IMPORTANT: ENSURE THAT THE PANEL RETAINING THUMB SCREWS (NUTS) ARE TIGHT BEFORE USE.

Figure 1

Figure 2

To Test the Entire System: **Make sure sensitivity dial is turned fully clockwise.** Touch the probe body to the standoff screw and probe tip to the stud (on axle) at the same time. The buzzer will sound if the system is okay.

Figure 3

Hanger to support the meter at the well head.

Tape Guide to protect the tape from sharp edges.

Figure 4 Well Depth Indicator Probe

Figure 5 Well Casing Indicator Probe

Item	Part Numbers
drawDown Electronic Panel (30m/100ft - 150m/500ft)	1121
drawDown Electronic Panel (200m/750ft - 600m/2000ft)	1124
Detachable dD-T probe	1109
Thumb Screws Set (2)	1136
Well Depth Indicator Probe (optional)	1101
Well Casing Indicator Probe (optional)	1102

HERON ALSO MANUFACTURES:

- Water Level Meters
- Data Loggers
- Interface Meters
- Conductivity Meters
- Temperature Meters
- Well Casing Indicators
- Well Depth Indicators
- Tag Lines
- Borehole Inspection Cameras

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Made in Canada

HERON INSTRUMENTS INC.

dipper-T

Four Function Water Level Meter

Operating and Maintenance Instructions

www.heroninstruments.com

dipper-T Water Level Meter Instructions

General Care of the dipper-T

The dipper-T is a high quality, robust, premium water level meter capable of **Four Functions – static and drawDown** levels, **well casing*** and **well depth*** indications (*optional probe required). The dipper-T will provide many years of reliable service when these recommendations are followed:

- Avoid sharp edged casing, use the tape guide on the unit to prevent damage to the tape.
- Take care to avoid the tape becoming entangled with other equipment in boreholes or wells, use stilling pipes when possible.
- Neatly rewind and clean the tape after each use. Refer to: **Cleaning the dipper-T**

DO NOT use the dipper-T as a guide to backfilling, bentonite sealing or sand packing in wells. This type of material falls through the water column at a much slower rate than the dipper-T probe and can result in a trapped tape and probe.

DO NOT allow the tape to "freefall" down the well, it may become caught in other equipment in the well.

Warranty is conditional upon adherence to these guidelines.

Equipment Check

Before taking the unit into the field, carry out these simple tests with the sensitivity knob turned fully clockwise (see Figure 1), and the two panel retaining thumb screws (nuts) tight.

- Insert battery drawer (battery included) into the battery compartment on the electronic panel. Note polarity.
- Check the condition of battery and circuit by pressing the **Change Mode** button from **static** to **drawDown**. The unit will sound and the indicator light will come on when the probe is in air. If the unit does not respond, replace battery and try again.
- Test the entire unit by placing the probe in tap water or touching the probe body to the standoff screw and probe tip to the stud (on axle) as shown in Figure 2. If the dipper-T is working properly, the unit will sound as above.

DO NOT test in distilled water.

Use in Field

The dipper-T operates in two modes, **static** and **drawDown**. In **static** mode, the unit is silent until the probe touches the water. In **drawDown** mode, the unit sounds and the light remains on when the probe is **not** in water.

NOTE: There is no on/off switch on the instrument. If using in **drawDown** mode, return the unit to **static** mode to turn indicators off. The dipper-T consumes no power in **static** mode when probe is not in water.

- To avoid damaging the tape on the side of the casing, hang the dipper-T on the casing and run the tape over the guide on the frame leg. If you cannot hang the unit, hold the dipper-T away from the side of the casing and guide the tape down the center of the well.
- Swivel the **probe holder** on the frame to allow the tape free movement down the well (see Figure 3).
- Note the inverted triangle on the probe holder serves as a datum point indicating "top of casing" (see Figure 3).
- The **sensitivity knob** (see Figure 1) is used to maintain a sharp distinctive signal by adjusting the unit's response to varying conductivities. Turn the knob clockwise for low conductivity (pure) water and counter-clockwise for high conductivity (dissolved minerals) water. In wells that have cascading water that may give false readings, reduce the sensitivity by turning the sensitivity knob counter-clockwise.
- Reel the tape down the well carefully avoiding the edge of the casing.

FOR STATIC MODE

- When the unit sounds (in **static** mode) carefully measure the depth to water indicated on the tape from your datum point (inverted triangle).
- Raise and lower the probe in and out of the water to ensure a consistent result.

FOR DRAWDOWN MODE

- When the probe is in water at the desired **drawDown** level, push the **Change Mode** button to **drawDown** mode, (see Figure 1) the unit will now be silent in water and start pumping the water out. Once the water goes past the tip of the probe, the unit will sound in air.
- Turn off pump and put the dipper-T back in **static** mode.

WATCH THE VIDEO ON "HOW THE DRAWDOWN FEATURE WORKS" FOUND ON HERON INSTRUMENTS' YOUTUBE CHANNEL.

FOR WELL DEPTH MEASURING

- Remove the water level meter probe from the detachable link and replace with the **Well Depth Indicator Probe**. Make sure the connection is tight but do not over tighten (see Figure 4).
- While the dipper-T is in **static** level mode, lower the probe down the side of the casing (use the tape guide to protect the tape from sharp edges), avoid hitting other objects within the well. When the probe reaches the bottom of the well, the pressure sensitive plunger enters the probe body closing a switch, initiating an audible and visual signal at the top of the well. The well depth reading is taken directly from the tape. The datum point indicator is on the back of the probe holder (see Figure 3).

FOR WELL CASING MEASURING

- Remove the water level meter probe from the detachable link and replace with **Well Casing Indicator Probe**. Make sure the connection is tight but do not over tighten (see Figure 5).
- While the dipper-T is in **static** level mode, lower the probe down the side of the steel casing in the well (use the tape guide to protect the tape from sharp edges). While the probe is within the magnetic field of the steel casing, an auditory and visual signal is active. When the probe leaves the magnetic field the signal stops, indicating the bottom of the steel casing. The well casing measurement is then taken directly from the tape. The datum point indicator is on the back of the probe holder (see Figure 3).
- **NOTE**: The unit may not signal fully in wells with deteriorating steel casing.

When rewinding the tape, remove as much water and debris as possible from the tape and the probe.

Cleaning the dipper-T

Always clean the dipper-T after use in the field to maintain optimal performance and extend the life of the unit.

The dipper-T may be cleaned with any **mild** household dishwashing detergent and rinsed with water.

If the electronic panel is removed first, the reel and tape can be washed gently with a power washer. Remove the thumb screws (nuts) (see Figure 1) to release the panel. Take care not to lose the thumb screws as the unit will not work without them.

DO NOT use abrasives, partially halogenated hydrocarbons or ketones to clean the reel.

Troubleshooting the dipper-T

Q. What if there is no sound or indicator light when the unit is tested?
A. Refer to **Equipment Check** and follow procedures. Change the battery if necessary.

Q. Why doesn't the unit sound when testing the probe?
A. There may be a lack of connection from the back of the electronic panel, down the tape to the probe. Tighten the panel retaining thumb screws (nuts) on the electronic panel to complete contact.

Q. After tightening the thumb screws, the probe is still not working. How can I fix this problem?
A. Carry out full continuity test, shown in Figure 2.

Q. What should I do if the unit does not sound in static mode (probe in air)?
A. Adjust the sensitivity setting. If the unit still does not work check all the connections inside the hub (inside the hub polarity is not an issue as the current is AC).

Q. Why would the instrument continue to sound when not in water?
A. The unit may be in **drawDown** mode. Press the **Change Mode** button, putting the unit into **static** mode (silent in air). Dry the probe with a clean cloth.

Q. Why is the Well Casing Indicator Probe giving false readings?
A. False readings may indicate that the well casing has deteriorated causing the probe not to pick up the magnetic field of the steel casing. The well casing may have holes, be rusty and/or have a material buildup.

Contact Heron Instruments or your Heron Distributor if you cannot isolate the problem.

Warranty (5 years, probe 1 year)

Heron Instruments Inc. warrants to repair or replace any defective equipment or part upon inspection by a **Heron** service technician. Warranty will be determined to our satisfaction to have a defect in workmanship or original material. The customer is responsible for all shipping fees to return the item to **Heron**.

This warranty shall not apply to damage of equipment caused by improper installation, usage, storage, alteration or inadequate care.

In no event shall **Heron** be held liable for any direct, indirect or consequential damages, abuse, acts of third parties (rental equipment), environmental conditions or expenses which may arise in connection with such defective equipment.

Heron Instruments Warranty coverage does not extend to the following:

- Tape, bag or batteries used with the product.
- Products used as rental equipment.
- Products contaminated by materials which are known to be hazardous and have rendered the unit unserviceable.
- Parts failure due to neglect in cleaning or servicing.
- Failure of parts caused by misuse.

For service information:

- visit **www.heroninstruments.com**
- email **service@heroninstruments.com**
- call **1-800-331-2032** or **905-628-4999**

Warranty is conditional upon adherence to these guidelines.