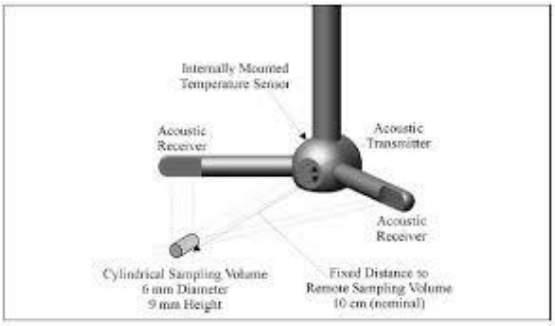
FlowTracker Gauging

The FlowTracker Itself

The FlowTracker measures velocities with a range as low as 0.001 m/s and up to 4.5 m/s. When united with a wading rod, the FlowTracker can be used to measure the total discharge across a river section.

How Does It Work

The FlowTracker uses SonTek's ADV technology to measure 2-D or 3-D velocities in a small measurement point located 10 cm from the acoustic transmitter. This allows measurement of natural flow that is free of any disturbance caused by the instrument. There are no moving parts on the FlowTracker.



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Basic Housekeeping

- Install AA batteries (8 in total) in the compartment in the back of the unit.
- Install the handheld unit onto the top setting rod
- Install the FlowTracker Probe using the mounting pin / wingnut
- To turn the unit on, **hold for one second**; to turn off**, hold for four seconds**.
- Always follow the on-screen instructions and use the major key functions labelled on the keypad.

Site Selection

- Select a site with reasonable uniform bottom conditions that may be safely waded (typically no more than 1-m deep).
- String a graduated tag line across the river perpendicular to the riverbanks.

Ideal Not Ideal

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Starting the Gauging

- Turn the FlowTracker on.
- **Press ENTER** to display the Main Menu.
- **Press 1** to enter the Setup Parameters Menu.

At the Setup Parameters Menu, review the current settings and change the values to meet your requirements. To change a displayed value, press the number next to the relevant parameter.

- **Press ENTER** to display more menu options. For example: Press 2 in the Setup Parameters Menu to change the Averaging Time.

The defaults for these parameters are:

Units: English Averaging Time: 40 seconds

Mode: Discharge Salinity: 0.0 ppt (freshwater)

Discharge Equation: Mid-Section

When you are finished, press 0 to return to the Main Menu. Now press 2 to enter the System Functions Menu.

Field testing the flow tracker

Some general tips at the System Functions Menu:

• Collect and verify temperature data (press 4).

• Check battery voltage (press 5).

• Collect and verify raw data. Ideally, SNR values should be >10 dB, but 4 dB is acceptable (press 6).

• Verify the internal clock is correct (press 9).

When you are done, press 0 to return to the Main Menu.

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Enter site information

Press 3 to Start Data Run and display the Data File Name Menu.

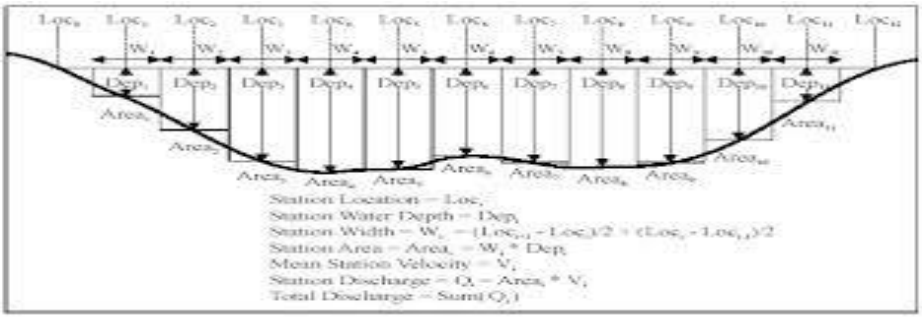
Press 1 and enter a file name. To enter text names, use the same method as mobile phones (e.g., press 2 four times for "C"; 2–A–B–C).

Press 9 to accept the name.

At any time during data collection, press 8 (QC Menu) to enter supplemental data including gauge height, rated flow, and user comments.

Begin the gauging

Start at one edge and enter the starting edge location and water depth. Divide the river cross-section into a number of stations appropriate for its width (as per a normal conventional gauging) (changed by pressing Method +/-).



- In the Starting Edge screen, enter the location, depth, correction factor, and starting edge using the marked buttons on the keypad.

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- A variety of measurement methods are supported using measurements at different depths, including:

• 0.6 * Depth

• 0.2 and 0.8 * Depth

• 0.2, 0.6 and 0.8 * Depth

• Kreps (surface and 0.62 * Depth)

• 5-point (surface, bottom, and 0.2/0.6/0.8 * Depth)

• Multi-point method (any number of points at user specified depths)

- Note that **LEW/REW** stands for Left/Right Edge Water.
- **Press Next Station** to continue.
- When the station information is complete, and the probe is at the correct depth and orientation, **press the Measure button**.
- An updating display will show the measured velocity and SNR values. Keep the probe as steady as possible.
- On completion of the averaging time, a summary will be displayed.
- **Press 1** to accept and go to the next station or depth, or **press 2 to repeat this measurement**.
- These steps will be repeated for all stations until **End Section** is pressed.

During the entire measurement, the probe's X-axis **must** be maintained perpendicular to the tag line. The probe should be held away from underwater obstacles that may disturb the flow. **Do not** turn the FlowTracker into the direction of flow, as it will automatically account for flow direction when making discharge measurements.

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Orient the FlowTracker perpendicular to the tagline Velocity data is recorded once per second for the entire Averaging Time, and then averaged to compute the mean velocity. Quality control data is also reviewed and displayed; you will be alerted to any unexpected values. If the velocity measurement is found to be unsatisfactory, you should **repeat the measurement**.

Based on the depth, station width, and mean velocity, the discharge for a station is calculated. The total discharge is the sum of all station and edge discharge values.

End the Measurement

- When **End Section** is pressed, the ending-edge information is displayed. Enter the information for this edge. The **Previous Station** and **Next Station** buttons can also be pressed to review completed stations.
- **Press Calc Discharge** to compute the total cross-sectional discharge for all completed stations.
- **Press 0** to return to the Main Menu. **You must always return to the Main Menu to make sure that all data is saved.**