The Transparent Velocity Head Rod, a simple tool to measure stream velocities

Where to use it:

- In any stream with a depth between 5 cm and 90 cm.

How to use the Transparent Velocity Head Rod to measure stream velocity:

- Put the safety loop on one of your wrists.
- Place the TVHR perpendicularly to the stream flow. Hold the TVHR perpendicular to the water surface, even in the case of a sloping streambed. 1
- Your head must be no more than 10 to 20 cm from the water level. To do so, the user can put his/her head down, getting as close to the water surface as possible.
- Observe the maximum height reached by the water on the TVHR for 20 seconds. If the highest point is reached more than twice, record it as the maximum height. Observe the lower point for 15 seconds.
- The difference in height between the maximum point and the minimum point is called Δ H (delta H, or change in height) and is measured in cm. (3)
- Write down the ΔH . Find ΔH and on the *table of velocities* and determine the corresponding velocity for that ΔH .
- At each measurement point in the stream, take two or three velocity measurements. Determine an average of those velocities to give the final velocity for the measuring point chosen.







How to use stream flow velocity to measure discharge:

To measure discharge, you need to measure your stream velocity and multiply it by the area of your cross section. To get the area, the depth of the channel must be known. Measuring the depth adds a step in the TVHR measurments.

- Use a measuring tape to determine the width of the stream.
- Measure the depth of the stream at each 50 cm along the cross section of the river using the TVHR for velocity. If the stream's width is more than 10m take measurments at each meter.
- To measure stream depth, the TVHR, originally perpendiculary to flow when measuring velocity, needs to be rotated 90 degrees in a clockwise direction to be parallel to the flow. If there is a rock/stone on the streambed prevenint the TVHR from sitting flat on the streambed, move the TVHR to directly next to the stone and measure depth there.
- Hold the TVHR perpendicular to flow to measure depth. During this step, the TVHR needs to be pushed firmly against the stream bed to prevent any slipping.
- The cursor needs to slide gently along the tool until the water starts coming over the top of it. Record this measure as the stream depth. Measuring depth is the last step, so the TVHR can be taken out of the water to read the depth recorded by the cursor.
- Write down the ΔH and report the value to the table of velocities to know the velocity associated. Write down the depths along the cross section. To calculate the discharge, the cross section should be divided into subsection with a width of 50 cm, with two velocities and two depth associated to each subsection.
- Calculate discharge by summing the area of each subsection multiplied by its average velocity. To get a better average velocity, the velocity can be measure in the middle of each subsection.



Slide the

cursor until water reach

the top of it



7 Table of velocities									
ΔH (cm)	Velocity (m/s)	ΔH (cm)	Velocity (m/s)	ΔH (cm)	Velocity (m/s)	ΔH (cm)	Velocity (m/s)	∆H (cm)	Velocity (m/s)
0.5	0.12	5.5	0.80	10.5	1.17	15.5	1.45	20.5	1.70
1.0	0.24	6.0	0.84	11.0	1.20	16.0	1.48	21.0	1.72
1.5	0.33	6.5	0.88	11.5	1.23	16.5	1.50	21.5	1.74
2.0	0.41	7.0	0.92	12.0	1.26	17.0	1.53	22.0	1.76
2.5	0.48	7.5	0.96	12.5	1.29	17.5	1.55	22.5	1.79
3.0	0.54	8.0	1.00	13.0	1.32	18.0	1.58	23.0	1.81
3.5	0.60	8.5	1.03	13.5	1.34	18.5	1.60	23.5	1.83
4.0	0.65	9.0	1.07	14.0	1.37	19.0	1.63	24.0	1.85
4.5	0.70	9.5	1.10	14.5	1.40	19.5	1.65	24.5	1.87
5.0	0.75	10.0	1.13	15.0	1.43	20.0	1.67	25.0	1.89

