



MODELS 001 & 002



The Model 001 & Model 002 Flow Meters represent a standard in open channel flow measurement. First introduced under the “Braystoke” brand over 30 years ago, both meters use the simple premise of converting speed of rotation of the helical impeller into speed of water. Available as a wading set for hand held use in shallow water, or as a hand-suspension system for use from bridges or boats, the Models 001 & 002 offer a quick, cost-effective method of measuring flow in a variety of open channel applications.

Specifications

Model 001

Type: 8011 series High Impact Styrene Impeller
 Size: 125mm diameter by 270mm pitch
 Range: 0.03 to 10m/s
 Accuracy: $\pm 1.5\%$ of reading above 0.15m/s
 $\pm 0.004\text{m/s}$ below 0.15m/s

Model 002

Type: 1178 series High Impact Styrene Impeller
 Size: 50mm diameter by 100mm pitch
 Range: 0.046 to 5m/s
 Accuracy: $\pm 2.5\%$ of reading above 0.5m/s
 $\pm 0.01\text{m/s}$ below 0.5m/s

What's the Difference?

Quite simply, the size of the impeller. The larger impeller of the Model 001 gives three key benefits over the smaller Model 002:

- Lower stall speed - greater surface area means that the minimum water speed required to turn the impeller is lower.
- Higher top speed - longer pitch means less revolutions for any given speed of water, so a greater speed range is possible.
- Higher accuracy - any variations in manufacturing tolerance, wear and tear, or deployment technique will have less effect on the larger impeller than on the small one.

However, the smaller Model 002 does have one major advantage over the Model 001:

- Since the impeller is smaller, it may be used successfully in very shallow water - provided the impeller is submerged, it will operate correctly.

Both impellers feature water lubricated PTFE bearings, requiring no oil for correct use, and a unique design that inhibits silt and weed from entering the bearings, allowing use in a wide variety of environments.

Calibration

Both instruments are offered as standard with a “Group Calibration”, according to BS ISO 2537:2007. Within limits, the performance of an impeller is primarily a function of its shape, provided that its bearings work and it is spinning freely. Since all our impellers are manufactured to the same standard shape, we guarantee that they fall within the tolerances of the group calibration, as given above. Note that the Group Calibration for each impeller is up to 3m/s - calibration above 3m/s is by linear extrapolation. Specific calibration of any individual impeller may be performed on request, at Valeport's own premises up to 1m/s, or via a third party for higher speeds.



Data Acquisition

The Model 001 & 002 Flow Meters are supplied with a dedicated surface display unit, the Model 0012B. As the impeller rotates, it opens and closes a magnetic reed switch, generating pulses. The Model 0012B measures the frequency of these pulses, and uses the calibration equation to calculate speed of flow from the pulse frequency. Data may be averaged over any number of seconds from 1 to 600, or according to number of impeller revolutions. The Model 0012B will display real time speed data, as well as the result of the data average, together with a Standard Deviation figure to give added data confidence. A solid state memory records all results, and the data may be downloaded to PC using the RS232 interface lead supplied.

Configurations

Both instruments are available in two standard configurations:

Wading Set

Designed for hand held use, with the operator standing in the channel, holding the instrument in position. System is supplied with 1.5m wading rod (3 x 0.5m sections), graduated in cm, and a 2m cable from instrument to display unit.

Alternatively, a “top-setting” wading rod system is available, which allows the vertical position of the instrument to be set without removing the wading rods from the water.

Suspension Set

Designed for hand suspension use, with the operator lowering the instrument on a cable into deeper water or from a high bridge. System includes a 35m suspension cable, together with an extended tail fin for ensuring that the instrument is aligned into the water flow. A range of streamlined weights is also available to aid suspension deployments - contact Valeport for details.

Also available is a “Conversion Kit”, which contains all the necessary additional parts to also allow a Wading Set to be used as a Suspension Set.

Software

System is supplied with CDUEXpress Windows based PC software, for data extraction from display unit. CDU Express is licence free.

Ordering

0001001 Model 001 Wading Set
 0001002 Model 001 Suspension Set
 0001003 Model 001 Conversion Kit
 0002001 Model 002 Wading Set
 0002002 Model 002 Suspension Set
 0002003 Model 002 Conversion Kit
 0001050 Top Setting Wading Rods (for either Model 001 or 002)

Datasheet Reference: MODEL 001 or 002 version 2A, Feb 2011