OPERATING INSTRUCTIONS

Water Level Meter

450-008/010/11/12/13/15/17

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Contents

This operating instruction manual tells you about the Water Level Meter and how to use it to measure the depth of water in standpipes, wells and boreholes.

This operating instruction applies to installers, field engineers and technicians who need to acquire water level measurements using a Water Level Meter.

ELE has an on-going policy of design review and reserves the right to amend these specifications without notice.

1 Introduction

This manual has been written to provide you with relevant information and to guide you in best practice when using a Water Level Meter in order for you to gain the most from our product.

Please read this manual thoroughly before use to help avoid any problems and keep it handy when using the Water Level Meter.
Water Level Meters are used to measure the depth of water in standpipes, wells and boreholes.

The meter comprises a stainless steel probe fitted to a flexible graduated cable which is wound on to a hand reel containing a transistorised switched circuit, audio and visual indicators and a battery.

The Water Level Meter is simple to use and being portable can be used at many locations. The tape design prevents it from sticking to wet surfaces, such as the lining of a borehole, ensuring accurate and easily acquired measurements.

2 Overview

2.1 Important information

	**Important:** Failure to adhere to the warnings in this manual may result in network disruption and possible data loss. Failure to observe the warning may result in injury, product malfunction, unexpected readings or damage to the product that may invalidate its warranty.
	Tips give additional information that may be helpful when using a Water Level Meter.

2.2 Warranty

Refer to our terms and conditions of sale for warranty information.

The batteries are a consumable item and are excluded from the warranty.

3 System Description

3.1 Things You Need to Know About the Water Level Meter

3.1.1 Features

- One instrument reads at many locations
- Contoured tape for accurate readings
- Tape range; 30m–500m with 1mm divisions:
  - 450-008 – 30m
  - 450-010 – 50m
  - 450-011 – 100m
  - 450-012 – 150m
  - 450-013 – 200m
  - 450-015 – 300m
  - 450-017 – 500m
- Lightweight
- Audible (buzzer) and visual (LED light) water level alert signals
- Sensitivity adjustment for variations in water conductivity
- Digital temperature indicator option available
- Non-stretch polyethylene coated steel tape
- Ø12mm slimline probe available

3.1.2 Benefits

- Easily portable
- Tape design prevents tape sticking to wet surfaces
- Economic water level monitoring
- Ideal for boreholes with small diameters

4 System Components

A Water Level Meter is used for measuring the piezometric level within a water well or an access tube containing a Casagrande or Standpipe Piezometer.

The Water Level Meter can be used in standpipes up to 25 degrees from vertical.

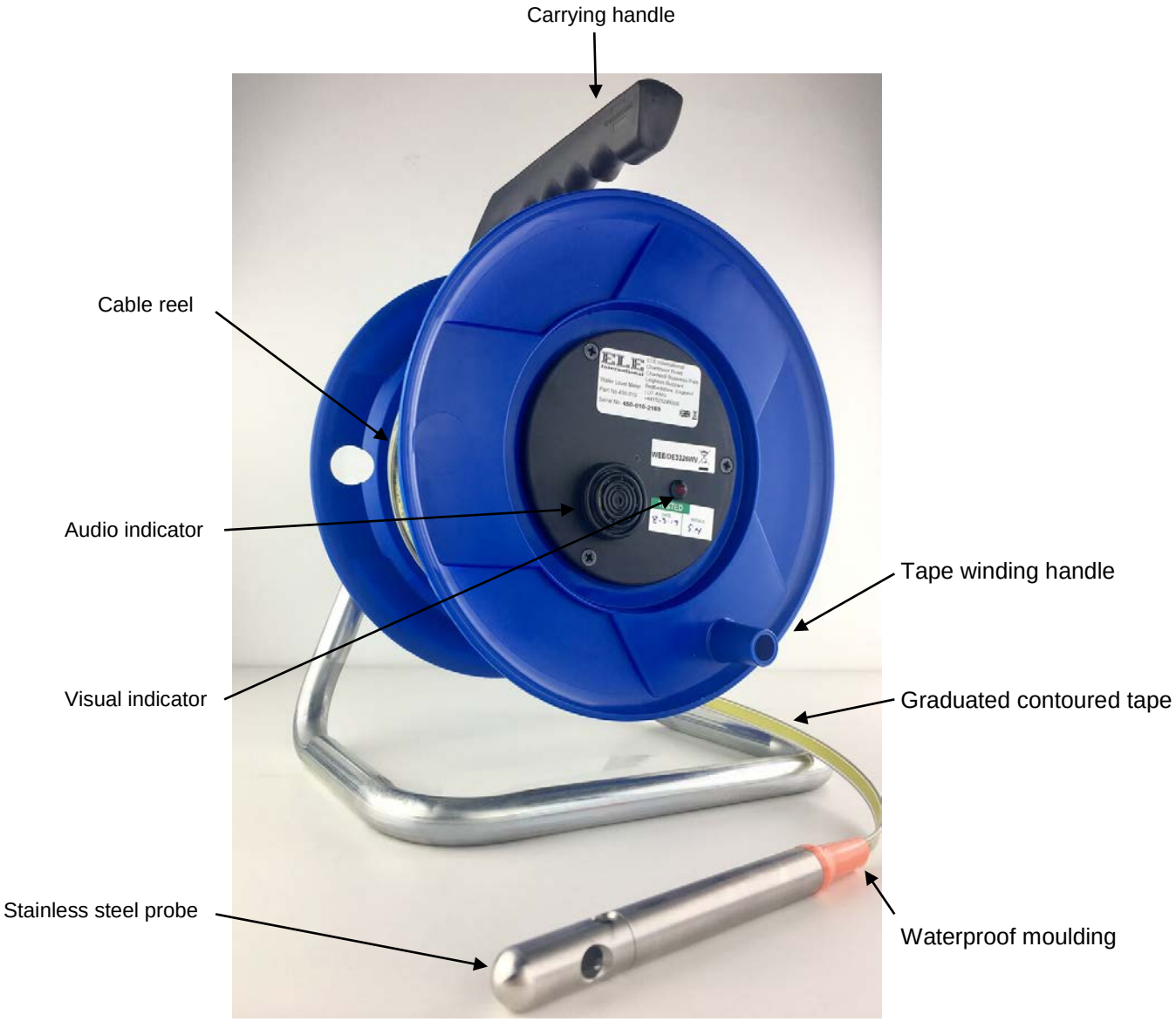
Each Water Level Meter comprises a stainless steel sensor probe fitted to a graduated cable that is wound on to a reel containing a transistorised switching circuit, audio (buzzer) and visual (light) indicator, sensitivity control and battery.

The sensor probe incorporates an insulating gap which acts as a switch, the circuit being completed when contact is made with the water.

The cable consists of a non-stretch contoured tape with stranded steel conductors, graduated at one millimetre intervals.

The probe is lowered down a borehole on the end of the tape. When it makes contact with water a buzzer sounds and an LED light comes on, both located on the reel. A reading can then be taken from the tape at the top of the borehole to record the water depth.

A sensitivity control is accessible inside the hand reel to enable adjustment to suit the water conductivity.



5 Quick Guide to Using a Water Level Meter

5.1 Before you go to site

	Follow the precautions outlined in this manual at all times to properly maintain the Water Level Meter.
	It is essential that the equipment covered by this manual is handled, operated and maintained by competent and suitably qualified personnel.
BEFORE YOU GO TO SITE	Unpack the Water Level Meter and familiarise yourself with the product.
	The sensitivity control is factory adjusted to suit the water conductivity of purified water; under normal conditions no user adjustment is required. If the Water Level Meter is to be used in salt or brackish water the sensitivity control may need to be adjusted to enable correct functionality.
	Please refer to Sections 6 and 7 for instructions on Probe Sensitivity Adjustment and Battery Replacement.
	When used in salty or contaminated water the probe should be rinsed clean in fresh non-contaminated water after use, very high salt concentrations may result in inconsistent readings or malfunction of the probe.

5.2 When you are in the field

ELE International recommends a **basic** skill level for using a Water Level Meter.

STEP	ACTION
1	Lower the probe down the borehole until the audio (buzzer) and visual (light) indicators from the reel signify the presence of water.
2	Raise the probe until the audio and visual indicators stop.
3	Slowly re-lower the probe until the audio and visual indicators are clear and distinct.
4	Record the depth at the top of the borehole using the graduated measuring tape.
5	When all readings have been completed, clean the probe and tape before re-winding the tape back onto the reel.

	Take precautions to safeguard the integrity of the measuring tape. Do not bend, kink or allow the tape to drag over sharp edges or surfaces and always wind the tape back on to the reel when not in use.
	Ensure that the tape is read at the same reference mark at the top of the borehole each time a depth reading is taken to ensure maximum accuracy of readings.

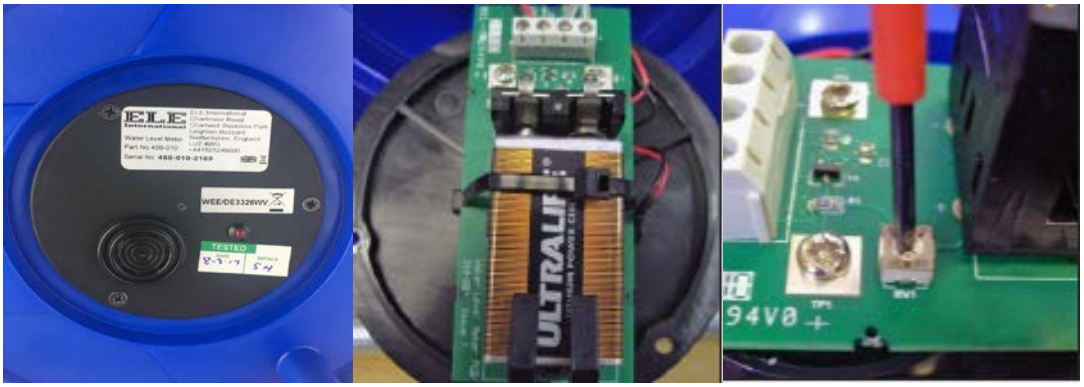
6 Probe Sensitivity Adjustment

ELE International recommends an **intermediate** skill level for adjusting the sensitivity of the Water Level Meter.

	Take care not to damage any of the wiring.

STEP	ACTION
1	Unscrew the three screws from the faceplate on the front of the reel.
2	Carefully lift the faceplate away to expose the wiring, battery and circuit board.
3	Raise and lower the probe through the surface of water, either within the standpipe or a container, whilst adjusting the sensitivity control using a small, flat-bladed screwdriver. The audio (buzzer) and visual (light) indicators should operate definitely and distinctly when the probe is in the water and cease as soon as the probe is removed from the water.
4	Carefully replace the battery housing ensuring that wires are not trapped, replace the faceplate and tighten the three fixing screws.

Step 1 Step 2 Step 3



Faceplate *Battery and circuit board* *Sensitivity control*

7 Battery Replacement

ELE International recommends a **basic** skill level for replacing the battery of the Water Level Meter.

	Take care not to damage any of the wiring when replacing the battery of the Water Level Meter.

STEP	ACTION
1	Unscrew the three screws from the faceplate on the front of the reel.
2	Carefully lift the faceplate away to expose the wiring, battery and circuit board.
3	Ensure you have a new ‘PP9’ 9V battery and a cable tie to hand.
4	Cut the cable tie securing the battery and remove the battery.
5	Insert a new battery observing the correct polarity.
6	Replace the cable tie.

	Make sure you insert the battery observing the correct polarity.

Step 1

Faceplate

Step 2

Battery and circuit board

Appendix A

Frequently Asked Questions/Troubleshooting Guide

	**Why are there no audio (buzzer) or visual (light) indicators when the probe is in contact with water, even under test conditions (under running water)?** There are three possible reasons; the battery is exhausted, the battery is inserted incorrectly, or there is damage to the tape. Replace the battery and/or ensure it is inserted with the correct polarity and visually inspect the tape. If the problems persist, please contact ELE International's Service Department for assistance.
	Why do the audio (buzzer) and visual (light) indicators work under test conditions (under running water) but cease to work within a known wet borehole? The water within the borehole is too hard and/or pure to conduct sufficient electricity to trigger the probe circuit. Adjust the sensitivity towards the 'high' sensitivity position and re-attempt the reading. Please refer to Sections 6 and 7 for Probe Sensitivity Adjustment and Battery Replacement.
	Why do the audio (buzzer) and visual (light) indicators remain activated after the probe has been withdrawn from the water in the borehole? The water within the borehole contains salt containments which lowers the electrical resistance, making it easier to conduct electricity. Adjust the sensitivity towards the 'low' sensitivity position and re-attempt the reading. It is advisable to clean the probe to remove salt or hydrocarbon products before making the adjustment.

DIRECTIVE ON WASTE ELECTRICAL & ELECTRONIC EQUIPMENT (WEEE)

Electrical equipment marked with this symbol may not be disposed of in European public disposal systems after 12 August of 2005. In conformity with European local and national regulations (EU Directive 2002/96/EC), European electrical equipment users must now return old or end-of life equipment to the Producer for disposal at no charge to the user.

Note: *For return for recycling, please contact the equipment producer or supplier for instructions on how to return end-of-life equipment for proper disposal.*

Important document. Retain with product records.

GERMAN

Elektrogeräte, die mit diesem Symbol gekennzeichnet sind, dürfen in Europa nach dem 12. August 2005 nicht mehr über die öffentliche Abfallentsorgung entsorgt werden. In Übereinstimmung mit lokalen und nationalen europäischen Bestimmungen (EU-Richtlinie 2002/96/EC), müssen Benutzer von Elektrogeräten in Europa ab diesem Zeitpunkt alte bzw. zu verschrottende Geräte zur Entsorgung kostenfrei an den Hersteller zurückgeben.

Hinweis: *Bitte wenden Sie sich an den Hersteller bzw. an den Händler, von dem Sie das Gerät bezogen haben, um Informationen zur Rückgabe des Altgeräts zur ordnungsgemäßen Entsorgung zu erhalten.*

Wichtige Informationen. Bitte zusammen mit den Produktinformationen aufbewahren.

FRENCH

A partir du 12 août 2005, il est interdit de mettre au rebut le matériel électrique marqué de ce symbole par les voies habituelles de déchetterie publique. Conformément à la réglementation européenne (directive UE 2002/96/EC), les utilisateurs de matériel électrique en Europe doivent désormais retourner le matériel usé ou périmé au fabricant pour élimination, sans frais pour l'utilisateur.

Remarque : *Veuillez vous adresser au fabricant ou au fournisseur du matériel pour les instructions de retour du matériel usé ou périmé aux fins d'élimination conforme.*

Ce document est important. Conservez-le dans le dossier du produit.

ITALIAN

Le apparecchiature elettriche con apposto questo simbolo non possono essere smaltite nelle discariche pubbliche europee successivamente al 12 agosto 2005. In conformità alle normative europee locali e nazionali (Direttiva UE 2002/96/EC), gli utilizzatori europei di apparecchiature elettriche devono restituire al produttore le apparecchiature vecchie o a fine vita per lo smaltimento senza alcun costo a carico dell'utilizzatore.

Nota: *Per conoscere le modalità di restituzione delle apparecchiature a fine vita da riciclare, contattare il produttore o il fornitore dell'apparecchiatura per un corretto smaltimento.*

Documento importante. Conservare con la documentazione del prodotto.

DANISH

Elektriske apparater, der er mærket med dette symbol, må ikke bortskaffes i europæiske offentlige affaldssystemer efter den 12. august 2005. I henhold til europæiske lokale og nationale regler (EU-direktiv 2002/96/EF) skal europæiske brugere af elektriske apparater nu returnere gamle eller udtjente apparater til producenten med henblik på bortskaffelse uden omkostninger for brugeren.

Bemærk: *I forbindelse med returnering til genbrug skal du kontakte producenten eller leverandøren af apparatet for at få instruktioner om, hvordan udtjente apparater bortskaffes korrekt.*

Vigtigt dokument. Opbevares sammen med produktdokumenterne.

SWEDISH

Elektronikutrustning som är märkt med denna symbol kanske inte kan lämnas in på europeiska offentliga sopstationer efter 2005-08-12. Enligt europeiska lokala och nationella föreskrifter (EU-direktiv 2002/96/EC) måste användare av elektronikutrustning i Europa nu återlämna gammal eller utrangerad utrustning till tillverkaren för kassering utan kostnad för användaren.

Obs! *Om du ska återlämna utrustning för återvinning ska du kontakta tillverkaren av utrustningen eller återförsäljaren för att få anvisningar om hur du återlämnar kasserad utrustning för att den ska bortskaffas på rätt sätt.*

Viktigt dokument. Spara tillsammans med dina produktbeskrivningar.

SPANISH

A partir del 12 de agosto de 2005, los equipos eléctricos que lleven este símbolo no deberán ser desechados en los puntos limpios europeos. De conformidad con las normativas europeas locales y nacionales (Directiva de la UE 2002/96/EC), a partir de esa fecha, los usuarios europeos de equipos eléctricos deberán devolver los equipos usados u obsoletos al fabricante de los mismos para su reciclado, sin coste alguno para el usuario.

Nota: *Sírvase ponerse en contacto con el fabricante o proveedor de los equipos para solicitar instrucciones sobre cómo devolver los equipos obsoletos para su correcto reciclado.*

Documento importante. Guardar junto con los registros de los equipos.

DUTCH

Elektrische apparatuur die is voorzien van dit symbool mag na 12 augustus 2005 niet meer worden afgevoerd naar Europese openbare afvalsystemen. Conform Europese lokale en nationale wetgeving (EU-richtlijn 2002/96/EC) dienen gebruikers van elektrische apparaten voortaan hun oude of afgedankte apparatuur kosteloos voor recycling of vernietiging naar de producent terug te brengen.

Nota: *Als u apparatuur voor recycling terugbrengt, moet u contact opnemen met de producent of leverancier voor instructies voor het terugbrengen van de afgedankte apparatuur voor een juiste verwerking.*

Belangrijk document. Bewaar het bij de productpapieren.

POLISH

Sprzęt elektryczny oznaczony takim symbolem nie może być likwidowany w europejskich systemach utylizacji po dniu 12 sierpnia 2005. Zgodnie z europejskimi, lokalnymi i państwowymi przepisami prawa (Dyrektywa Unii Europejskiej 2002/96/EC), użytkownicy sprzętu elektrycznego w Europie muszą obecnie przekazywać Producentowi stary sprzęt lub sprzęt po okresie użytkowania do bezpłatnej utylizacji.

Uwaga: *Aby przekazać sprzęt do recyklingu, należy zwrócić się do producenta lub dostawcy sprzętu w celu uzyskania instrukcji dotyczących procedur przekazywania do utylizacji sprzętu po okresie użytkowania.*

Ważny dokument. Zachować z dokumentacją produktu.

PORTUGESE

Qualquer equipamento eléctrico que ostente este símbolo não poderá ser eliminado através dos sistemas públicos europeus de tratamento de resíduos sólidos a partir de 12 de Agosto de 2005. De acordo com as normas locais e europeias (Directiva Europeia 2002/96/EC), os utilizadores europeus de equipamentos eléctricos deverão agora devolver os seus equipamentos velhos ou em fim de vida ao produtor para o respectivo tratamento sem quaisquer custos para o utilizador.

Nota: *No que toca à devolução para reciclagem, por favor, contacte o produtor ou fornecedor do equipamento para instruções de devolução de equipamento em fim de vida para a sua correcta eliminação.*

Documento importante. Mantenha junto dos registos do produto.