



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

Item	Part Numbers
drawDown Electronic Panel (1.5m/50ft-1.50m/500ft)	1408-1
drawDown Electronic Panel (1.80m/600ft-300m/1000ft)	1408-2
Thumb Screws (Set of 2)	3250

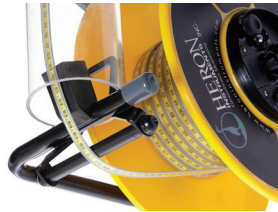


Figure 3
Hanger to support the meter at the well head.
Tape Guide to protect the tape from sharp edges.



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 1

- Keep Thumb Screws Tight
- Battery Box
- Keep Thumb Screws Tight
- Sensitivity Knob for cascading water
- Please Note: This is NOT an on/off switch; the water is the switch.
- Signal LED
- Mode Indicator
- Change Mode Button
- Buzzer

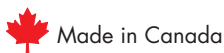
HERON ALSO MANUFACTURES:

- 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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dipper-Tough
Static & drawDown Levels

Operating and Maintenance Instructions



www.heroninstruments.com



dipper-Tough Water Level Meter Instructions

General Care of the dipper-Tough

The **dipper-Tough** is a high quality, robust, premium water level meter, capable of **2 Functions - static and drawDown** levels. Ideal for use in waste disposal and remediation sites and other harsh environments. The **dipper-Tough** 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-Tough**

DO NOT use the **dipper-Tough** 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-Tough** 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 the 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-Tough** is working properly, the unit will sound as above.

DO NOT test in distilled water.

Use in the Field

The **dipper-Tough** 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-Tough** 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-Tough** on the casing and run the tape over the guide on the frame leg (see Figure 3). If you cannot hang the unit, hold the **dipper-Tough** 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-Tough** back in **static** mode.

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

WATCH THE VIDEO ON “HOW THE DRAWDOWN FEATURE WORKS” FOUND ON HERON INSTRUMENTS’ YOUTUBE CHANNEL.

Cleaning the dipper-Tough

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

The **dipper-Tough** may be cleaned with any **mild** household dishwashing detergent or Alonox if necessary 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 retaining 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-Tough

- 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) (see Figure 1) 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 (see Figure 1), putting the unit into **static** mode (silent in air). Dry the probe with a clean cloth.

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

Warranty (5 years, tape & probe N/A)

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 under the **CONTACT** heading
- email service@heroninstruments.com
- call 1-800-331-2032 or 905-628-4999

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