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Air-Met Scientific
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geotech

ET Water Level Meter

Installation and Operation Manual



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DOCUMENTATION CONVENTIONS

This document 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 ET Water Level Meter (ET WLM) is a portable instrument used to accurately measure water levels in monitoring wells and bore holes. The sensor consists of a stainless steel probe attached to a reel-mounted, polyethylene-coated engineer's tape. The engineer's tape comes in standard or metric graduations, and is accurate to 1/100th of a foot, or 1 millimeter.

The sensor relies on fluid conductivity to determine the presence of water. An audible signal and visible red LED activate when the probe contacts water. It features adjustable sensitivity, used to prevent false triggering.

The ET WLM is intended for use as a depth to water measuring device. Using the ET WLM for any other purpose may compromise safety of the operator and/or void manufacturer's warranty.



To avoid damage to tape and strain relief, do not over tighten reel with probe in storage position.

System Components

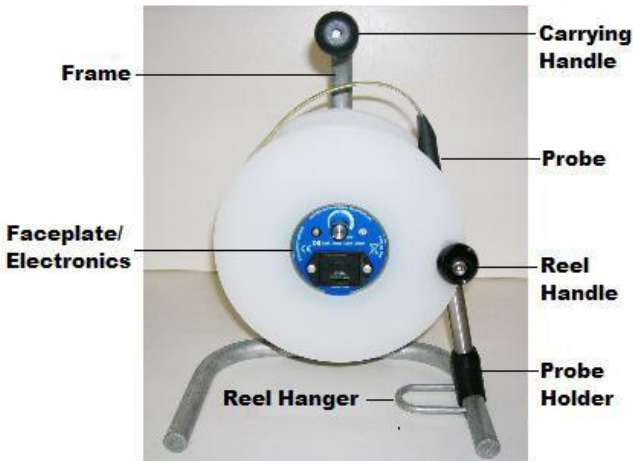


Figure 1-1: WLM Components



Figure 1-2: WLM Faceplate



Figure 1-3: WLM Faceplate with Draw Down

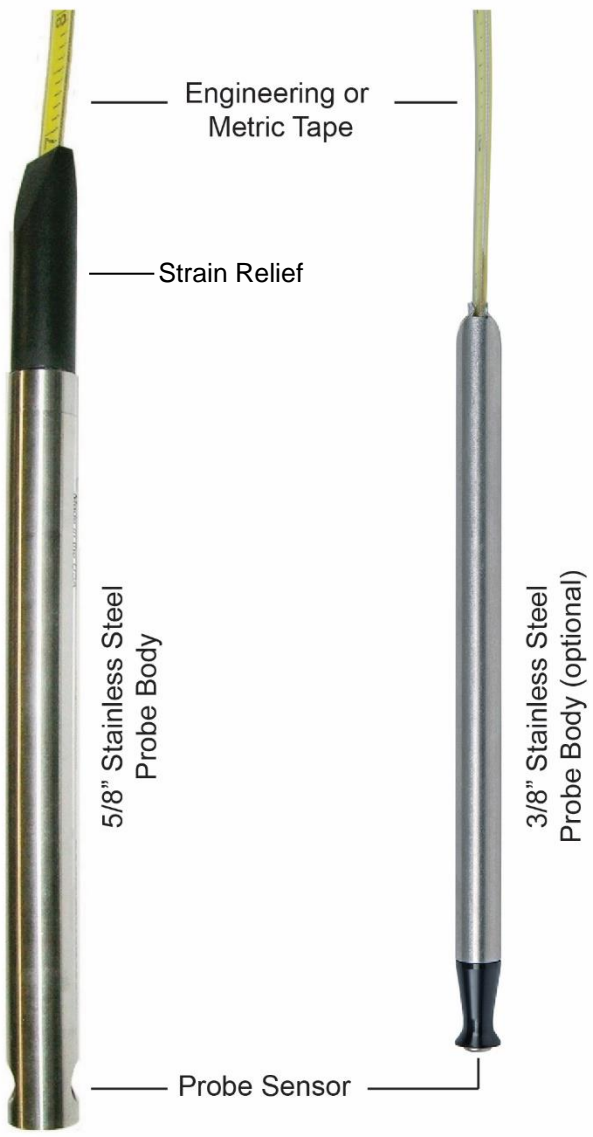


Figure 1-4: Probe Options

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.

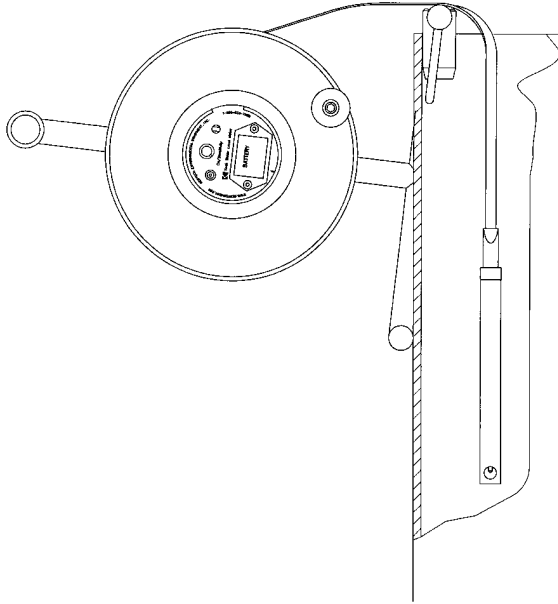


Figure 2-1: Reel Frame on Well Casing

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



Figure 2-2: Tape Guide (optional) , Tape Weight (optional), Tape Leader Guard



Do not use the tape leader guard in wells larger than 4" (10cm), as it may fall down the well. The optional tape weight helps sink probe into a deep or crooked well

Optional Tape Weight Installation

Attach tape weight to tape near probe end being lowered into well.

- 1) Loosen the screws using an Allen wrench.
- 2) Slide the weight onto the tape (Figure 2-3).
- 3) Tighten the screws (Figure 2-4).



Figure 2-3: Fitting (Optional) Tape Weight



Figure 2-4: Tightening (Optional) Tape Weight

Section 3: System Operation

Turn the ET WLM on with the ON/SENSITIVITY switch. If the buzzer makes a loud signal and a red light is visible, the battery is adequate for normal operation.

Lower the probe down the well to the water surface. The light and buzzer will activate. At this point, adjust the probe dial by rotating it counter-clockwise until the light and buzzer turn off.

With the probe still in contact with the water, adjust the probe sensitivity dial clockwise until the light and buzzer barely activate. In this setting, the probe will detect the water level and avoid false triggering.

Water level measurements can now be taken from the top of the casing or any reference point.

The ET WLM should be stored with the ON/SENSITIVITY switch in the OFF position. To turn the unit off, rotate the switch fully counter-clockwise until the switch clicks. If the ET WLM is not used and is stored for longer than three (3) months, remove the battery to prevent battery leakage, which can cause internal damage.



To avoid damage to the tape and strain relief, do not over tighten the reel with the probe in storage position.



This unit is not rated for use with hydrocarbons or flammable liquids. If measuring depth to fluid of wells containing hydrocarbons, use Geotech's line of interface probe products.

Operation of Optional Draw Down Control

1. Lower the probe to desired depth of maximum allowable draw down with the unit in standard ET WLM mode (switch at "Right") – see Figure 1-3.
2. Move the mode switch to the "Left", for Draw Down mode.
3. Connect the ET WLM to a controller; such as the Geotech GeoControl Pro or Geo Controller, which is equipped with a Draw Down feature, as shown in Figure 1-3.
4. Operate your controller in accordance with the controller's operation manual. The ET WLM will stop the controller when the water level dips below it. It will allow the controller to re-start when the water level rises and makes contact with the probe

Section 4: System Maintenance

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 ET WLM can be cleaned with mild detergents such as trisodium phosphate (TSP). If other detergents are used, take care to select detergents that are compatible with BUNA-N, polypropylene, and stainless steel. The reel should not be submerged in any liquid, but may be cleaned with a damp cloth.

Cleaning the Conductivity Contact

The conductivity contact of the probe should be periodically cleaned with a non-abrasive cleaner such as isopropyl alcohol, xylene, methanol, or phosphate free type cleaner. To clean the conductivity contact, place a small amount of the cleaner on a cotton swab; rub the conductivity contact to remove all foreign matter. Repeat this process until all foreign matter has been removed.

Section 5: System Troubleshooting

Problem: No signal (audible or visible) when unit is turned on.

Solutions:

- The battery is discharged. Check or change battery (*Section 4: System Maintenance*).
- The circuit is malfunctioning. Contact Geotech Service.

Problem: No indication of water.

Solutions:

- The conductive contact is dirty. Clean the contact (*Section 4: System Maintenance*).
- There is an open connection in the tape. Replace tape and/or probe.
- The circuit is malfunctioning. Contact Geotech Service.

Problem: The signal (audible or visible) is intermittent.

Solutions:

- There is an open connection in the tape. Replace tape and/or probe.
- There is a loose connection in the circuit or the probe. Repair the connection.

Problem: The signal (audible or visible) is continuous when not in water.

Solutions:

- Make sure the meter is in standard mode. Place the mode switch to the "Right", for normal operation.
- The conductive contact is dirty (causing bridging). Clean the contact (*Section 4: System Maintenance*).
- There is a short in the tape and/or probe. Replace tape and/or probe.
- The circuit is malfunctioning. Contact Geotech Service.

Problem: Controller shuts down automatically when ET WLM has draw down feature connected.

Solutions:

- ET WLM is in standard ET WLM mode. Lower the probe until it contacts the water level and switch to draw down mode.
- ET WLM is in draw down mode, but water level dropped below probe. Wait for well to recharge and make contact with probe, or lower probe to contact water.

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

Section 6: System Specifications

Geotech has taken steps to remove all polyfluoroalkyl substances (PFAS) materials from ET Water Level Meters.

| | |
|----------------|---|
| 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) |

5/8" Probe

| | |
|---|---------------------------------|
| Material: | Stainless steel, Buna-N, Acetal |
| Weight: | 4.68 oz (132.5 g) |
| Diameter: | .625" (1.59 cm) |
| Length: | 6.125" (19.7 cm) |
| Minimum Conductivity Threshold (detects water at): | 10 μ S |

3/8" Probe (optional)

| | |
|---|---------------------------------|
| Material: | Stainless steel, Buna-N, Acetal |
| Weight: | 1 oz (30.5 g) |
| Diameter: | .375" (1 cm) |
| Length: | 6.5" (16.5 cm) |
| Minimum Conductivity Threshold (detects water at): | 10 μ S |

Tape

| | |
|-----------|---|
| Material: | Polyethylene coated steel tape w/ stainless steel conductors |
| Accuracy: | 100th of a foot/100' (3 mm/30.5 meters) Per Federal Specification: GGG-T-106E or |
| Material: | MDPE tape w/ stainless steel conductors |
| Accuracy: | 100th of a foot/100' (3 mm/30.5 meters) |

Reel/Frame

| | |
|-----------|--|
| Material: | Polypropylene & aluminum |
| Size: | 13" H x 11" W x 7" D (33 cm H x 28 cm W x 18 cm D) |

Unit

| | |
|------------------------------|---|
| Battery: | 9 volt alkaline |
| Max power: | < 1 Watt |
| Max sound pressure output: | 75 dB @ 30 cm |
| Insulation rating: | Insulation rating is considered double as there are no hazardous voltages or power circuits to pose a threat to the operator. |
| Battery life: | Continuously detecting: 8 hours On but not detecting: >1 year |
| Output tone: | 5 kHz |
| Operating temperature range: | 32 – 140 °F (0 – 60 °C) |
| Operating environment: | Rated for Outdoor use. |
| Storage temperature range: | -40 – 158 °F (-40 – 70 °C) |
| Response time: | <10 milliseconds |
| Humidity: | 0-100% |
| Elevation: | -328 – 13,124 feet (-100 – 4000 meters) |
| Tape Weight (Optional) | 1" (2.54cm) OD, 4" (10.16cm) Long, 12.74oz (361g) |

Section 7: System Schematic

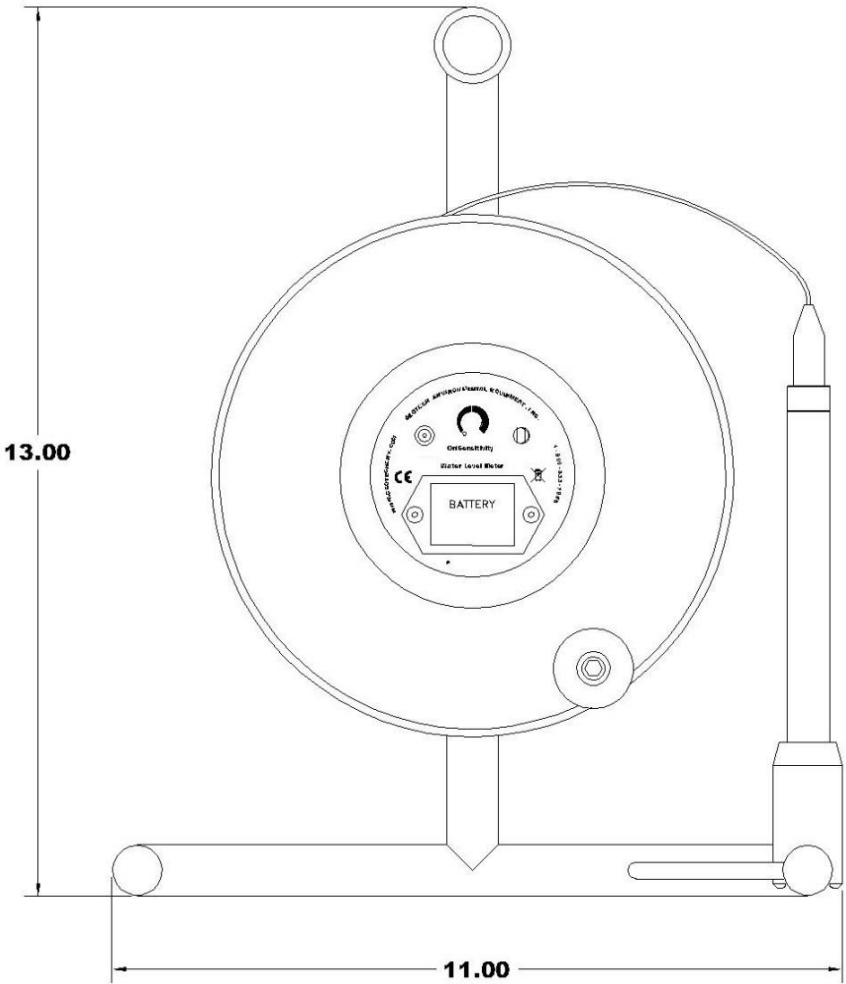


Figure 7-1: Water Level Meter (front view)

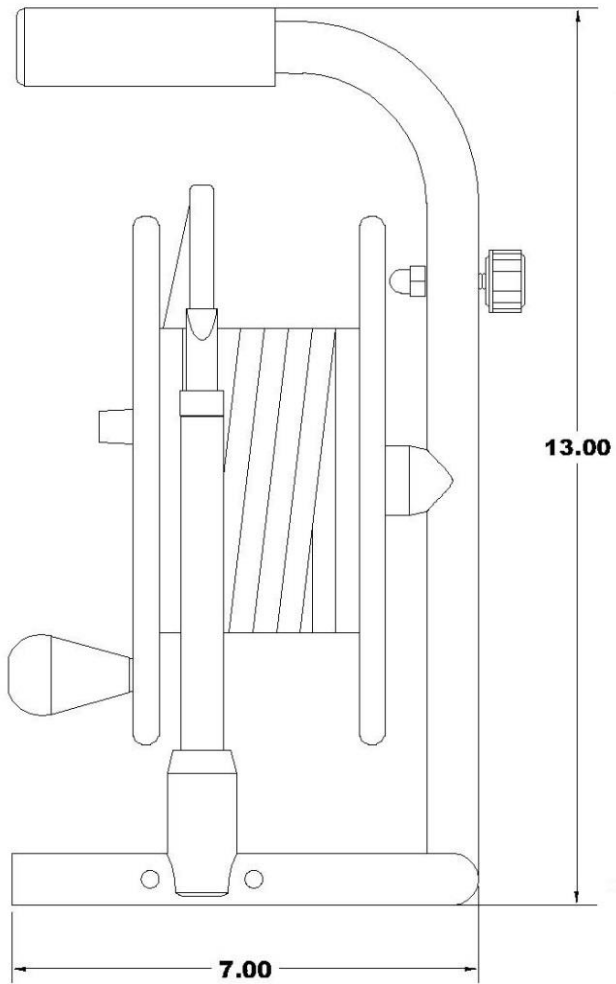
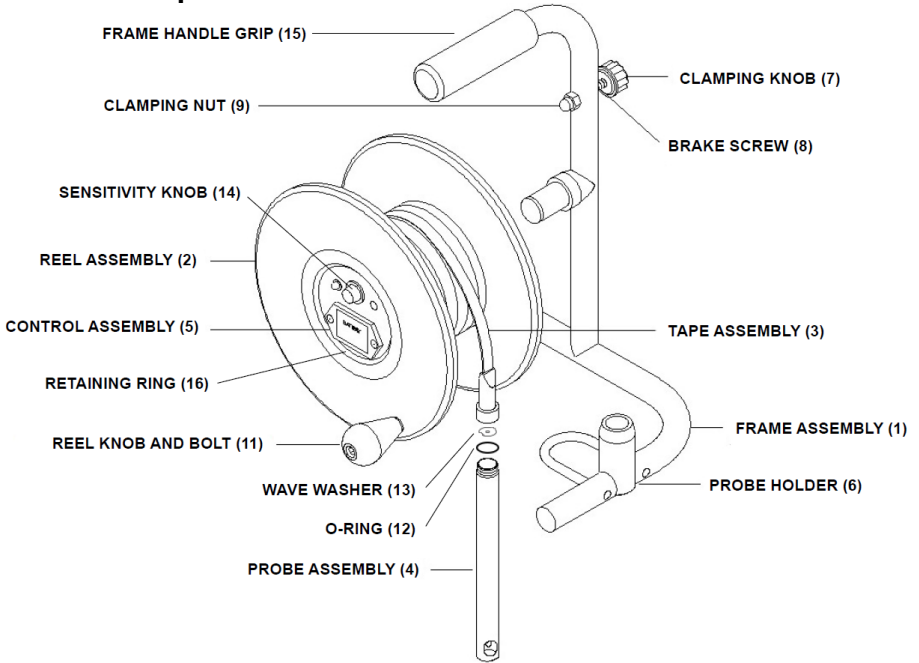


Figure 7-2: Water Level Meter (side view)

Section 8: Replacement Parts List



| Item # | Parts Description | Part # |
|--|-----------------------------|----------|
| 1 | ASSY,FRAME,GEOWLM/GIP | 52050002 |
| 2 | ASSY,REEL,100FT,GEOWLM | 52050029 |
| " | ASSY,REEL,200FT,GEOWLM | 52050030 |
| " | ASSY,REEL,300FT,GEOWLM | 52050031 |
| Replacement Tape Assemblies (5/8" Probe and reel not Included) | | |
| 3 | ASSY,TAPE,GEOWLM,POLY,100FT | 52050013 |
| " | ASSY,TAPE,GEOWLM,POLY,200FT | 52050012 |
| " | ASSY,TAPE,GEOWLM,POLY,300FT | 52050014 |
| " | ASSY,TAPE,GEOWLM,POLY,30M | 52050072 |
| " | ASSY,TAPE,GEOWLM,POLY,60M | 52050042 |
| " | ASSY,TAPE,GEOWLM,POLY,100M | 52050053 |
| " | ASSY,TAPE,GEOWLM,MDPE,100' | 52050181 |
| " | ASSY,TAPE,GEOWLM,MDPE,200' | 52050182 |
| " | ASSY,TAPE,GEOWLM,MDPE,300' | 52050183 |
| " | ASSY,TAPE,GEOWLM,MDPE,30M | 52050230 |
| " | ASSY,TAPE,GEOWLM,MDPE,60M | 52050231 |
| " | ASSY,TAPE,GEOWLM,MDPE,100M | 52050232 |

| Item # | Parts Description | Part # |
|--|--|----------|
| Replacement Tape Assemblies (3/8" Probe Included, reel not included) | | |
| 3 + 4 | ASSY,TAPE,GEOWLM,100FT,3/8" | 52050126 |
| " | ASSY,TAPE,GEOWLM,200FT,3/8" | 52050127 |
| " | ASSY,TAPE,GEOWLM,300FT,3/8" | 52050128 |
| " | ASSY,TAPE,GEOWLM,30M,3/8" | 52050129 |
| " | ASSY,TAPE,GEOWLM,60M,3/8" | 52050130 |
| " | ASSY,TAPE,GEOWLM,100M,3/8" | 52050131 |
| " | ASSY,TAPE,GEOWLM,MDPE,100',3/8 | 52050226 |
| " | ASSY,TAPE,GEOWLM,MDPE,200',3/8 | 52050227 |
| " | ASSY,TAPE,GEOWLM,MDPE,300',3/8 | 52050228 |
| " | ASSY,TAPE,GEOWLM,MDPE,30M,3/8 | 52050233 |
| " | ASSY,TAPE,GEOWLM,MDPE,60M,3/8 | 52050234 |
| " | ASSY,TAPE,GEOWLM,MDPE,100M,3/8 | 52050235 |
| 4 | ASSY,PROBE,GEOWLM (5/8") | 52050052 |
| Reel and Control only (does not include tape or probe) | | |
| 5 | ASSY,CONTROL,GEOWLM TAPE LENGTH | 52050003 |
| 6 | PROBE HOLDER, 5/8", UNI-FRAME | 52050063 |
| " | PROBE HOLDER, 3/8", UNI-FRAME | 52050263 |
| 7 | KNOB,KNURLED,3/4x5/16",BLK (USE WITH | 12050524 |
| 8 | SCREW,SS8,1/4-20X1.375",SHCS | 12050525 |
| 9 | NUT,NYL,1/4-20,HEX | 17500129 |
| 10 | KNOB,PHENOLIC,OVAL/TAPERED REEL | 12050002 |
| 11 | BOLT,SS8,KNOB HANDLE STRIPPER 5/16x1.5" (1/4-20 THRD) | 17500123 |
| 12 | O-RING,BUNA,.484 X .039" | 12050961 |
| 13 | WASHER, WAVE | 12050255 |
| 14 | KNOB,INDICATING,1/4",RND (SENSITIVITY) | 12050090 |
| 15 | HANDLE, GRIP, VINYL, 3/4 x 5-1/16" | 12050007 |
| 16 | RING, RETAINING, SS, SPIRAL, WLM IP | 12050022 |
| Not shown: | | |
| | GUARD,LEADER,PROPAMIDE,NATURAL | 12050060 |
| | GUIDE,TAPE,DELRIN | 22050255 |
| | CASE,GEOWLM,100-300' | 12050059 |
| | MANUAL,INSTRUCTION,GEOWLM | 12050062 |
| | TAPE WEIGHT (OPTIONAL) | 52050277 |

| DOCUMENT REVISIONS | | |
|---------------------------|--|-----------------|
| EDCF# | DESCRIPTION | REV/DATE |
| - | Previous Release | 08/31/2012 |
| - | Updated 3/8" probe specs, updated EC Declaration of Conformity, updated international office address, SP | 03/14/2014 |
| - | Updated EC Declaration of Conformity, correct backpage footer information, SP | 03/03/2015 |
| EDCF# 1972 | Updated Replacements Parts List & Diagram with sensitivity knob (#12050090) information, SP | 04/22/2016 |
| Project 1947 | Added PFAS free components – StellaR | 5/4/2020 |
| Project 2016 | Changed tape guide PN from PVC to Delrin (22050601 to 22050255) – StellaR | 7/27/2020 |

NOTES

EC Declaration of Conformity

Manufacturer: Geotech Environmental Equipment, Inc.
2650 E 40th Avenue
Denver, CO 80205

Declares that the following products,

Product Name: Water Level Meter, manual rewind only

Model(s): ET Water Level Meter
ETL Water Level Meter

Year of manufacture: 2010

Conform to the principle safety objectives of 2006/95/EC Low Voltage Directive by application of the following standards:

EN 61010-1: 2010
EN 809-1 + A1:2010

Year of affixation of the CE Marking: 2008

Conform to the protection requirements of 2004/108/EC Electromagnetic Compatibility (EMC) by application of the following standards:

EN 61000-6-1: 2007
EN 61000-6-3: 2012
EN 61326-1: 2013

EMC conformity established 11/28/2008

Production control follows the ISO 9001:2008 regulations and includes required safety routine tests.

This declaration issued under the sole responsibility of Geotech Environmental Equipment, Inc.



Joe Leonard
Product Development

Serial number _____



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.



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