

AMIAD Filtration Systems

AMF² Cassettes Test Unit

Operation, Maintenance and Reference Manual

Ref- May 2011

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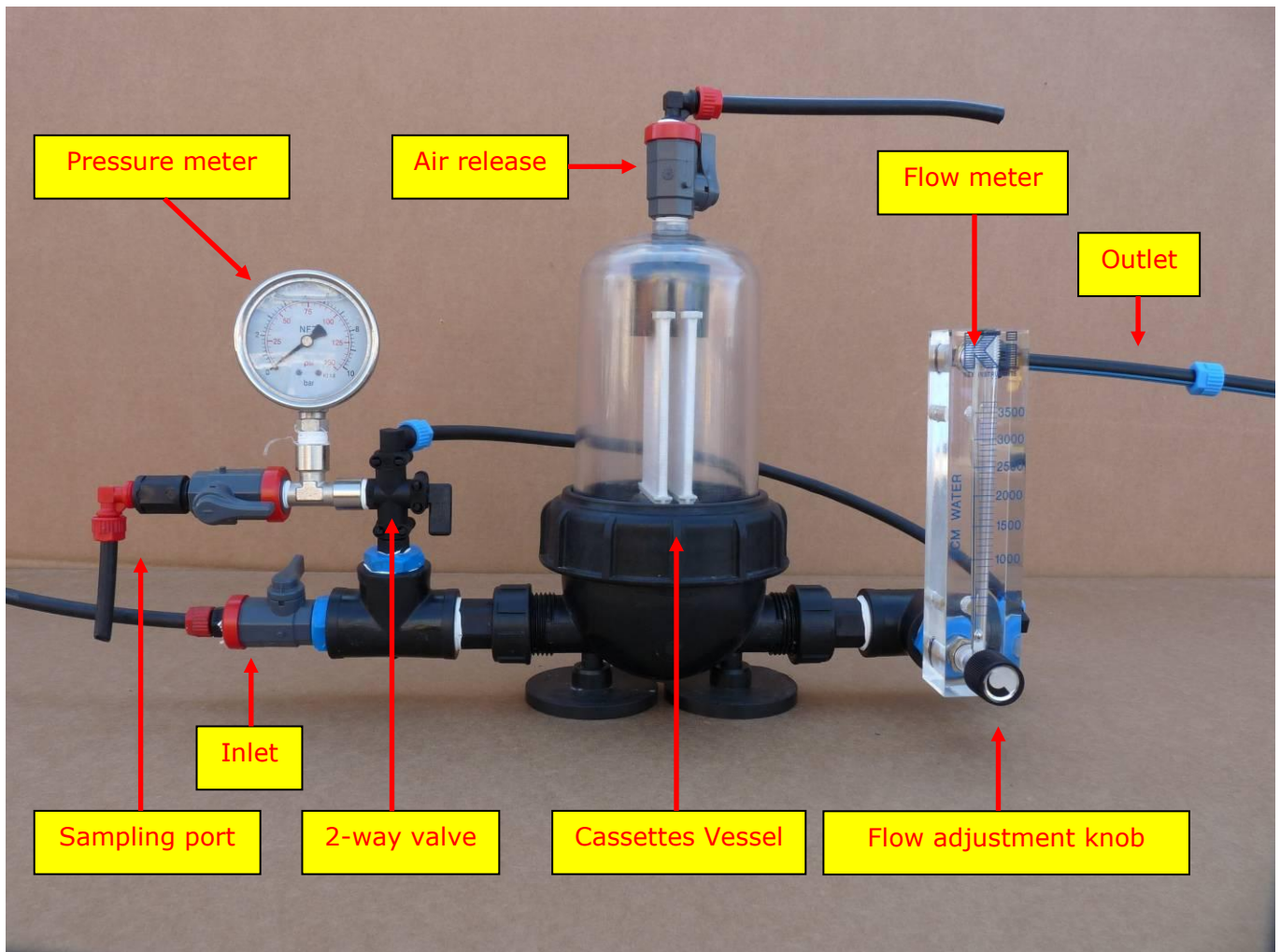
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Operating Instructions

This document describes the Amiad AMF² Microfiber Test Unit and its operation instructions.

General layout:



Purpose of Test Unit:

To conduct initial testing of micro-fiber cassettes, of different filtration degrees, for the purpose of verifying the typical filtration achieved, allow filtered water samples to be collected, (for post testing analysis), and to also obtain feedback to the time taken to develop a head-loss across the cassette, for various potential application.

The test kit does not replace a full size pilot project and it does not necessarily yield the exact performance ability of the automatic micro-fiber filters. But it gives realistic feedback to the typical values the AMF² technology can yield.

It must be understood that this equipment cannot clean the cassette element and soiled cassettes are usually discarded. Due to this fact there may also be residues left over from production of the cassettes in the filtered water, that can contaminate the filtered water samples taken, (particularly the finer degree cassettes, and in the early stages of operating the test unit).

The flow-rate through the cassette, and the time taken to load the cassette to significant differential pressure needs to be recorded for each cassette tested, and water samples of the raw water and filtered water need to be collected for laboratory testing to verify the level of removal and or levels of reduction of the target parameters for the intended application.

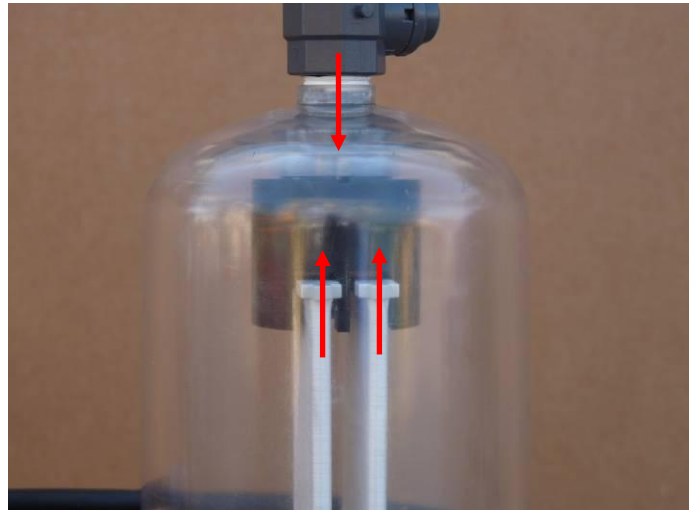
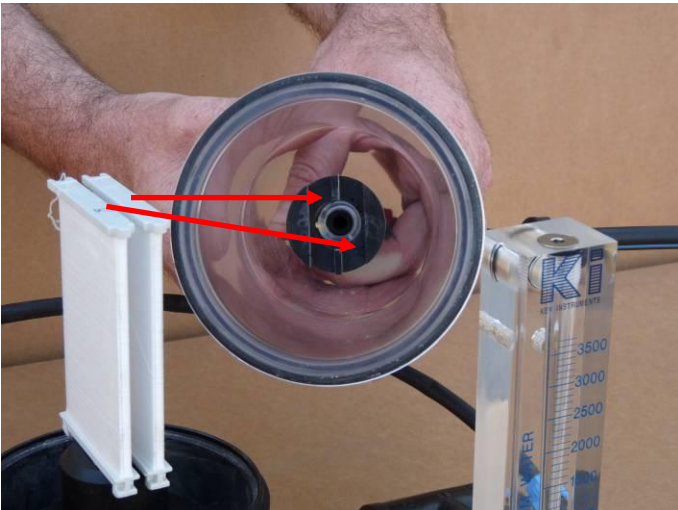
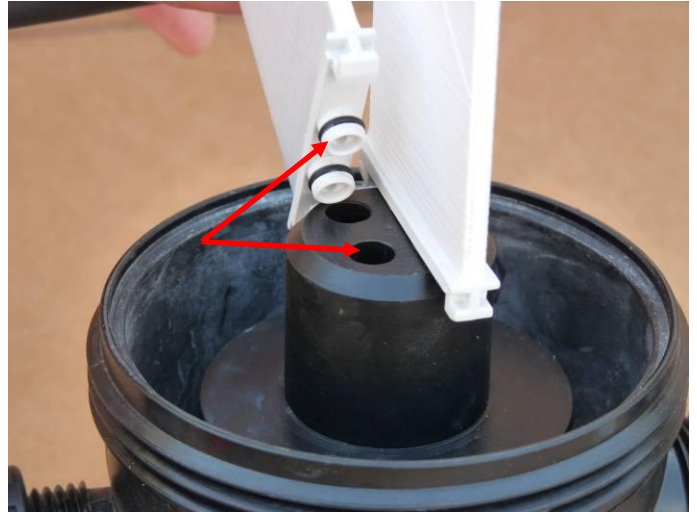
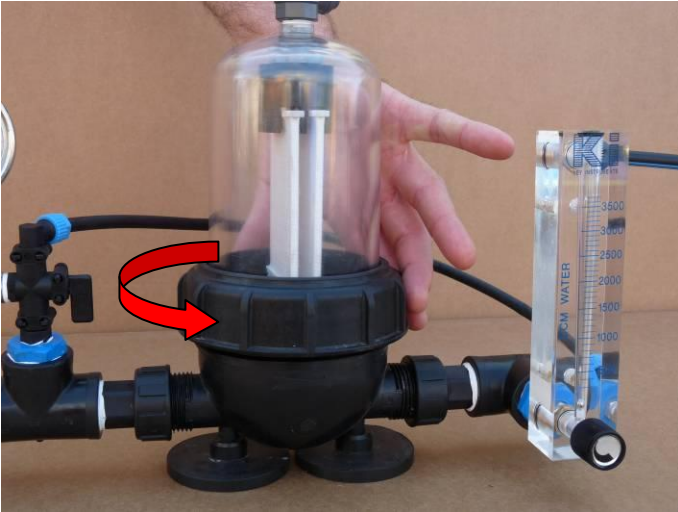
The volume to be collected of each sample varies depending on the type and quantity of tests to be undertaken, (1 L sample is usually the minimum required).

Technical Data

Inlet & Outlet ports	8mm Nylon compression fittings
Tubing	8mm Polyethylene
Filter Area	0.02 m ²
Flow rate (typical design)	Up to 2 L/m
Maximum Operating Pressure	up-to 6 bar
Maximum Operating Temperature	60°C
Filtration degrees available	2, 3, 7, 10, & 20 micron
Cleaning water supply	N/A (Discard soiled cassettes)

Operating Instructions:

1. Soak the cassettes to be tested for at least 30 minutes in clean water (subject to the intended application de-mineralized water is preferred). The soak time is to ensure all the threads of the cassette are wet – otherwise the run-time to a dirty cassette will be premature.
2. Open the cassettes vessel lid and insert new, pre-soaked, cassettes into the test unit and ensure they are seated squarely in place, (even if unit has new cassette installed, remove the lid and ensure they are seated correctly before commencing the test). Record the filtration degree of the cassettes, (stamped numbers on the end of each cassette identify the filtration degree). Make sure that the upper side of the cassettes is properly inserted to its place in the vessel's lid.

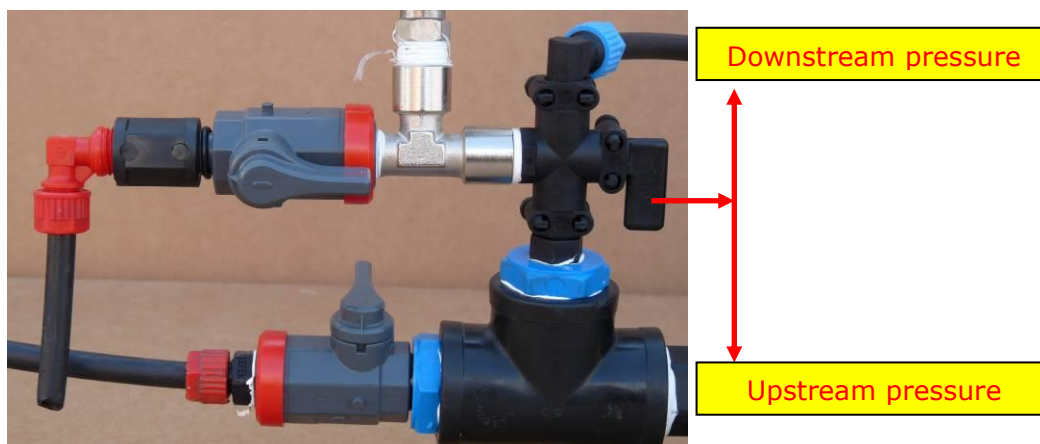


3. Ensure a suitable supply point is available prior to your site visit. We need a minimum pressure of 5m head of water to conduct tests, and be able to connect the 8 mm inlet tubing of the test unit. Before connecting the feed tube open the supply port and flush any silt or accumulated debris. It is preferred not to use water from the bottom of a pipe section, due to sedimentation issues, or the top of the pipe in the case of air entrapment. When the supply port has been prepared and flushed the test unit feed tube may be fitted.
4. **Caution:** The test unit is rated to 6 bar!
Should the feed pressure be greater please fit an appropriate Direct Acting Pressure Reducing Valve, (DAPRV), and set the pressure to below 6 bar.

5. The discharge from the test unit is normally an open discharge to atmosphere, (to a drainage point), please take care to support the discharge tube appropriately, to prevent potential spraying/jetting hazard risks (eye protection should be worn).
6. When starting flow through the unit, open the top air release valve, to vent excess air from the raw water chamber to ensure the cassette is entirely immersed. Verify the flow-rate and adjust to the desired value.



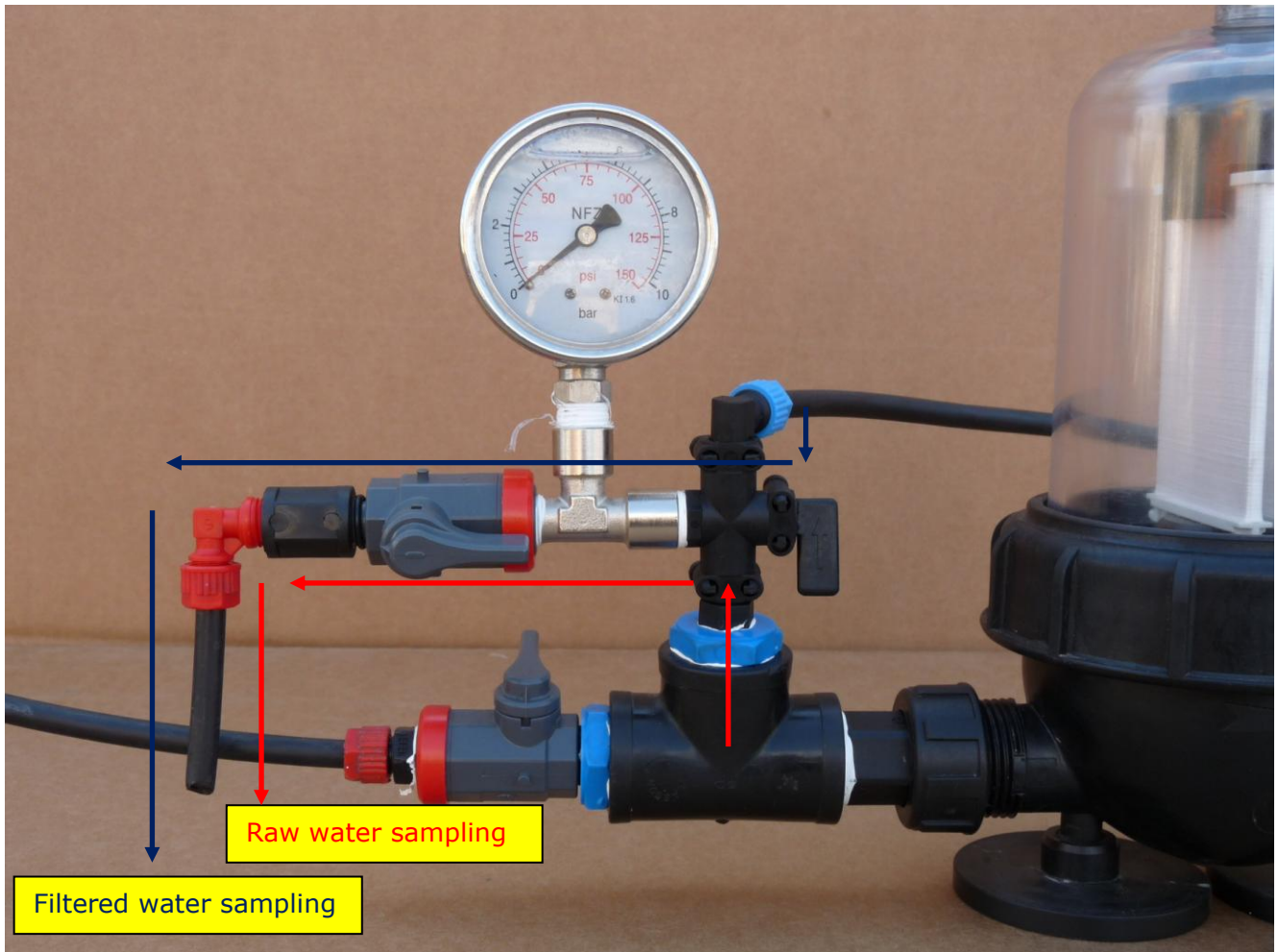
7. Record the starting time of the test, the flow-rate, filtration degree, and the head-loss across the cassette.
8. Run the water for at least a few minutes before taking any filtered water samples, (any fines or residue from the micro-fiber, or the molded cassette body, should be allowed to flush through before taking filtered water samples).
9. 2.5 m differential pressure, over & above the clean cassette head-loss, is considered a loaded/dirty micro-fiber cassette; therefore monitor the head-loss closely to ensure you record the time taken to load up to this point, (if the loading occurs quickly - reduce the flow-rate or consider pre-filtering options)
10. To check the head-loss; Swivel the handle of the "2-Way valve" such that the arrow on the handle points to the upstream sense port and record the reading. Rotate the handle anti-clockwise to the downstream sense port and record the pressure accordingly. The difference between these two readings is the differential pressure across the cassette.



11. Check and record the readings regularly, (every minute or so depending on the speed of the loading of the cassette, or at each 0.1 m differential pressure increment), such that an accurate overall time when the head-loss reaches 2.5 m can be recorded.

Water sampling:

Ensure you obtain raw water and filtered water samples in clean sample bottles (1L of each is sufficient - although 2L is preferred if Particle Size Distribution & TSS analysis is planned). The sampling should be conducted methodically to avoid contaminating the samples, ensure to rinse the sample bottles and their lids with the water being sampled prior to taking the sample. Clearly label and date each sample bottle, ensuring the Test Name, (site/application name), and Sample name, (raw or filtered with appropriate filtration degree) is clearly legible on every bottle.



Cassettes Test Record

Test Name: _____ Date: _____

Client: _____

Contact: _____

Contact Details: _____

Test No.			
Filtration degree (µm)			
Flow-rate L/m			
Time	Upstream Pressure	Downstream Pressure	Differential Pressure

A fully loaded cassette is considered at 2.5 m differential pressure over and above the clean cassette head-loss, (higher DP values up-to 4 m can be tested, but may yield poorer quality in some applications).