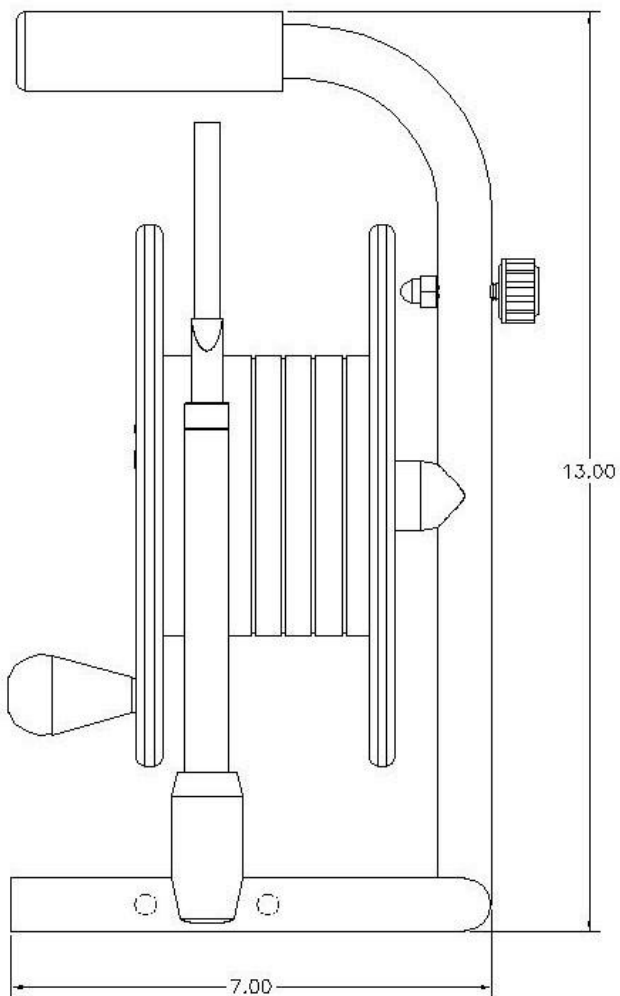
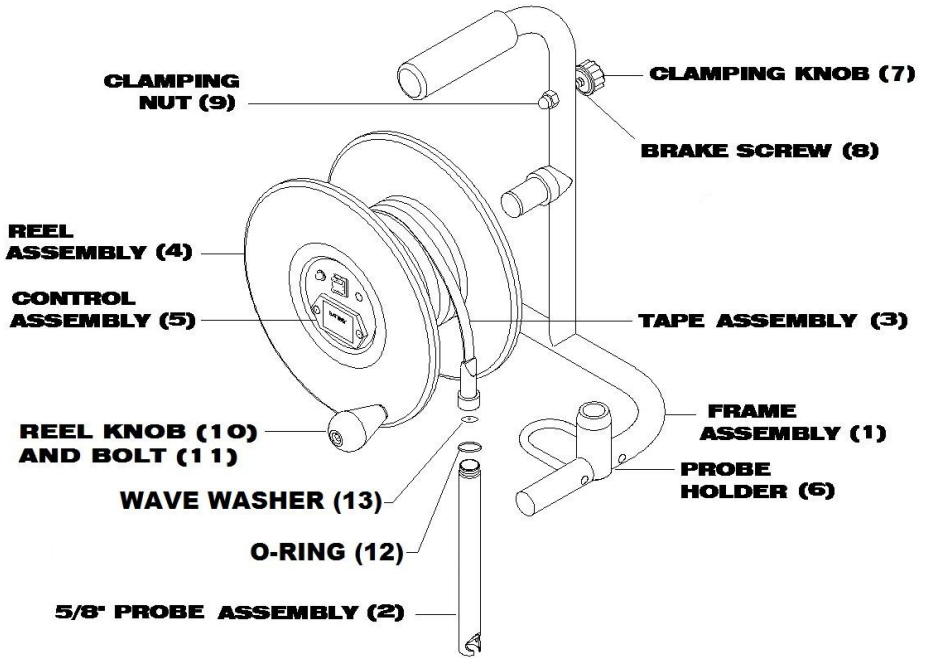


Figure 7-2 Interface Meter (side view)

Section 8: Replacement Parts List



| Item # | Parts Description | Parts List |
|--------|---|------------|
| 1 | ASSY,FRAME,GEOWLM/GIP | 52050002 |
| 2 | ASSY,PROBE,GEO IP,5/8",3 WIRE | 52050064 |
| 3 | ASSY,TAPE,GEO IP,100FT KYNAR | 52050057 |
| | ASSY,TAPE,GEO IP,200FT KYNAR | 52050058 |
| | ASSY,TAPE,GEO IP,300FT KYNAR | 52050059 |
| | ASSY,TAPE,GEO IP,500FT KYNAR | 52050015 |
| | ASSY,TAPE,GEO IP,750FT KYNAR | 52050018 |
| | ASSY,TAPE,GEO IP,1000FT KYNAR | 52050047 |
| | ASSY,TAPE,GEO IP,30M KYNAR | 52050060 |
| | ASSY,TAPE,GEO IP,60M KYNAR | 52050061 |
| | ASSY,TAPE,GEO IP,100M KYNAR | 52050062 |
| 4 | ASSY,REEL,100FT,GEOWLM | 52050029 |
| | ASSY,REEL,200FT,GEOWLM | 52050030 |
| | ASSY,REEL,300FT,GEOWLM | 52050031 |
| | ASSY,REEL,300-500FT,GEOWLM | 52050021 |
| | ASSY,REEL,750-1000FT,GEOWLM | 52050043 |
| 5 | ASSY,CONTROL,GEO IP,3 WIRE TAPE LENGTH REQUIRED | 52050068 |
| | ASSY,CONTROL,GEO IP,3WIRE,500' | 52050016 |
| 6 | PROBE HOLDER, 5/8", UNI-FRAME | 52050063 |
| 7 | KNOB,KNURLED,3/4X5/16",BLK (USE WITH #12050525) | 12050524 |
| 8 | SCREW,SS8,1/4-20X1.375",SHCS | 12050525 |
| 9 | NUT,NYL,1/4-20,HEX | 17500129 |
| 10 | KNOB,PHENOLIC,OVAL/TAPERED REEL HANDLE | 12050002 |
| 11 | BOLT,SS8,KNOB HANDLE STRIPPER 5/16 X 1.5" (1/4-20 THRD) | 17500123 |
| | GUARD,LEADER,PROPAMIDE,NATURAL | 12050060 |
| | GUIDE,TAPE,PVC | 22050601 |
| | CASE,GEOWLM,100-300' | 12050059 |
| | CASE,GEOWLM,500-1000' | 12050113 |
| | MANUAL,GEOTECH IP | 12050256 |
| 12 | O-RING, VITON, .480X.039, BROWN | 17500202 |
| 13 | WASHER,WAVE | 12050255 |

NOTES

NOTES

The Warranty

For a period of one (1) year from date of first sale, product is warranted to be free from defects in materials and workmanship. Geotech agrees to repair or replace, at Geotech's option, the portion proving defective, or at our option to refund the purchase price thereof. Geotech will have no warranty obligation if the product is subjected to abnormal operating conditions, accident, abuse, misuse, unauthorized modification, alteration, repair, or replacement of wear parts. User assumes all other risk, if any, including the risk of injury, loss, or damage, direct or consequential, arising out of the use, misuse, or inability to use this product. User agrees to use, maintain and install product in accordance with recommendations and instructions. User is responsible for transportation charges connected to the repair or replacement of product under this warranty.

Equipment Return Policy

A Return Material Authorization number (RMA #) is required prior to return of any equipment to our facilities, please call our 800 number for appropriate location. An RMA # will be issued upon receipt of your request to return equipment, which should include reasons for the return. Your return shipment to us must have this RMA # clearly marked on the outside of the package. Proof of date of purchase is required for processing of all warranty requests.

This policy applies to both equipment sales and repair orders.

FOR A RETURN MATERIAL AUTHORIZATION, PLEASE CALL OUR
SERVICE DEPARTMENT AT 1-800-833-7958.

Model Number: _____

Serial Number: _____

Date of Purchase: _____

Equipment Decontamination

Prior to return, all equipment must be thoroughly cleaned and decontaminated. Please make note on RMA form, the use of equipment, contaminants equipment was exposed to, and decontamination solutions/methods used. Geotech reserves the right to refuse any equipment not properly decontaminated. Geotech may also choose to decontaminate the equipment for a fee, which will be applied to the repair order invoice.

Geotech Environmental Equipment, Inc.

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